The Fixation of Superstitious Beliefs

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RESUMEN

Se puede entender la superstición como un modo de fijación de creencias, en situaciones en las que hay una continua ausencia de control, por medio de explicaciones que de hecho no pueden someterse a comprobación. Que las explicaciones no puedan someterse a comprobación se debe sólo en parte a su contenido; las actitudes sociales y las posibilidades de comprobación empírica juegan también un papel fundamental. Es importante señalar que la ausencia de posibilidad de comprobación empírica no entraña ausencia de significado sino que, más bien, posibilita que el significado se determine por la función real de las prácticas relacionadas con la afirmación en cuestión. Sucede así especialmente en el caso de las prácticas religiosas, que se diferencian de las supersticiosas en que tampoco su eficacia puede someterse a comprobación. Tal y como defiende Haack, frente a esto, la ciencia se caracteriza por su actitud ante la evidencia y por insistir en la ampliación de las posibilidades de comprobación empírica. La actitud científica supera a las alternativas en la medida en que una comparación rigurosa entre ellas requiere la adopción de la actitud científica.

PALABRAS CLAVE: *creencias supersticiosas, creencias religiosas, comprobación, función no-cognitiva, racionalidad limitada*.

ABSTRACT

Superstitions can be understood as a way of fixing beliefs – in the face of an ongoing lack of control – by involving effectively untestable explanations. The explanations are untestable only in part due to their content: related social attitudes and available empirical capabilities also play a vital role. Importantly, untestability does not entail the lack of meaning but, rather, frees the meaning to be determined by the actual function of the practices related to the claim. This is particularly the case with religious practices, which differ from superstitious ones in that their effectiveness is also untestable. Science, as Haack suggests, is contrasted by its attitude to evidence and the focus on extending empirical capabilities. The scientific attitude trumps the alternatives in so far as an accurate comparison requires that the scientific attitude be adopted.

KEYWORDS: *Superstitious Beliefs, Religious Beliefs, Testability, Non-Cognitive Function, Bounded Rationality*.

My aim in this paper is to sketch a broadly Peircean account of religious and superstitious beliefs.

I begin by examining the relationship between Malinowski's view that superstitions arise in circumstances in which people experience a lack of control and Peirce's view that it is doubt that leads to inquiry. Taken together, the views suggest that superstitions arise in situations in which doubt cannot be readily assuaged. Instead of continuing to alter the beliefs, superstitions act to protect them from counterevidence.

This is done in three different ways. Firstly, the content of the beliefs can be such as to minimise the opportunity for testing. Secondly, social attitudes can be such as to make testing unlikely. And, thirdly, the methods available for testing can be constrained. Both religious and superstitious beliefs make use of the full range of these mechanisms, the contrast class being provided by scientific beliefs for which maximum testability is sought.

The untestability of religious and superstitious beliefs does not render them meaningless, however. This is because they still remain capable of motivating human behaviour. Indeed, once empirical considerations are guarded against it is this non-cognitive role of beliefs that determines whether they become generally accepted. This role can be understood in terms of the adaptive function the beliefs come to have. Investigation of this role, however, will undermine it. What is more, a comparison of the actual desirability of religious beliefs with scientific ones requires that a scientific attitude be taken.

I

It is instructive to draw a comparison between the effect of uncertainty identified by Peirce and that put forward by Bronislaw Malinowski. Malinowski, in his 1925 essay "Magic, science and religion", argues for a correlation between uncertainty and superstition. (For the sake of this essay I assume that the cognitive basis of superstition and magic is exactly the same and they only differ in so far as they find themselves in different social contexts. Given that I am much more interested here in the cognitive aspect I can, therefore, treat them as a single phenomenon.) He gives a famous example comparing different kinds of fishing by the Trobriand islanders [Malinowski (1925), p. 31]:

> It is most significant that in the lagoon fishing, where man can rely completely upon his knowledge and skill, magic does not exist, while in the open-sea fishing, full of danger and uncertainty, there is extensive magic ritual to secure safety and good results.

The general observation that Malinowski is making is that people tend to believe in magic and engage in superstitious practices in situations over which they think they lack control, particularly if danger is involved.

While Malinowski thinks that uncertainty occasions superstitious thought, Peirce writes of it as being the cause of all thought [Peirce (1877)]:

> The irritation of doubt causes a struggle to attain a state of belief. I shall term this struggle *inquiry*, though it must be admitted that this is sometimes not a very apt designation.

Clearly, Peirce is thinking of a much broader category than Malinowski, as is made evident by his example of the doubt caused by not knowing straightaway which coins to use when making a small payment – a matter of very little import. Even so, both Malinowski and Peirce appear to be talking about, at the very least, closely connected issues. In effect, Peirce's observation about some inquiry not being worth the name, originally meant to point to its common inconsequentiality, takes on a certain piquancy when applied to superstitious thinking. The significant point is to identify the difference between what Peirce and Malinowski are discussing. Abstracting away from the somewhat different language they use, and assuming that the cases Malinowski is concerned with are a subset of those that Peirce considers, the question becomes: Under what circumstances does the kind of inquiry Peirce writes about lead to the kinds of magical beliefs and practices Malinowski describes? It seems that the vital difference is that Malinowski is concerned with cases in which it is impossible to obtain control (not something normally associated with fishing for change, if you pardon the pun). It is the lack of apparent control over some significant aspect of our lives that leads to superstitions according to him, after all.

Of course, it may be pointed out that some situations in which we have no control are highly predictable and, therefore, according to Peirce do not occasion inquiry – a lone sailor setting out to cross the Pacific in a dug-out being one such possible situation. However, these are not usually of interest, due to their very predictability. Of much greater interest are the circumstances in which we know we have some limited chance of succeeding, perhaps on the basis of past experience, and are trying to shorten the odds. Quite appropriately, the often heard superstitious person's explanation is that they are engaging in their superstitions "just in case".

A further, further point is that Peirce allows a variety of kinds of inquiry, the vital thing being that the inquiry does lead to beliefs – a settled mental state – not that it necessarily leads to true beliefs. This means that inquiry which leads to superstitious beliefs still falls very much within Peirce's purview. Indeed, magical thinking may be thought of as a particularly inventive form of the method of tenacity. This is because it has the virtue of mak-

ing the ongoing disconnect between what is believed and what occurs easier to cope with psychologically [Case et al. (2006), pp. 848-71]. The way that is achieved is by rendering the beliefs less subject to empirical testing – a solution that should strike as problematic anyone who takes seriously Peirce's maxim. Yet, it is important to put these worries aside for a moment if the role of superstitions is to be understood. The reason is that to characterise superstitions it is useful to rely upon a point that is related to Peirce's maxim.

II

While Peirce's maxim is controversial there is a related and hopefully more generally accepted hypothesis that I wish to make use of in characterising superstition. It seems fairly clear that, to the degree that a particular empirical claim is not subject to empirical testing, its acceptance within any particular group of people must be due to something else than its truth value. Quite simply, if people are not in the position to find out if something they happen to believe is actually the case, they must happen to believe it for reasons other than its truth. Appreciating this fact has, as we will see, a profound significance for understanding why it is that people do have superstitious beliefs. Before pursuing this point, however, it is important to understand the dimensions of testability.

In the case of superstitions, the manifest function of the practices – such as coming back with a good catch – is such as to be relatively testable. It is possible to make an informed decision as to whether the practice was successful, particularly in the kind of stark cases that become urban legends. However, the mechanism by which the practice is supposed to bring about the desired effect, unlike the obtaining of that effect, is not typically open to testing. To continue the example, a woman's success in obtaining a desirable husband might be explained in terms of the luck brought about by finding a four-leaf clover – the superstition works on the supernatural assumption of the existence of substantive luck that may be gained through certain actions and that can affect the future course of one's life. In so far as people do test superstitious beliefs and find them lacking it is primarily claims of correlation between practices and effects that get tested. The purported superstitious mechanisms get tested indirectly and come to be rejected for the reason that no empirical evidence requires that we assume their existence. This might seem to undermine the distinction I am drawing between the testability of the correlations and the mechanisms. However, for the purposes I will use it to, I need only argue for a practical distinction – I will speak of effective testability, which will be determined by much more than the content of the claims.

It is instructive to compare superstitions with typical religious practices, such as celebrating Mass. In this case, the manifest function of the practice is

normally described in terms that, unlike in the case of superstitions, are untestable – such as "communing with God". Of course, any mechanisms by which this might be achieved are, likewise, not generally open to testing. At the same time, it is important to recognise that there are religious practices that are much more like straightforward superstitions. An example of this may be intercessory prayer – prayer aimed at obtaining God's assistance in some worldly matter. In that case, the effectiveness of the practice can, and has been, tested on numerous occasions, with no significant positive evidence resulting from the efforts [Roberts et al. (2007)].

At the same time, commonsense everyday claims of causal connections tend to concern mechanisms and correlations that are open to relatively straightforward testing. Thus, superstitions might be seen as falling somewhere between commonsense claims and religious ones, in that they only propose effectively untestable mechanisms.

A further point can be made. In the case of commonsense beliefs, explanatory mechanisms tend to play a very minor role and claims concerning them are typically only reconstructed post hoc under direct questioning. This is strikingly different to religious claims, in whose case the supernatural entities proposed seem to be much more vital to the practices. Again, superstitions appear to fall somewhere in between these two. In many superstitions the mechanism is either inconsequential – as in the case of the saying "step on a crack, break your mother's back" – or minimised to the vague notion of substantive luck. At the same time, in other cases, the mechanisms at the core of superstitions may be much more involved, such as in the case of various practices aimed at maintaining good relations with house spirits.

While science may not be readily understood in the terms that we have been using, it is still instructive to consider how it compares to superstitions in these respects. Even though far from practical, scientific practices – if we understand experimentation in such terms – have the provision of evidence as a focal point. At the same time, scientific explanations might be given in terms that are originally hard to test, but the obtaining of evidence for the existence of the proposed causal mechanisms is seen as vital. Thus, in a recent book discussing the developments in evolutionary accounts of human behaviour, Laland and Brown write the following [Laland & Brown (2002), p. 234]:

> Ultimately memetics will stand or fall on whether it generates empirical research. Meme advocates must accept that, unless they devise a rigorous methodology for *doing* memetics, methods that instigate a valid research programme involving testing as well as generating hypotheses, then memetics will never be a science.

Of course, as evidenced by Peirce's pragmatic maxim, the focus on empirical evidence as science's calling card is hardly novel. However, in tradi-

tional formulations – even Peirce's maxim – the focus is on the propositions put forward. The Laland and Brown quote points toward two other considerations that are, if anything, more important in determining whether a claim is testable. The first is, to use Susan Haack's term, "the integrity of science" [Haack (2007)]; the second is science's continuous development of novel methodology. In the first case, the point may be generalised to the question of how social attitudes can render a claim – within its social context – more or less testable. Social norms and mores can make it very difficult if not practically impossible to test claims, or to have the results of such tests taken into consideration, by simply making such testing socially unacceptable. In the second case, the issue concerns the technological and methodological context for beliefs that, likewise, affects their testability. Whether someone can test a particular claim will depend upon the tools, mechanical as well as conceptual, that are available to them. Even more profoundly, it is significant to identify that the difference between superstition and science does not concern so much the current testability of proposed correlations or mechanisms but the attitude to this testability – the scientific attitude being to render the claims testable.

We can see now that the question of whether superstitions are testable can be teased apart to concern several different issues. First of all, it may concern the purported correlation between the practices and their desired ends or it may concern the supposed underlying mechanisms. Secondly, the testability will depend not only upon the content of the claims but, also, upon the context in which they are made, this context having its social as well as methodological dimensions. We will now turn to examine each of these contexts and their roles in detail. Doing this will cast in sharp relief the question of the relationship between science and, among other things, superstition, as well as shining light on the ethics of belief.

III

Durkheim distinguished between the sacred and the profane sphere of human activity and saw magic and religion as falling within the sphere of the sacred – unlike the examples of everyday practices or science that we have been also discussing. While the accuracy of Durkheim's distinction has been questioned, its relevance to the question of the testability of claims is remarkable. Durkheim defines the sacred as follows [Durkheim (1912), p. 40]:

> Sacred things are those things protected and isolated by prohibitions; profane things are those things to which such prohibitions apply and which must keep their distance from what is sacred.

As we have already observed, one element of what can render a claim untestable are socially constructed empirical limits. What Durkheim calls "the sacred" appears to be precisely this – social rules that render claims concerning certain things untestable to the members of that society. Thus, Christian relics have traditionally been protected from close inspection, recent breakdowns in this tradition having led to a number of them, including the Shroud of Turin, being revealed to be medieval fakes. The protections afforded to the sacred may take on legal form, in the case of official penalties instituted for failing to treat sacred objects or beliefs as is deemed appropriate. Such legal measures even persist in many modern societies that maintain blasphemy laws or other laws aimed at protecting religious sensibilities. Lacking the social character of religious beliefs, superstitions are less often afforded such additional protection.

Durkheim proposed "the sacred" as a way of defining religion and magic that got away from using notions of the supernatural. The problem with "the supernatural" is that many societies which espouse religious and magical beliefs do not make a clear distinction between natural and supernatural spheres [Martin (2004)], whereas this is not the case with the distinction between the sacred and the profane. However, Durkheim's alternative appears to have only identified a means by which cultures have rendered particular beliefs immune from investigation. This may be seen to lie behind some of the problems that Durkheim's use of the sacred had in dealing with apparent cases of secular societies treating things as sacred. When the sacred is understood to be less central, the problem disappears and it is possible to see how this strategy of creating social taboos in order to protect certain claims from testing is used in many nonsupernatural contexts. Indeed, that it is extremely common outside of religion or superstition.

Be they religiously-motivated or not, impediments to the investigation of elements deemed sacred stand in stark contrast with "the epistemological values of evidence-sharing and respect for evidence" that Haack identifies as central to science [Haack (2007), p. 10]. The instilling of these values is part of the training of young scientists, just as people who are brought into a religious tradition are taught to "respect" its central elements. The scientific values are institutionalised in such mechanisms as blind peer review and the insistence upon the reproducibility of results. Where, in the case of religion and magic, the point is to protect claims from empirical enquiry, the aim within science is to expose them to such enquiry, in so far as it is possible. Without, for the moment, reaching any conclusions as to the preferability of either attitude, it is possible to see that this points to a fundamental difference between scientific and supernatural world-views that is not metaphysical but attitudinal in character. Indeed, I would argue that this difference, and the related difference in the function of the factual claims that such stances lead to, is more basic than the more-often-pointed-to metaphysical disagreements. It

is this fundamental attitudinal aspect of science that empiricist accounts seem to aim at.

Of course, partly due to human capacity for self-contradiction and partly due to the institutional character of the divergent attitudes, it is possible for individuals to maintain both sets of attitudes in a pluralist social context, acting upon either of the two standards depending upon the situation they find themselves in. Thus, scientists are far more willing to accept religious or superstitious claims so long as they do not impact upon their professional practice or fall within its purview. Likewise, people in general are far more willing to voice reservations about religious beliefs outside of the public sphere.

IV

Having considered the role social attitudes play in making certain claims effectively untestable, we should turn to consider the role played by empirical methods. The general point is that whether a particular claim is effectively untestable in some particular situation depends upon the empirical tools that are available. A person may be perfectly willing to investigate a claim and yet be incapable of doing so for the lack of the right tools, be they physical or conceptual. In this respect, science has played a vital role in developing new ways of testing claims, effectively expanding the sphere of the testable. As Haack observes [Haack (2003), p. 300]:

> … what is epistemologically valuable about the natural sciences is not simply the vast body of knowledge they have accumulated about the world and how it works, but also the way they have expanded and refined human cognitive capacities, overcome human cognitive limitations, and amplified our capacity to inquire effectively.

This capacity for development has a second side to it, which is that scientific methods are merely a development upon basic human capacities and, therefore, continuous with them. The general theoretical model for how science manages to expand upon existing human abilities is provided by Herbert Simon's account of human rationality as constituted by heuristics [Simon (1972)]. On Simon's account human abilities are bounded, at any point in time, while also being open-ended, in their capacity for extension. The boundedness of the heuristics is primarily a matter of their constrained applicability: all reasoning is ecological, depending – explicitly or implicitly – upon substantive assumptions regarding the subject to which the heuristics are applied. The open-endedness is a result of the ability to develop new heuristics to suit novel problems. In saying that "scientific inquiry is continuous with everyday

empirical inquiry – only more so" Haack is putting forward a position [Haack (2003), p. 94] that is very much in tune with Herbert Simon's. This is because science, on this view, gains its effectiveness not from having a separate "Scientific Method" but by building upon the existing human heuristics – the everyday means we use to gain knowledge about the world – through adding to them new heuristics such as double-blind testing. Indeed, it is its focus on expanding human epistemic capacities that, according to this view, becomes another of the main characteristics of science.

The open-ended aspect of scientific methodology has a vital implication for the relationship between science and the supernatural. A particularly popular view is that science does not conflict with religious views as, to use Stephen Jay Gould's terminology, they have "non-overlapping magisteria" – in other words, they do not concern the same issues [Gould (1999)]. One particular way in which this claim is often expressed is that science concerns issues of fact while religion deals with issues of value. The ways of characterising the different magisteria have been criticised on numerous occasions – in general, they appear to depend upon jerrymandered views of science and religion. It is possible, however, to make a more fundamental objection to the general claim that science has a particular "magisterium". The problem with this view is that it assumes that science is, essentially, closed; incapable of extending its reach beyond a certain well-defined area of applicability. What is more, it assumes that there exists another way of obtaining knowledge about the issues that must remain closed to science. However, if the Simon account is correct, this view must be incorrect. First of all, science makes opportunistic use of existing human capabilities, so that if knowledge can be obtained by humans about some particular question, science has the capacity to make use of that knowledge and the methods used to obtain it. One example of this is the way that traditional treatments are being scientifically investigated and, to the degree they are not purely placebos, are being turned into pharmaceuticals. Secondly, while there are limits to what can be achieved by the science of today, tomorrow's science will go far beyond them, just as today's science is capable of much that was beyond the scientists of the nineteenth century: We have precise lab equipment to gather results, computers to store vast amounts of that data, powerful statistical tools to analyse it and novel mathematical models to represent it, at times in ways that go beyond what it is humanly possible to conceptualise.

The implications for views such as Gould's could not be worse. Far from having a neatly delineated magisterium, outside of which religious claims might remain safe from scientific investigation, science is always invading ever new "territories". In effect, religion's magisterium – if it is to remain unaffected by scientific investigation – must get ever smaller over time. Gould's God of the non-overlapping magisterium ends up looking very much like the God of the Gaps – the view that religion's scope is constantly

being pressed into the ever smaller and more obscure enclaves that are yet to be claimed by science. It may be argued that, even so, science will never come to have a complete grasp of everything there is to know, always leaving scope for a separate magisterium to be reigned over by religion. This brings in the other aspect of science that has been raised – its capacity for making use of existing methods and knowledge. This means that, in so far as science has failed to come to grips with some aspect of the world we live in, it is not likely to be the case that some other means to understand that aspect exists as, if such a means exists, science is likely to have made use of it or, at least, is very likely to do so in the future. A prime example of just this sort of process appears to be currently taking place in the humanities, their subject matter and methods coming to be incorporated into the broader scientific world picture thanks to the evolutionary paradigm. In other words, if religions and superstitions did in some way provide real understanding of some aspect of the world, they would be open to being subsumed by an appropriately altered science – the vital point being that science does not change the facts to suit itself but adjusts its methods to fit the reality it is trying to come to grips with. As previously explained, however, a central characteristic of supernatural claims is that they are effectively untestable and any connection between the content of the claims and reality is coincidental to their having been accepted by people. This means that developments in scientific methodology are as much of a challenge to supernatural claims as social changes which undermine their status as sacred – both increase the likelihood that the claims will come to be tested and, most probably, found wanting. In the face of the incursions of scientific investigations, the best weapon for supernatural positions is to try to halt the advance of scientific methodology, thereby protecting their effective untestability.

The discussion of the means by which the effective untestability of supernatural claims can come to be undermined by social changes and scientific progress has served to cast light on the conflict between scientific and supernatural positions. It has not, however, served to explain the reasons for which people do come to hold supernatural views, given that they do not do so on the basis of good evidence. This is the aspect to which we turn now. Doing so will show the kernel of truth within Gould's mistaken position. However, it will require that we look at supernatural beliefs not as claims about the world but in terms of their actual function.

V

Recent years have witnessed an explosion of high quality scientific work aimed at understanding religious beliefs and practices. Much of that work is based upon evolutionary theory and seeks to place religion within the

context of the selection pressures that have shaped human minds and behaviour. One particular example of this work is David Sloan Wilson's research [Wilson (2002)]. Wilson takes Durkheim's view that social function is the essential property of religion and updates it by arguing that religion should be seen as a group-level adaptation which helps groups maintain cohesion and, thereby, to outcompete other groups. Essentially, according to Wilson, religion serves to replace intra-group competition with inter-group competition.

In discussing a particular, potentially religious, superstition Wilson makes an extremely significant observation [Wilson (2002), p. 24]:

> Virtually any misfortune can be used as "evidence" of a previous transgression. Immunity from disproof might seem like a weakness from a narrowly scientific perspective, but it can be a strength for a social system designed to regulate human behaviour.

It is only one part of the story to recognise that the degree to which religious or superstitious beliefs are not subject to empirical evaluation is significant because it protects them from being shown to be false. The second part is to accept that people none-the-less hold such beliefs and to ask why they hold the particular untestable beliefs that they do. After all, beliefs that are not testable will still vary in their success in the population but their success will not be explainable in terms of the truth or falsity of their content.

The explanation will, in part, concern the structure of human minds. This is the avenue pursued by the cognitive science of religion which aims to explain religious and superstitious beliefs as the by-products of the structure of human cognition. According to this approach, certain kinds of beliefs are attractive to humans due to particular deeply ingrained cognitive biases shared by people around the world [Barrett (2004)]. A focus on the cognitive explanation need not, however, prohibit a second kind of explanation. This relates the social success of individual beliefs to the actual function they are put to – such as maintaining group-cohesion in Wilson's account – or – on the meme's-eye view that Sue Blackmore among others proposes [Blackmore (1999)] – the function they put us to. On the first of these accounts particular beliefs become successful because of the success of the groups in which those beliefs are prevalent. On the second, the beliefs outcompete other beliefs by more successfully inducing us to spread them. Significantly, our awareness of the actual function such beliefs and practices serve need not be any more relevant than the "opinions" held by fruit flies. It may be, for example, that by propagating superstitions other people have told us we are, actually, merely communicating our willingness to accept the other people's authority, as Craig Palmer suggests [Palmer (1989)].

The degree to which religious beliefs have become detached from the truth of their content is greater than that achieved by merely superstitious be-

liefs. This is because, as has already been observed, superstitions include claims as to the effects of superstitious practices that are at least potentially testable, while the effects of religious practices are not. This is the vital difference between practices aimed at bringing about some real world effect, such as the return of good health that is supposed to be obtained by drinking a magical potion, and practices whose posited aim is otherworldly, i.e. getting into heaven thanks to participating in the appropriate ceremonies while on Earth. Of course, as has also already been pointed out, the difference is far from straightforward in that there are many practices that are part of existing religions but whose aims are at least in part earthly, the already given example being intercessory prayer.

Abstracting from these complexities, it can be seen that the epistemic difference between religion and superstition leads to a functional difference, in that religious beliefs are better situated for taking on various functions. The causal connections posited by superstitious beliefs need to be such as to maintain plausibility in the face of potential disconfirming instances. While human shortcomings in evaluating such connections create a lot of leeway, the problem is not faced by religious beliefs, allowing them to potentially underpin a broader range of practices. However, religious beliefs come to face a different problem. Because the effectiveness of religious practices is not open to empirical investigation, participation in such practices cannot be due to experiences of their apparent success. This is unlike superstitious practices which may be in part motivated by instances in which engaging in the practice was, coincidentally, followed by the aim being obtained. This means that participation in religious practices must be motivated more strongly by other considerations. One consideration that may be relevant is the much more significant role played by the supernatural explanations that are part of religious beliefs as compared to similar explanations that are part of superstitious beliefs. The difference may due to the need for religious entities to be treated seriously enough to motivate religious practices whereas, in the case of superstitions, the entities only play a secondary explanatory role.

In Peircean terms, superstitious beliefs and, to a greater degree, religious beliefs avoid the possibility of coming into conflict with our experience. This means that, in so far as they are fixed within any particular society, this is due to their fitting with deeply seated cognitive biases and due to the functions played. Taking a hard-line view, many have been tempted to conclude that religious claims are, strictly speaking, meaningless. This is definitely the conclusion to be drawn from the application of one particular interpretation of Peirce's pragmatic maxim. However, it is possible to take a line which is more akin to James' understanding of the pragmatic maxim and to consider not the testability of the claims but the overall effect they have upon those who believe in them. Given such an approach, the practical meaning of religious or superstitious claims does not come from their proposi-

tional content but, if anything, from the function they play in determining human behaviour quite independently of their truth value. Taking this into consideration has the advantage of allowing us to explain what it is that religious believers mean when they assert that attempts to test religious claims are premissed upon a basic misunderstanding of those claims – one example being Catholic objections to requests for evidence that communion wafers do undergo transubstantiation. A literal, scientific interpretation of such claims takes them to be making assertions about actual states of affairs, to be examined empirically and evaluated on whether they are true or false. Theists, however, are right that this is not what religious claims mainly concern. The truth or falsehood of such claims has been rendered irrelevant to their assertion so that their meaning has become tied to their function, to the behaviour of those whole believe in them. Crucially, however, what that function is may be very complex, may change over time and is likely to be far from obvious to anyone, including the religious believers. For example, to establish the actual function or functions of the belief in the transubstantiation of communion wafers it may be necessary to carry out a number of sociological and historical studies informed by evolutionary explanations of human behaviour. The opinions on this issue held by the religious believers will be of interest but there is no reason to think that they will be correct. In effect, there is no good reason to think that the believers will be aware of the actual function of their practices and, thereby, the practical meaning of their beliefs.

VI

We have established two fundamentally different ways in which beliefs may function. The first is the *cognitive* role and it is determined by their relation to reality. To serve this role well beliefs must be open to investigation and modification on the basis of evidence. The second role is *non-cognitive*, linked purely to the behaviour such beliefs motivate, and requires that such beliefs be protected from investigation. It would be useful to compare the relative utility of the two different roles that can be played by beliefs. It is important to recognise, however, that any overall judgement will have to be a simplification due to the very different functions that either role allows for. Just considering the non-cognitive role of religious beliefs, a wide variety of suggestions have been put forward, with Blackmore's virus meme idea at one end of a broad spectrum and Wilson's view of religion as a group level adaptation at the other. The complexity of human psychology ensures that it is never a simple either/or choice: Everyone holds a mix of beliefs whose primary roles are cognitive and non-cognitive. What is more, due to the nature of our rationality as characterised by Simon, we only ever subject subsets of

our beliefs to rigorous examination. The Enlightenment expectation that rationality will drive out superstition is not one that is ever likely to be realised.

Even so, it is possible to examine particular superstitious or religious beliefs and to decide on a case by case basis whether their overall effect is helpful or harmful – whether Wilson or Blackmore are right. Ironically, however, investigation of these beliefs is likely to undermine them. The reason is that by being actively investigated their status as effectively untestable – the very thing that allows them to have a non-cognitive role – is compromised. An even more profound problem is that any investigation of the relative merits of religious as opposed to scientific beliefs must take up a cognitive stance. Therefore, to evaluate their beliefs, religious believers would have to reject the stance these beliefs rely upon. Eschewing evidence, religious believers might say that religion is superior. But they can't possibly mean it.

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