Partial Structures and the Logic of Azande

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Abstract. In *Science and Partial Truth* (da Costa and French 2003) it was argued that inconsistencies in scientific reasoning may be accommodated by the combination of partial structures and quasi-truth, together with a notion of 'representational belief'. In this paper1 I shall examine whether this framework can be extended to the reasonings and beliefs of other cultures, focusing in particular on the witchcraft beliefs of Azande. I shall argue that these beliefs are akin to the theoretical beliefs of Western science but that the most appropriate way of representing the latter — and hence also the former — is via the framework of partial structures and quasi-truth. In this way I hope to steer a plausible path between 'imperialist' and 'relativist' approaches.

Keywords: Partial structure; quasi-truth; representational belief; Azande; witchcraf.

1. Introduction

In da Costa and French (2003) it was argued that putative anomalies in scientific reasoning may be accommodated by the combination of partial structures and quasi-truth, together with a notion of 'representational belief'. This provides a unitary framework in terms of which these anomalies can be brought back under the wings of rationality.

In this paper[1] I shall examine whether this framework can be extended to the reasonings and beliefs of other cultures. Consider the Bororo of central Brazil, who, in 1894, were reported to insist that 'We are red macaws.'[2] Such statements became emblematic of a form of thought that was set at a distance from 'Western' rationality: the so-called 'imperialist', who holds to the superiority of Western thought and science in particular, regards such statements as 'primitive' and false; the relativist, who insists that different cultures live in different worlds, in some sense,[3] regards them as true, *in the world concerned*.[4] The 'rationalist', on the other hand, seeks to close the cognitive gap by establishing some commonality between 'Western' and 'non-Western' thought, thereby allowing us to retain the notion that there is only one world, in all senses, without having to appeal to some distinction between 'primitive' and 'non-primitive'.

One way of achieving this is to adopt a 'symbolist' approach in which, as the name suggests, such statements as those of the Bororo are regarded as symbolic or metaphorical, rather than literally true. Thus Crocker returned to the Bororo and

discovered that only men say 'we are red macaws', that red macaws are owned as pets by Bororo women, on whom the men are dependent in significant ways and that both men and macaws were believed to be in touch with spirits (Crocker 1977). His conclusion was that the identification of Bororo men with red macaws should not be viewed as ontological but as *metaphorical* and as a means by which they seek to express the irony of their situation.

There are two aspects of this example worth emphasising. The first illustrates the limitations of the symbolist approach: the metaphor is crucially dependent on a non-metaphorical belief in contacts with spirits (Sperber 1982a, p. 153). Hence it must be augmented by a further analysis capable of accommodating such beliefs without re-establishing their epistemic 'strangeness'. What is needed is an approach which steers a middle course between the imperialists' dismissal of these beliefs as false and the relativists embrace of them as literally true but in a different world from ours.

The second aspect concerns the fundamental role played in the symbolist-ratio-nalist analysis by attending to the relevant context — in this case, the social and spiritual contexts. Underpinning this, and indeed all attempts to establish common-alities between different belief systems, is some form of 'Principle of Charity' which, put crudely, urges us to seek intelligibility when faced with belief systems different from our own. Putting it less crudely leads to different forms of this principle cover-ing a wide epistemic range from the demand of 'maximizing intelligibility', to that of 'minimizing unintelligibility'. (I shall return to these less crude formulations below). Now, if consistency is regarded as the absolute bedrock of intelligibility, so that in-consistency is the clearest sign of unintelligibility there could be, then an apparently inconsistent belief set would appear to provide the Principle of Charity, in whatever form, however diluted, with no purchase whatsoever. Indeed, at the limits of its epistemic range, the most extreme form of the Principle constrains us to translate any given set of beliefs as *at least consistent*, since otherwise they would be utterly unintelligible and, perhaps, not even worthy of being called 'beliefs'. If the relativist could find an example of a set of inconsistent beliefs which resists such translation, the rationalist would indeed be in trouble as the epistemic distance would appear to be insuperable. Zande witchcraft beliefs provide just such an example.

These are blatantly inconsistent, or so it would seem, and have therefore ac-quired the status of a cultural datum against which successive philosophers can test their particular views of cross-cultural understanding. They have supplied much of the grist to the mill of those relativists who insist that not only can the *content* of be-liefs vary from culture to culture but so also can the underlying formal framework. In other words, according to this view, even *logic* is relative, on the grounds that such beliefs clearly violate the Principle of Non-Contradiction and therefore conform to a different, non-classical logic.[5] Hence Zande witchcraft beliefs offer the most acute challenge to the rationalist, who is now caught between the devil of logical

relativism and the deep blue sea of the imperialists' attributions of irrationality. One way out of the dilemma is to follow the first aspect of the analysis of the Bororo above and focus on the putative *truth* of the beliefs concerned. In what follows I shall press the claim that Zande beliefs should be regarded — from the intrinsic perspective — as *quasi-true* in the sense of da Costa and French (2003) and that the representations of witchcraft are semi-propositional in Sperber's sense and therefore — from the extrinsic perspective — are themselves appropriately modelled in terms of *partial structures* (da Costa and French 2003). Charity still plays a role in such an account since something like it must be presupposed, it seems, to get the translation off the ground, to even begin to talk of Zande beliefs. The nature of this 'something' will, however, have to be somewhat fine-grained in order both to establish the content of the beliefs in the first place, and accommodate their apparent inconsistency. Before we move on to a discussion of such a principle, let us review the case study itself.

2. Zande Reasoning

By far the most well-known description of Zande beliefs is that given by Evans-Pritchard (1937).[6] It is worth acknowledging that this particular cultural datum is structured in terms of Evans-Pritchard's own framework and the latter's underlying cultural and philosophical presuppositions have been noted (Traweek 1992, pp. 435–7).[7] Just as scientific data are never presented 'raw' but always as structured in one form or another, so are the data of the anthropologist. Thus, in a sense, what we are presenting here is an analysis not of Zande beliefs per se but of such beliefs *as structured by Evans-Pritchard*.[8]

As so structured, then, the Azande believe that certain individuals are witches, by virtue of their possessing 'witchcraft substance' (see Evans Pritchard 1937, p. 22 for a discussion of the nature of this substance).[9] Being a witch is a heritable trait — the witchcraft substance is inherited by the same-sex offspring of a witch. Attributions of the activity of witchcraft are made to explain a variety of events and are determined through the use of 'oracles', such as that of the 'poisoned chicken': typically a dose of 'benge' — a naturally occurring toxin — will be administered to the hapless fowl and the result will be associated with the answers to a particular question regarding a *particular* putative case of witchcraft.[10] (I shall return to consider the Zande attitude towards the oracles below.)

Since a Zande clan can be delineated as a group of biologically inter-related individuals, it would seem to follow that if one member of a clan is found to be a witch, all members of the same sex of the clan must be witches. The Zande, however, do not accept such an inference.

The argument can be expressed in the following manner:

1. All and only witches have witchcraft substance;
2. Witchcraft substance is always inherited by the same-sexed children of a witch;
3. The Zande clan is a group of persons related biologically to one another through the male line;
4. Man A of clan C is a witch;
5. Every man in clan C is a witch. (Jennings 1989)[11]

The Azande appear to accept the premises but not the conclusion. As Evans-Pritchard said, in one of the most reproduced remarks in the literature on this topic:

> Azande see the sense of this argument but they do not accept its conclusions, and it would involve the whole notion of witchcraft in contradiction were they to do so. (Evans-Pritchard 1937, p. 34)

How, then, should we respond to this refusal to face the epistemic facts?

3. Responses

One obvious response is to regard the Azande as simply irrational, illogical, child-like even. Ignoring the suggestion of cultural imperialism inherent in such a response, it collapses into implausibility once one notes that the Azande could not be described as particularly child-like in their other, non-magical, dealings. As Cooper notes, such a view implies a degree of cultural schizophrenia on the part of the Azande that is clearly difficult to maintain (Cooper 1975, p. 247). Evans-Pritchard himself emphasised that,

> Most of their talk is common-sense talk, and their references to witchcraft, whilst frequent enough, bear no comparison in volume to their talk about other matters. Similarly, though Azande often perform ritual it takes up very little of their time in comparison with more mundane occupations. (1937, p. 20)

Towards the end of his work he further remarks that,

> [w]hen we see how an individual uses [Zande beliefs] we may say that they are mystical but we cannot say that his use of them is illogical or even that it is uncritical. I had no difficulty in using Zande notions as Azande themselves use them. Once the idiom is learnt the rest is easy, for in Zandeland one mystical idea follows on another as reasonably as one common-sense idea follows on another in our own society. (1937, p. 541)

There is, then, some sort of logical structure here, sufficient to allow inferences of one form or another to be made.

Alternative responses can be divided between those that are broadly rationalist and those that are equally broadly relativist. As I have indicated, Zande witchcraft beliefs pose a particular problem for the rationalist, with her emphasis on the (classical) 'laws' of logic, and in particular the Principle of Non-Contradiction, as a critical supporting strut in her fundamental framework of rationality (Lukes 1982). Taken as universal, or at the very least, trans-cultural, it is this framework which establishes the crucial element of commonality by appropriately structuring the common core or 'bridgehead' of beliefs (Hollis and Lukes 1982a). This bridgehead is constructed at a low, 'empirical' level and enables translation to proceed. Without this bridgehead, we could not even begin to get a grip on the 'higher', non-empirical beliefs, or so the rationalist insists. And, as we have said, the structure of this bridgehead is taken to be that of classical logic.

Those of the relativist persuasion are correspondingly keen to exploit the Zande example and Barnes and Bloor, in particular, have homed in on the rationalist invocation of these 'laws of logic', noting that

> It is ironic that logicians, who expose with admirable ruthlessness how problematic, variable and difficult to ground patterns of inference are, and who freely confess how very little is agreed upon by the totality of practitioners in their field, are turned to again and again to provide constraints upon the possibilities of rational thought. Just as there is always a certain demand for iron laws of economics, so there seems always to be a demand for iron laws of logic. (1982 p. 45, fn. 40)

This forms part of their attack on the rationalists' bridgehead: it is not just that the content of the beliefs of other cultures may be very different from our own, even at the low, empirical level (1982, pp. 36-40) but so also is the *logic* of these beliefs. As a defender of paraconsistent logic (and other non-classical systems) I am happy to go along with Barnes and Bloor's rejection of the 'laws of logic' as cast-iron. Nevertheless, this is not enough to establish relativism, if it can be shown that the non-classical logic appropriate for representing Zande beliefs is the same as that used for representing scientific ones, for example. Let us consider this approach in more detail.

4. Zande Beliefs and Non-Classical Logic

Evans-Pritchard wrote, presciently perhaps, that '... witchcraft has its own logic, its own rules of thought ...' (Evans-Pritchard 1937, p. 79) Barnes himself, and later, Jennings, have taken this claim seriously and suggest that Zande witchcraft beliefs

are embedded within a non-classical logic, so that within the global system of beliefs plus logic, there simply does not exist a contradiction (Barnes 1976; Jennings 1989).

However, there is no indication as to what kind of logic Azande are supposed to be using. Of course, for Barnes, Bloor, and Jennings, logics, or kinds of logic, are culturally specific:

> Logic, as it is systematized in textbooks, monographs or research papers, is a learned body of scholarly lore, growing and varying over time. It is a mass of conventional routines, decisions, expedient restrictions, dicta, maxims and *ad hoc* rules. The sheer *lack* of necessity in granting its assumptions or adopting its strange and elaborate definitions is the point that should strike any candid observer. (Barnes and Bloor 1982, p. 45)[12]

This is all part and parcel of their relativism, of course. But now the rationalist has the opportunity to pull the rug out from under them, by arguing against cultural specificity on the grounds that the embedding alternative logic is identical to that proposed in the case of certain (Western) scientific theories. The crucial element of commonality would then be reinstated.

This is the line adopted by Cooper (1975) who adopts the rationalist view that certain magico-religious propositions, such as those expressed by Zande witchcraft beliefs, should be taken as analogous to highly theoretical scientific ones. However, his emphasis is on understanding the logical relations between so-called 'primitive' beliefs, rather than the beliefs themselves. Cooper's specific proposal is to advocate Łukasiewicz's three-valued logic Ł$_3$, as elaborated and applied by Reichenbach to the foundations of quantum mechanics. In Ł$_3$ propositions may possess the three 'truth values' of true, false and indeterminate and so the presumption that every proposition is either true or false is rejected.

Cooper then adopts a two-stage approach: first, it must be shown that if 'primitive thought' is embedded in Ł$_3$ the inconsistencies are dissolved, and secondly that the system of 'primitive' beliefs actually is embedded in Ł$_3$. The first stage would be achieved, he argues, if magico-religious inconsistencies can be shown to be analogous to quantum ones. Thus he claims that, in the specific case of Zande beliefs, if one of the premises of the argument above is assigned the truth-value 'indeterminate', the inconsistency is avoided.[13] The premise that Cooper seizes upon is premise 2, regarding the heritability of witchcraft substance. This, he claims, is regarded by the Azande as an in principle untestable proposition, akin to those analysed by Reichenbach in quantum mechanics.

In achieving the second stage of this account, the question must be answered as to whether the Azande actually do regard propositions such as that expressed in premise 2 as having an indeterminate truth-value. Cooper approaches an answer to this question indirectly by noting, first of all, that outside the domain of the magical or religious, 'primitive' reasoning can be embedded in classical logic. He then

puts forward as a 'reasonable hypothesis' that the classical form is abandoned in this domain precisely because it is an area where testability and verification is least available. Secondly, he repeats the oft-noted observation that the reaction of the natives when the contradictions are pointed out to them is one of indifference, or lack of interest. Thus, Evans-Pritchard records that 'Azande do not perceive the contradiction as we perceive it, because they have no theoretical interest in the subject, and those situations in which they express their beliefs in witchcraft do not force the problem upon them.' (1937, p. 25; we shall return to this quote). According to Cooper,

> This would be precisely the attitude we would expect of someone who treated the rogue propositions as indeterminate, which would then become analogous to those which, according to Reichenbach, we can ignore 'without danger'. (Cooper 1975, p. 251)

Finally, Cooper notes that the distinction between his two stages is somewhat artificial, since a good reason for thinking that a system of beliefs *is* embedded in a non-classical logic is precisely that difficulties such as apparent inconsistencies are removed if such a logic is applied. As he notes in his concluding remarks, he holds no special brief for $Ł_3$; it may be that different non-classical logics might be suitable for different belief systems — what is important is the spirit of such an approach.

The more classically minded rationalist may of course respond by denying the presence of inconsistency in the first place. Thus she may invoke some form of the Principle of Charity, as noted above, and claim that in abstracting the above heritability argument from Zande utterances, something has gone awry with the translation: if due attention is paid to the context and an alternative translation manual constructed, the appearance of inconsistency will be removed (but see Cooper 1975, p. 240 and p. 249 for criticisms). Of course, the precise form of the Principle that is invoked here will have to be attended to very carefully; at the very least, it would seem, it would have to rule out those translations which do not preserve classical logic. This is the context for Salmon's forceful criticism of Cooper (Salmon 1978) and her defence of the contrary position, that native reasoning can be captured perfectly well by standard, classical logic.

The central plank of Salmon's critique, is that in extending the above analogy between witchcraft beliefs and scientific ones, Copper has confused 'not directly testable' with 'in principle untestable.' The highly theoretical propositions of science are only indirectly testable but in this they have a character very different from those of quantum mechanics which Reichenbach considered. Thus, even if propositions concerning the heritability of witchcraft substance are regarded as highly theoretical, this provides no grounds for assigning them an indeterminate truth value. And Cooper provides no evidence that Azande regard such propositions as untestable *in principle*.

Furthermore, regarding Cooper's claim that the attitude of Azande to the inconsistency is one of indifference, Salmon argues that this cannot provide evidence that the proposition in question has an indeterminate truth value. Her reasoning is as follows: An example of such a proposition would be 'All Azande are witches and not all Azande are witches'. If this conjunction is assigned an indeterminate truth value, then so must be each of the conjuncts, given the truth tables of Ł₃. However, the statement 'Not all Azande are witches' is not regarded as indeterminate by Azande themselves; indeed, they possess a post-mortem test to determine if someone was a witch or not (Evans-Prithcard 1937, pp. 40–9) and on the basis of past results of this test, they would regard the statement as true. Indifference, then, does not imply indeterminacy.

Salmon also questions Cooper's claim that Azande are indifferent to inconsistency in her own attempt at a resolution, which falls under the 'charitable' approach. She contends that rather than expressing indifference towards the conclusion of the argument, Azande actively reject it and remain within the framework of classical two-valued logic by applying a form of the reductio and rejecting one or other of the premises. Thus, as Evans-Pritchard notes, when faced with the argument they either deny premise 1, and claim that witchcraft substance may, in certain cases, be 'cool' and inoperative, or they deny premise 2 and claim that the heritability of witchcraft substance is restricted to very close relatives of the purported witch. Thus, Salmon concludes, 'There is no contradiction when the standards of ordinary two-valued logic are employed.' (1978, p. 452)

This particular exchange has been reprised in the pages of *The British Journal for the Philosophy of Science*, where Triplett, responding to Barnes, has argued that Azande regard the conclusion of the argument as false and reject one or more of the premises, keeping within the bounds of standard Aristotelian logic (Triplett 1988; see also Triplett 1994). As he sees it, the fact that Azande resist the conclusion (that everyone in clan C is a witch) is not evidence for their employing an alternative logic; rather, he insists,

> They are simply reasoning according to the method of reductio ad absurdum. Since the conclusion that all the members of the clan are witches is unacceptable, there must be something wrong with one or more of the premises. ... They revise their beliefs so that they are consistent. (1988, p. 364)

Jennings' reply is illustrative: these responses — of rejection of one or other of the premises — are *individual reactions* rather than socially instituted responses and thus do not represent features of established Zande thought or logic (Jennings 1989). According to Jennings, Evans-Pritchard does not say that Azande revise their beliefs when presented with the argument, he simply records that they avoid see-

ing the inconsistency. In particular, there is no evidence that they actually regard inconsistent statements of the kind introduced by Salmon as false.

How then do they live with the inconsistency? On Jennings' account, the answer is arrived at by considering the fundamental distinction between *practice* and the theoretical implications of a set of beliefs. Again, turning to Evans-Pritchard: 'In practice they regard only close paternal kinsmen of a known witch as witches. It is only in theory that they extend the imputation to all a witch's clansmen.' (1937, p. 24) Following Barnes in adopting a broadly Wittgensteinian line on meaning and use, particularly as applied to negation, Jennings insists that contradictions are 'unacceptable because of the problems in *practice* to which they give rise' (Jennings 1989, p. 284; our emphasis). His view is nicely encapsulated in the aphorism, 'The difficulty in being told that it is raining and not raining is not that it is a contradiction but that we cannot both take and not take the umbrella.' (1989, p. 284)

Jennings' response makes it absolutely clear that his camp is proceeding from an entirely different view of the nature of logic to that represented by Salmon and Triplett. A full evaluation would obviously lead us well away from our central concern in this book. Nevertheless, it is worth emphasising, I feel, the sharpness of the split between the social and personal or psychological aspects of logic, on the Barnes-Jennings account. The implication would seem to be that Azande social thought is non-classical in form, whereas 'personal' reasoning, as evidenced in their rejection of premises 1 or 2, follows the classical standard. Such a divorce of social reasoning from the personal seems implausible.

Salmon's argument that Zande logic cannot be Łukasiewicz's $Ł_3$ is correct, I believe, but, as Cooper himself would point out, it rules out only one kind of nonclassical logic and there are many others available to choose from. One thing that is particularly notable about this whole discussion is the overall consensus that no inconsistency is really found in Zande thought. Triplett, as noted above, insists the underlying logic is Aristotelian; Jennings, naturalistically, insists 'there is no contradiction in Zande thought'.[14] Even Cooper thinks of his application of non-classical logic as 'dissolving' the contradictions and anomalies (1975, p. 238), and Salmon regards the contradictions as only 'apparent' (1978, p. 444). An alternative possibility, then, is to take the inconsistencies at face value and suggest that Zande logic is paraconsistent (da Costa and French 1998): with paraconsistent calculi, of course, inconsistency does not produce a collapse into triviality (cf. da Costa and French 2003, ch. 5). However, as in the case of inconsistencies in science, this presupposes that such inconsistencies are *true*. Here, the intention is to take a different tack, one which can accommodate the possibility that the Zande do not regard their witchcraft beliefs as *true* but only as *quasi-true*.

Let us return to Cooper's paper. Towards the end he notes that it could be objected to his approach that even if Azande do not regard propositions concerning

witchcraft as testable, still, they believe them and this is sufficient for inconsistency to arise at the doxastic level. Cooper's response is illuminating: he asks whether the sense of 'belief' that is appropriate here is one which is problematic for his approach. 'For not every use of 'believe' is best rendered by 'hold to be true' (which is the troublesome sense)' (1975, p. 252)

5. Zande Beliefs as Representational

The key move is to get away from the standard philosophical examples of propositions, such as 'The grass is green' (da Costa and French 2003). What anthropologists, and scientists in general, are interested in is something more complex, more open-ended and partial. Philosophers tend to be locked into this view of belief as a 'propositional attitude', which obscures the fact that a person can have doxastic attitudes to 'objects', for want of a better word, that are not propositions in the strict sense of that which is true or false *in the correspondence sense*. A semi-propositional representation is neither true nor false in this sense, but it may be partially true in that it is conceptually incomplete. Just as propositions are associated with standard (complete) structures so semi-propositional (or quasi-propositional) representations are associated with partial structures (da Costa and French 2003).

Inconsistency is then no longer a problem, *at this level*, since, from the intrinsic perspective, the beliefs involved are not beliefs in propositions regarded as true, but beliefs in semi-propositional representations regarded as quasi-true only (cf. Sperber 1982a, p. 171). From the extrinsic stance, we can think of the representations involved as being open to further elaboration and modelled via partial structures. Holding inconsistent *factual* beliefs *is* a problem, not because of any violation of a particular classical logical principle, but because of *practical* barriers. At this level, contradictory assertions are impediments to action, as Jennings suggests in his umbrella example. We would therefore expect to see a corresponding difference in attitude, with inconsistencies recognised and avoided at the 'factual' level, but tolerated at the 'representational; and that is precisely what we do see in the Zande case as I shall discuss below.

How are representational beliefs to be contextually distinguished from those of factual form? Sperber offers the following:

> . . . the semi-propositional character of cultural beliefs is implicitly acknowledged in one of two ways. In some case people offer exegeses of their beliefs, and, while sharing beliefs, wonder, argue or even fight about interpretations. In other cases, when you ask the people what their cultural beliefs mean, what they imply, how they fit with everyday facts etc., they beg off, saying: 'It is the tradition', 'Our ancestors knew', or something to that effect. Whether the proper interpretation is considered a secret lost or

> a secret to be discovered (or both), a clear if implicit distinction is made
> between holding a belief and knowing how to interpret it. This distinction
> only makes sense if these are semi-propositional beliefs. (1982a, pp. 175–6)

The application of all this to Zande witchcraft beliefs is straightforward. Let us
consider again what Evans-Pritchard tells us:

> The Zande notion of witchcraft is incompatible with our ways of thought.
> But it must also be said that even to the Azande there is something peculiar
> about the action of witchcraft. Normally it can be perceived only in dreams.
> It is not an evident notion but transcends sensory experience. They do not
> profess to understand witchcraft entirely. They know that it exists and works
> evil, but they have to guess at the manner in which it works. Indeed, I have
> frequently been struck when discussing witchcraft with Azande by the doubt
> they express about their subject, not only in what they say, but even more
> in their manner of saying it ... They fell out of their depth in trying to
> describe the way in which witchcraft accomplishes its ends. That it kills
> people is obvious, but how it kills them cannot be known precisely. They tell
> you that perhaps if you were to ask an older man or witchdoctor he might
> give you more information. (1937, p. 81)

It has already been noted that Azande reject, in a more or less ad hoc fashion,
one of the premises of Jennings' form of the argument and thus satisfy the first of
Sperber's two ways in which the semi-propositional character can be acknowledged.
The above passage reveals that they also satisfy the second. There are two aspects to
this that deserve attention: The first concerns the elements of vagueness and doubt
regarding the operation of witchcraft; the second concerns the appeal to higher
authorities.

6. The Analogy with Natural Reasoning

Considering the former, this is one of several reasons given by Evans-Pritchard as
to why Azande do not perceive the contradictions in their beliefs (1937, p. 478).
Vaguely formulated beliefs are less easily verified or falsified by experience, and less
easily brought into conflict with other beliefs. It is not clear how both evidence and
other beliefs impact on such beliefs because of their vague, imprecise nature. There
is a certain incompleteness with regard to their conceptual content which allows for
a degree of slack in their connections with other beliefs and which can be captured
by the notion of a partial structure, where the relations between the elements are
not fully specified.

But what is striking here is the analogy with 'lay' beliefs and 'natural' reasoning.
Consider a lay person's understanding of electricity, for example; most lay people

would not profess to understand electricity entirely (certainly not in quantum field theoretic terms), most would have to guess at the manner in which it works, most would express a degree of doubt about the subject and so on. Another example would be Newtonian mechanics and in situations where the use of this theory would be most appropriate, people actually tend to resort to a pre-Newtonian model (Giere 1988). Again, the issue is not one of irrationality, but rather that of employing an inappropriate or less than fully adequate model (that is, one that is only partially correct).

7. The Appeal to Authority

Regarding the appeal to higher authorities, the role of the kings in Zande culture is crucial. Death due to the action of witchcraft (and all deaths can be so attributed) must be avenged and typically the vengeance is executed by means of lethal magic. The attribution of witchcraft action to a certain witch will be made by means of the poison oracle. Thus, witchcraft, the oracles and vengeance magic are all related together within one system. I shall return to the other elements of the triangle shortly.

Once the oracle has given the appropriate response, it is then up to the king to decide as to how vengeance is to be exacted — by the physical killing of the witch, by compensation or by lethal magic. Interestingly enough, under British rule, only the method of magic was permitted and here again problems arise:

> ... it may be observed here ... that if it were known that the death of a man X had been avenged upon a witch Y then the whole procedure would be reduced to an absurdity because the death of Y is also avenged by his kinsmen upon a witch Z. (Evans-Pritcahrd 1937, p. 27)

But confirmation of the efficacy of the magic is achieved via the poison oracle of the kinsmen of the witch's victim, which in turn is confirmed by the king's oracle. Only then may the kinsmen cease their mourning. And — this is the important point — the names of the victims of vengeance magic are kept secret by both the kinsmen and the king. Regarding this system, Evans-Pritchard writes, '... its fallaciousness is veiled so long as everybody concerned keeps silence about the victims of their vengeance magic.' (1937, p. 27) He continues,

> Since the names of victims of vengeance are kept secret the contradiction is not apparent, for it would only be evident if all deaths were taken into consideration and not any one particular death. So long therefore as they are able to conform to custom and maintain family honour Azande are not interested in the broader aspects of vengeance in general. They saw the objection when I raised it but they were not incommoded by it. (1937, p. 28)

But what of the kings? Surely they must be aware of the contradiction? And indeed they are, since they know the outcome of every death in their provinces:

> When I asked Prince Gangura how he accepted the death of a man both as the action of vengeance-magic and of witchcraft he smiled and admitted that all was not well with the present-day system. Some princes said that they did not allow a man to be avenged if they knew he had died from vengeance-magic, but I think they were lying. One cannot know for certain, for even if a prince were to tell the kin of a dead man that he had died from vengeance-magic and might not be avenged he would tell them in secret and they would keep his words a secret. They would pretend to their neighbours that they were avenging their kinsman and after some months would hand up the barkcloth of mourning as a sign that vengeance was accomplished, for they would not wish people to know that their kinsman was a witch.
>
> Consequently if the kinsmen of A avenge his death by magic on B and then learn that B's kinsmen have ceased mourning in sign of having accomplished vengeance also, they believe that this second vengeance is a pretence. Contradiction is thereby avoided. (1937, pp. 28–9)

Again, the means by which contradiction is kept from breaking out into the open are made clear in these passages.

It is worth recalling at this point Evans-Pritchard's remark: 'Azande do not perceive the contradiction as we perceive it because they have no theoretical interest in the subject, *and those situations in which they express their beliefs in witchcraft do not force the problem upon them*.' (1937, p. 25; our emphasis) The kinds of situations Azande find themselves in when engaging in 'everyday' activities do not cause them to face the inconsistencies in their beliefs. Time and again in his book, Evans-Pritchard emphasises the *particularity* of witchcraft, the way its actions are specific to particular places, times and people: 'Witchcraft is a variable factor in time as well as in space and gives peculiar value to particular times as it does to particular places or persons.' (1937, p. 72) and again, 'Witchcraft is a causative factor in the production of harmful phenomena in particular places, at particular times, and in relation to particular persons.' (p. 72) It is this particularity which prevents the inconsistency from becoming apparent, a mechanism which is common across cultures. It is certainly true with regard to statistical fallacies, for example. The instances remain 'particularised' and are not combined in such a way as to reveal just what is going on. Again, it is this fundamental aspect of the problem which ultimately explains how the contradictions persist.

Nevertheless, the models themselves are not wholly inadequate, but are at least partially successful. Those employed in statistical reasoning may fail to be maximally successful, but they nevertheless give a better than 50-50 chance of getting the right answer. There is something similar to be said about Zande models of witchcraft and, notably, magic, although here, of course, there is only the *appearance* of success.

8. The Action of Magic

As noted above, Zande witchcraft beliefs are tied in to their beliefs about magic and the role of oracles in one encompassing system. As Evans-Pritchard puts it, indicating, again, the role of authority:

> Death is proof of witchcraft. It is avenged by magic. The achievement of vengeance-magic is proved by the poison oracle. The accuracy of the poison oracle is determined by the king's oracle. which is above suspicion. (1937, p. 475).[15]

There are many different kinds of Zande magic, but the most destructive and 'most honourable' (p. 388) is vengeance-magic, used to slay witches. Even other forms of magic, such as those designed to help produce a successful harvest, do not produce a positive effect so much as ward off the effects of witchcraft.

With magic there is often the appearance of success. Thus, Evans-Pritchard notes, 'Azande insist that magic must be proved efficacious if they are to employ it.' (1937, p. 444) and 'The test of magic is experience.' (p. 466). As he goes on to point out, the reason there is the appearance of success is because,

> Magic is only made to produce events which are likely to happen in any case — e.g. rain is produced in the rainy season and held up in the dry season; pumpkins and bananas are likely to flourish — they usually do so. Magic is not asked to achieve what is unlikely to occur. (p. 476)

and,

> Not too much is claimed for magic. Generally, in the use of productive magic it is only claimed that success will be greater by the use of magic than it would have been if no magic had been used. It is not claimed that without the aid of magic a man must fail — e.g. a man will catch many termites, even though he does not use termite-medicines. (p. 476)

It is noteworthy, however, that Azande recognise that the action of magic is different from that of empirical practices and acknowledge that there is something mysterious about it. Again the element of vagueness enters, as Evans-Pritchard reports that with respect to the question, how do Azande think their magic works?, 'They do not think very much about the matter.' (1937, p. 463) A similar account could be given of the layperson's attitude to the action of electricity.

9. The Role of the Oracle

As already noted, the action of witchcraft and, in particular, its possible role in a person's death, is determined by means of the poison oracle.[16] Basically, as the

name suggests, a form of poison is administered to a chicken, and the behaviour of the hapless fowl — whether it lives or dies — determines the answer to the question that has been put. The oracle has enormous importance and authority and is relied upon extensively.[17] Evans-Pritchard draws a useful comparison:

> In many situations where we seek to base a verdict upon evidence or try to regulate our conduct by weighing of probabilities the Zande consults, without hesitation, the poison oracle and follows its directions with implicit trust. (1937, p. 261)

The poison itself is a paste, made from a mixture of water and a red powder derived from a forest creeper. Upon examination its chemical nature has been determined to be alkaloidal and possibly related to strychnine.[18] However, it is difficult to be precise due to its lack of purity and general inhomogeneity (Evans-Pritchard 1937, p. 260). This latter fact is important because it helps explain why the poison's efficacy is so variable. The other factor of course, is the size and health of the chickens used and the poison can affect them in different ways: some die immediately, some are unaffected and some appear unaffected only to suddenly expire a short time later.

Now, what is particularly interesting is that this variability is controlled for, somewhat, by employing two tests during the consultation to ensure that the oracle is functioning correctly; if a chicken dies in the first test, then another must survive the second, and vice versa, for the result to be valid.[19] If, as Evans-Pritchard puts it, '[t]he verdict is contradictory' (p. 300), it is declared invalid. So, at this, very factual, level of chickens living and dying, contradictions are not only acknowledged but also taken to have a practical impact.[20] They are indicative of invalidity and require a new test to be run. Indeed, with two tests required, the oracle is designed so as to *allow for* the possibility of contradictions (1937, p. 330).[21] At this level, contradictions are regarded as impediments to practical action, since no further action can then be taken on the basis of the test. This obviously contrasts sharply with the corresponding attitude concerning witchcraft beliefs.

Nevertheless, the prevalence of such contradictions is not generalised in any way and particularly not into the form of any kind of reductio of the power or usefulness of the oracle.[22] The contradictions do not leave this level. Contradictions may also arise between the verdict of the oracle and experience and between two oracles when asked the same question. Again, however, Azande do not take the force of such contradictions as directed against the oracle. Here, then, their attitude is interestingly different from that in the case of witchcraft but, as we shall now see, can still be incorporated within the framework I am defending.

To those of us outside of Zande society, of course, the action of the oracle appears, if not random, then at the very least, highly variable and one can explain the

variability in terms of its impurity, the different sizes and weights of the chickens and so on. As Evans-Pritchard remarks,

> Without laboratory experiments it is impossible to see any uniformities in the working of the oracle. Bare observation by itself is insufficient to explain why some fowls die and others survive. (1937, p. 318)

And Azande themselves recognise that the poison can vary in strength; indeed in many respects they act as we would act under similar circumstances.[23]

Nevertheless, they do not generalise from the contradictions between tests, or between oracles or between the oracles and experience because of their mystical beliefs regarding the poison oracle. At this, *representational*, level, they simply do not draw the conclusions that we would draw[24] and, in particular, do not make the reductio moves because they simply do not perceive the contradictions. They only become generalised and 'glaring' '... when they are recorded side by side in the pages of an ethnographic treatise.' (1937, p. 319). For Azande these separate bits of knowledge are simply not brought together; rather they are uncoordinated functions of entirely separate situations. Throughout his narrative Evans-Pritchard emphasises the level of privacy involved in these oracular consultations. Hence,

> ... the contradictions so apparent to us do not strike a Zande. If he is conscious of a contradiction it is a particular one which he can easily explain in terms of his own beliefs. (1937, p. 319)

This gives at least two mechanisms which explain the lack of perception of such contradictions: first, the failure to bring together the separate bits of knowledge and secondly, the way in which other Zande beliefs, regarding witches and magic, will be brought to bear.

Thus we have an interesting situation. At the factual level of an actual consultation, Azande not only perceive a contradiction but are bothered by it. And not, of course, because of any worries about the Principle of Non-Contradiction, but because it is a block on practical action. At a more general level, however, when one considers not the tests of a particular consultation but rather the relations between oracles or between oracular judgements and experience, Azande simply do not perceive contradictions at all. Evans-Pritchard invites the reader to construct an argument that would undermine Zande claims of the power of the oracle and insists that any such argument, if translated into 'Zande modes of thought' would actually support their beliefs.

> For their mystical notions are eminently coherent, being interrelated by a network of logical ties, and are so ordered that they never too crudely contradict sensory experience but, instead, experience seems to justify them. (1937, p. 320)

At this level, then, there is sufficient flexibility in the system to accommodate what to us appear to be refutations. This flexibility exists not only between different beliefs, such as the three vertices of the triangle of witchcraft, magic and the oracle, but also between such beliefs and 'sensory experience'. The suggestion is that this is the level of *representational* belief where, if cast into the above idiom, the concepts are semi-propositional in nature.

The 'plasticity' of our own 'lay' beliefs as functions of specific situations, to paraphrase Evans-Pritchard (1937, p. 540), seems plausible enough.[25] Driven by the pragmatics of our circumstances as we are, only the most angelically rational can avoid using a particular belief, or belief set, in one situation and another, contradictory, in a different situation. It is only when we are pushed to set the two together that the inconsistency becomes glaring. With factual beliefs we may be so pushed in very short order, whereas with those that can be described as representational the push may be towards a state of epistemic virtue only, and thus correspondingly weaker. Furthermore, as in the cases of witchcraft and magic, Azande do not have what we would call a 'theory' of the oracle. An oracle hears the questions put to it and is thus like a person, and passes judgement like a prince or king, but is not a person but just a red powder. How it works is not a question that the Zande ask. It is this, perhaps, rather than the epistemic nature of the beliefs themselves, which separates Azande and lay folk from scientists.[26]

10. Representational Belief and Relativism

Returning to the role of the kings, it can now be seen how the second of Sperber's characteristic indicators of the holding of representational beliefs is exemplified. It is they who are taken to possess a complete, or at least a more complete, representation of what is going on. Again, there are clear similarities with 'lay' and scientific reasoning. Pressed for an explanation of the action of electricity, a 'lay' person might appeal to their college physics professor, Carl Sagan or a physics textbook. Even at the level of scientific beliefs there will be similar appeals: someone working within quantum field theory might appeal to an expert in solid state physics; even within a particular discipline there will typically be divisions of technical expertise.[27]

Thus, there is a distinction to be drawn in this account, between the lay (Western) person, attempting to draw statistical inferences, or describing their notion of the nature of electricity, and the statistician, or physicist, respectively, and likewise, between the 'lay' Azande, questioned by Evans-Pritchard about witchcraft and the action of magic or oracles, and the kings. In all cases the appropriate model is one that is conceptually incomplete and partial, but the difference between the 'lay' person, whether Zande or Western, and the scientist or king, is that in the former case,

the fallaciousness of the reasoning, or the inconsistency of the beliefs, is not apparent, for the reasons given above, whereas in the latter it is. Bohr was perfectly well aware of the contradictory nature of his model of the atom and both hoped and worked for a consistent successor; likewise, the kings are aware of the inconsistent nature of the Zande system and acknowledge its deficiencies. The only difference, perhaps, is that the kings typically do not search for a more consistent successor, since the current system serves their purposes.[28]

The thesis being defended here, then, is that Zande witchcraft beliefs are best modelled via partial structures which can accommodate their loose and incomplete aspect. Again, Evans-Pritchard contends that such beliefs

> ... are not indivisible ideational structures but are loose associations of notions ... In real life they do not function as a whole but in bits. (1937, p. 540).

And, of course, it is when the 'bits' are brought together that the inconsistencies become apparent. The doxastic attitude of Azande towards this model is one of doubt, as Evans-Pritchard also makes clear:

> To what extent have Azande faith in magic? I have found that they always admit that the issue of a rite is uncertain. No one can be sure that his medicines will achieve the results aimed at. There is never the same degree of confidence as in routine empirical activities. (1937, p. 466)

Thus these beliefs should be regarded as *representational*, rather than factual. This provides a doxastic system capable of allowing for the accommodation of the inconsistencies, since such beliefs are not regarded as true, in the correspondence sense, but as partially or quasi-true only.[29]

Furthermore, this approach removes the sting from relativism: the slogan 'Different cultures live in different cognizable worlds' only makes sense if the relevant beliefs are taken to be beliefs in certain propositions as true. That is, it only makes sense if the cultural beliefs are factual beliefs. But they clearly are not. As Sperber himself notes,

> If people of different cultures did hold apparently irrational factual beliefs, then it might be acceptable to try and reformulate the content of these beliefs so to establish their rationality, even at the cost of having to imagine different cognizable worlds. But there is no reason, either theoretical or empirical, to assume that the apparently irrational beliefs reported by anthropologists and historians are factual beliefs. No theoretical reason: the very fact that, when assumed to be factual, these beliefs appear irrational is reason enough to assume, on the contrary, that they are representational beliefs with a semi-propositional content, thereby avoiding the costs of relativism. No empirical reason: look in the literature for evidence as to the

exact attitude people have toward their 'beliefs'; what little evidence there is supports the view that the beliefs we are dealing with are representational and have a semi-propositional content. (1975, p. 175).

11. Charity and Explicability

Where does the Principle of Charity fit into all this? We recall that one form of the Principle urges us to take apparently inconsistent beliefs and by paying attention to the surrounding *context*, translate them as consistent. This is Salmon's response to Cooper's suggestion, for example, and she, like Triplett after her, argues that careful attention to the cultural context reveals that there is no need to step outside the bounds of the standard framework of rationality in order to understand what is going on. However, careful attention to this context may in fact undermine this very response. The context of Zande beliefs has also been appealed to, in particular with regard to doubt and the role of authority but it was argued above that this context supports a more fine grained response. What, then, of charity?

Clearly, if understanding piggybacks on translation — in the sense that Evans-Pritchard had to translate Zande utterances in the first place in order to describe and interpret their beliefs — then some such principle is required to get the whole process off the ground. *Something* has to be taken for granted if the circle of belief and meaning is to be broken and the first steps towards understanding taken. However, an extreme form of the Principle of Charity is unacceptable, if it immediately rules out of court any translation that involves the attribution of inconsistent beliefs (unless such beliefs are written off as irrational). The above discussion was intended to press the claim that this would not do justice to the very context that we are urged to consider. In the case of witchcraft beliefs, when presented with the argument which makes the inconsistency explicit, Azande might reject one or more premises, rather than swallow the explicit contradiction but this is a localised response. In their daily practice the inconsistencies are either simply not allowed to become manifest *at the factual level* or if they do appear, they are acknowledged as blocks on practical action and thereby taken account of, as in the case of the two tests in oracular consultations. The further inconsistency concerning the results of witchcraft and vengeance magic drives this point home.

What is required, therefore, is some Principle that, like Charity, would compel us to consider the appropriate context but which would not immediately rule out attributions of inconsistency. There are two broad proposals that can be adopted. One would be to weaken the Principle in some way, and the other would be to adopt a multi-stage form. Let us consider each in turn.

A representative of the first approach can be found in the work of Thagard and

Nisbett who distinguish no fewer than five levels of stringency (1983). The most stringent, of course, is represented by the insistence that contradictory utterances should *never* be translated as such. Thagard and Nisbett themselves draw on studies of Azande and Nuer to rule out such a hard line as inappropriate:

> To assume that the Nuer, Berbers and other peoples are disinclined to assent to contradictions in all cases is to assume that they share our attitudes towards formal logic, but why expect this any more than we would expect them to share our attitude towards empirical science? (1983, p. 254)

Their suggestion is that a weaker form of the Principle should be adopted which allows us to understand contradictory utterances in terms of their social functions.

The problem with this kind of proposal is that it is simply not fine grained enough to handle the details of the relevant context. Crucially it cannot accommodate the point that at the 'factual' level inconsistency is avoided, not because of the dictates of classical logic, but for *practical* reasons. The central idea here is that if such beliefs were to be held, certain actions would be blocked. That the relevant actions are *not* blocked in the case of Azande — they continue with their everyday activities — gives *us* good reason to maintain that a translation of the relevant beliefs as contradictory would be inappropriate. Thus we should be charitable at the factual level for *pragmatic* reasons.[30]

A more fine grained approach has been offered by Henderson with his 'Principle Of Explicability'. This not only seems to do the trick with regard to accommodating the relevant context but also meshes nicely with the distinction between representational and factual beliefs (Henderson 1987).

The decisive element in Henderson's approach is an analysis of the process of constructing a translation manual that breaks it down into earlier and later stages. In the former, a 'first-approximation' manual is constructed, adequate for translating the sentences of 'everyday usage'. It is during this stage that the Principle of Charity is used[31] and it is here that we establish an effective level of commonality between us and the other culture via common factual beliefs. It is against the background of generally successful first approximation translation manuals that a 'refined' translation manual is elaborated. This process proceeds by fine-tuning the first-approximation manuals and is guided by a 'Principle of Explicability', which constrains the translator to attribute *explicable*, rather than 'correct' or 'consistent' beliefs to the speakers of the source language. According to Henderson, 'When engaged in this later task, the concern is with explanation.' (1987, p. 238) It is only at this stage that the social scientist or anthropologist becomes concerned with *explaining* native beliefs and '[o]nly by using the first-approximation translation manual can we acquire much of the evidence in terms of which the ensuing explanatory endeavor proceeds.' (1987,

p. 238) Refined translation depends upon first approximation translation as its basis; the latter provides the data for the former.

Thus, Henderson notes, Evans-Pritchard's explanation of the Zande failure to perceive the contradictions inherent in their witchcraft beliefs, and the futility of their magic in general[32] depends crucially on his first-approximation translations which provide the basis for his identification of these beliefs at the level of the refined translation. In the terms set out here, what the first-approximation manual translates are the factual beliefs of the natives. Such beliefs will typically be about matters of observation and, recalling what we've just noted concerning the way the first-approximation feeds into the refined translation as data, there is an analogy here with the empirical substructures of scientific theories. Of course there may be limits to how far this analogy may be taken, depending on one's philosophy of science with regard to these empirical substructures: the first-approximation translations may subsequently be returned to and refined in the light of their 'refined' counterparts. Those who take the data of science as some kind of 'bedrock' would not expect the relevant empirical substructures to be revised in the light of further theoretical considerations (not least for fear of admitting problematic circularities). However, this 'bedrock' view in general has long attracted concern and more recently Schindler (forthcoming) has described how data may be revised or even ignored altogether on the basis of theoretical considerations.

Leaving this last point to one side, at the level of these first-approximation translations the appropriate logic would be classical, not because of some blind adherence to the law of non-contradiction (as an absolute a priori principle, say) but because of pragmatic considerations, such as indicated in Jennings remark about carrying an umbrella. It is upon such considerations that Charity piggy-backs. Refined translation manuals, of course, translate representational beliefs and here explicability is what matters. At the refined level the translators toolbox will include a variety of formal frameworks, including those of paraconsistent doxastic logics. Thus the logic of representational belief may well be highly non-classical (Bueno, da Costa and French 1998).

Returning, for a final time, to Evans-Pritchard's cultural datum, and the continuation of that most famous of quotes regarding Zande logic, we find the following:

> ... witchcraft has its own logic, its own rules of thought, and ... these do not exclude natural causation. Belief in witchcraft is quite consistent with human responsibility and a rational appreciation of nature. First of all a man must carry out an activity according to traditional rules of technique, which consist of knowledge checked by trial and error in each generation. It is only if he fails in spite of adherence to these rules that people will impute his lack of success to witchcraft. (1937, p.79)

12. Conclusion

Both the imperialist and the relativist set some epistemic distance between 'Western' and 'non-Western' beliefs; the former regarding them as illogical and false, the latter taking them as logical and true, within their own 'world'. The rationalist seeks to close this distance, but the symbolist attempt at doing this, while adequate for such statements as 'We are red macaws', cannot accommodate non-metaphorical beliefs in spirits or witches. According to the 'intellectualist' position, the imperialists' response trades on an incorrect analogy between the scientific and magico-religious frameworks: it views spirits as some kind of primitive, personified causes, whereas they should be taken as analogous to the highly theoretical entities of physics, say (Horton 1967). In order to close the epistemic gap, then, it is crucial that an accurate analogy be adopted, which in turn depends on an appropriate characterisation of science being drawn.

In the late 1960s, Barnes drew just such a comparison in terms of Kuhnian paradigms, suggesting that just as chemists, for example, could be seen as in the grip of the paradigm of molecular orbital theory, so Azande operate within the social paradigm delineated by the triangle of witchcraft, magic and oracles.[33] Nevertheless, there is still some difference, Barnes argues, since scientific paradigms can be changed more easily than social ones:

> Abandoning, say, the molecular orbital theory of chemistry means a lot less than abandoning the notion of responsibility or, for example, abandoning belief in poison oracles if you are an Azande. (Barnes 1968)

Some might argue that the truth of such a claim is not so evident. Nevertheless, one can discern a difference between molecular orbital theory and the poison oracle in that the former 'connects' to practical action via a complex intervening network of other theories, models, idealisations etc., whereas the relationship between the oracle and practical action is more direct. It is a well known criticism of the Kuhnian view that whole scale paradigm change cannot accommodate the retention through even radical revolutionary changes in science, of low lying models and structures (Post 1971). What is required is, again, a more fine-grained approach.

Horton has rejected the Kuhnian approach on similar grounds (1982, pp. 212–4 and 224–5), noting, crucially, that what research there is on belief change in 'traditional', non-Western thought does not appear to support the Kuhnian model of paradigm shifts. In its place he opts for, on the scientific side, a more Lakatosian view which emphasises inter-theoretic competition (1982, pp. 224–5).[34] On the non-Western side, he has abandoned his earlier distinction between 'everyday' and 'theoretical' beliefs, modelled as it was on the observational/theoretical distinction, in favour of a contrast between 'primary theory' and 'secondary theory' (pp. 228–

38). The former concerns 'middle-sized, enduring, solid objects' and '. . . provides the cross-cultural voyager with his intellectual bridgehead.' (p. 228) Secondary theory, on the other hand, is concerned with that which is 'hidden' and it is here that the cross-cultural differences are apparent.

Now this is a distinction with which I am sympathetic, not surprisingly, and particularly as Horton stresses both the 'correspondence' between primary theory and 'reality' (1982, p. 232) and the role of analogy in articulating the nature of the 'hidden' realm described by secondary theory. His characterisation of the relationship between primary and secondary theory is somewhat positivistic, however, as he suggests it is based upon a 'dictionary' which correlates aspects of the hidden world with aspects of the 'given'. The Zande case cannot be quite so straightforward if the analysis of witchcraft beliefs by means of semi-propositional representations is on the right track. Just as the nature of 'electricity', or 'stagflation', to use Sperber's example may be unclear to a lay person, so the nature of witchcraft is unclear to the average Azande. And just as the positivists' operational definitions and dictionaries failed to do justice to the practice of science, so this lack of clarity in witchcraft beliefs resists analysis in terms of dictionaries. Furthermore, as Evans-Pritchard has set out so clearly, these witchcraft beliefs are intimately tied up with other beliefs regarding magic and the poison oracles. This suggests that a structural approach to such relationships might be more appropriate, just as the model-theoretic approach to scientific theories has garnered support from the way such theories may be intimately bound up with one another. Given the open-ended and partial nature of both scientific theories and 'traditional' beliefs, such an approach should be amended by the inclusion of partial structures.

Thus, the framework of partial structures and representational belief can be situated within this intellectualist approach broadly outlined by Horton and others according to which Zande witchcraft beliefs are akin to the theoretical beliefs of Western science; the trick is to find the most appropriate way of representing the latter. Where da Costa and I differ from Horton — and Cooper — is with regard to what should be taken as the correct *model* of science. It is in this respect that there is agreement with the symbolists who are adamant that native beliefs are not beliefs in propositions regarded as *true* (in the correspondence sense). This is correct, but then neither are scientific beliefs.[35]

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Resumo. Em *Science and Partial Truth* (da Costa and French 2003) argumentamos que inconsistências no raciocínio científico podem ser acomodadas pela combinação de estruturas parciais e quase-verdade, junto com uma noção de 'crença representacional'. Neste artigo, examino se isso pode ser estendido aos raciocínios e crenças de outras culturas, focando em particular nas crenças de feitiçaria dos Azande. Argumento que tais crenças são similares às crenças teóricas da ciência ocidental, mas que o modo mais apropriado de representar esta última — e portanto também a primeira — é através de estruturas parciais e quase-verdade. Dessa maneira, espero encontrar um caminho plausível entre as abordagens 'imperialista' e 'relativista'.

Palavras-chave: Estrutura parcial; quase-verdade; crença representacional; Azande; feitiçaria.

Notes

[1] This was originally intended to be a chapter in da Costa and French (2003) but was eventually dropped from that volume. I've since amended and updated it and offer it here as a suitable contribution to this collection. I would like to thank Otávio Bueno in particular for helpful comments but my greatest thanks of course are to Newton who was and remains one of the most important influences on my intellectual development. I continue to regard my work with him — and those long and profound talks we had together at USP back in the late

1980s — as one of the most significant episodes in my philosophical career. Happy birthday Newton!

[2] As I sit here typing this there is a Bororo bow and arrow hanging on the wall (or, at least, it was claimed to be such when bought).

[3] One sense can be traced back to Kuhn, of course and this is not the only point of contact between the general rationality-relativism debate and philosophy of science. What Kuhn himself meant by his claim that adherents of different paradigms live in different worlds is open to question.

[4] For a detailed, if unsympathetic, presentation of the principal strands in relativism see Hollis and Lukes 1982a, pp. 1–12.

[5] One way of accommodating them, therefore, is to appeal to a non-classical system such as paraconsistent logic (da Costa, Bueno and French 1998). Of course, this does not quite remove the sting from relativism as it may reappear in the guise of logical pluralism.

[6] It is interesting to reflect upon the crucial importance of Evans-Pritchard's work not only for the relativism-rationalism debate (it crops up again and again in the well known collection of essays edited by Hollis and Lukes (1982b) for example) but, more fundamentally, for social anthropology in general ('more fundamentally' in that the former sense of importance is presumably derivative upon the latter). Douglas has noted that his book on the Azande had little influence for a 'good decade' after its publication but then '... in the next twenty years it came to dominate the writings of anthropologists in a remarkable way.' (Douglas 1970, p. xiii) The causes of this transformation are not clear.

[7] The sociological approach to anthropology and the work of Lévy-Bruhl, in particular, have been noted as major influences (Douglas 1970, p. xv). It is interesting to note that this influence was reciprocal, with Lévy-Bruhl responding to Evans-Pritchard's criticism of his characterisation of 'primitive' people as pre-logical and as living in a mystical plane (see Horton 1973).

[8] Indeed, Evans-Pritchard himself acknowledges that he tried to keep such sociological questions as 'what are the Zande notions of reality?' and 'How are these notions expressed in custom?', always in mind in order that his account be a '... purposive description, rather than a bare record, of fact.' (Evans Pritchard 1937, p. 4). On the next page he writes, '[e]xplanations ... will be found embodied in my descriptive account and are not set forth independently of it. My interpretations are contained in the facts themselves, for I have described the facts in such a way that the interpretations emerge as part of the description.' (1937, p. 5). In an interesting essay on the 'interpretive practice' of anthropologists, Sperber argues that such 'interpretations' as Evans-Pritchard's above can neverthless constitute scientific data if they are accompanied by what he calls a 'descriptive comment' (Sperber 1982b) A descriptive comments identifies the object that is being represented and specifies the type of representation that is involved (1982b, p. 12). And by doing so it clarifies the empirical import of interpretations. With regard to the kind of ethnographic interpretations found in Evans-Prithard, for example, Sperber argues that the object of the interpretation is a *conceptual representation* (or set of such representations) which itself has an object — Zande witchcraft for example. These representations are constructed, or 'synthesized', from a variety of data — Zande utterances, behaviour etc. — together with the ethnographer's intuitive understanding. Only if the latter are 'sorted' from native statements can an adequate descriptive comment be given in such cases (1982b, p. 23). Further discussion of this

interesting issue would take us too far beyond the scope of this paper but I shall speculate that one could adapt the model-theoretic hierarchy of structures in order to capture this kind of situation.

[9] This substance is described as '. . . an oval blackish swelling or bag in which various small objects are sometimes found.' (Evans-Pritchard 1937, p. 22), or as '. . . of a reddish colour and contains seeds of pumpkins and sesame and other food plants . . .' (1937, p. 22) Other writers have recorded its description as a '. . . round hairy ball, which may have teeth' and '. . . as being like a mouth with large sharp teeth.' (1937, pp. 22–3). Evans-Pritchard believed it to be the small intestine, in the process of digesting certain foods, but he notes alternative views that it is the gall bladder or an inflamed appendix. The discovery of witchcraft-substance through autopsy is discussed in Ch. 2, Part I of his book.

[10] There is, of course, an entire field of 'witchcraft studies' in which this case study can be situated and which can offer a variety of explanations for the occurrence of witchcraft across both history and cultures. Of particular interest to me is the suggestion by Douglas, in her introduction to a volume of such studies dedicated to Evans-Pritchard (Douglas 1970, pp. xiii-xxxviii), that we might expect to find witchcraft beliefs where social interaction is both *intense* and — crucially I feel — *ill defined* (p. xxxv).

[11] Miller (2006, p. 236) points out (following a suggestion from Popper) that, as stated, this argument is classically invalid since it admits the possibility that a man may be the first in the clan to have witchcraft substance, in which case the premises will be true but the conclusion false as the man's father will not be a witch. Although this is formally correct, it is not clear that Azande themselves would admit such a possibility; thus I think we can add an implicit premise to rule it out.

[12] Logic is '. . . those shared patterns of thought which are socially selected from among the various patterns of thought to which we are naturally inclined.' (Jennings 1989, p. 275)

[13] He also considers the case of Nuer beliefs about twins and subjects them to the same analysis.

[14] I owe this point to Otávio Bueno.

[15] 'Witchcraft, oracles and magic are like three sides to a triangle.' (1937, p. 387)

[16] Given the ever present possibility of such action, the use of the oracle is ubiquitous and as Evans-Pritchard goes on to note, it features in every sphere of Zande life (1937, pp. 261–2): 'For how can a Zande do without his poison oracle? His life would be of little worth. Witches would make his wife and children sick and would destroy his crops and render his hunting useless. Every endeavour would be frustrated, every labour and pain would be to no purpose. At any moment a witch might kill him and he could do nothing to protect himself and his family. Men would violate his wife and steal his goods, and how would he be able to identify and avenge himself on adulterer and thief? Without the aid of his poison oracle he knows that he is helpless and at the mercy of every evil person. It is his guide and counsellor.' (1937, pp. 262–3) Evans-Pritchard also presents a charming story which illustrates the difference between 'European' and Azande perceptions of behaviour: what appears rude or untrustworthy to us, is seen by a Zande as entirely appropriate caution in the face of possible witchcraft action and the result of entirely proper consultation of the poison oracle (pp. 265–6). In order to gain confidence and be able to observe consultations of the oracle, he himself used it and remarks, 'I found this as satisfactory a way of running my home and affairs as any other I know of.' (p. 270).

[17] The use of poison in also important in a wider sense: in order to get it, Azande must make a long and hazardous journey to the rain forest. In doing so they come across cultures with customs very different from their own. This leads not only to a degree of tolerance with respect to foreigners but also a considerable amount of cultural diffusion (see Evans-Pritchard 1937, pp. 277–8).

[18] Of course, to Azande it is only once it has been prepared according to the appropriate rituals that it actually becomes 'benge', suitable for oracular consultation (Evans-Pritchard 1937, p. 314).

[19] 'Generally the question is so framed that the oracle will have to kill a fowl in the first test and spare another fowl in the corroborative test to give an affirmative reply, and to spare a fowl in the first test and kill another fowl in the corroborative test to give a negative reply; but this is not invariably the case, and questions are sometimes framed in an opposite manner.' (Evans-Pritchard 1937, p. 300)

[20] This is also clear from the records of consultations displayed by Evans-Pritchard, where contradictory verdicts cause a great deal of discussion and sometimes disagreement (1937, pp. 302–9).

[21] Azande take such contradictory results as evidence of mystical interference with the workings of the oracle. Such interference runs from the action of witchcraft to sorcery and the anger of ghosts (Evans-Pritchard 1937, p. 330).

[22] Indeed, they actually provide support for the oracle, since they demonstrate just how accurate the oracle's judgements are when any interference is eliminated.

[23] 'They act as we would have to act if we had no means of making chemical and physiological analyses and we wanted to obtain the same results as they want to obtain.' (1937, p. 336).

[24] Where by 'we' we mean philosophers and anthropologists with some background in logic, perhaps, rather than 'lay' people.

[25] There is a further connection with the psychology of statistical reasoning. As noted, the action of the poison is highly variable and constitutes a statistical effect. The Zande do not see it as such because the instances are not encoded appropriately; indeed, from our perspective, they do not seem encoded at all but are left as particular instances.

[26] It is this, among other aspects, that raises problems for Sankey's (2010) attempt to present the oracle in terms of an 'alternative epistemic norm'. Within a broadly naturalistic framework he adopts a form of 'particularism', according to which we can — contra the sceptic — be assured that we possess knowledge. On that basis he claims to show — contra the relativist — that some epistemic norms (e.g. those that feature in scientific practice) possess a higher degree of rational justification that others (e.g the poison oracle). However, the particular bits of knowledge he insists that we know we possess all concern 'factual' beliefs and although the probity of the oracle can indeed be tested with regard to these — and hence it can be established whether it is a reliable indicator of truth — the results of such testing cannot then be extended to witchcraft beliefs, as Sankey demands (2010, p. 11), since these are representational and are quasi-true. By focusing on factual beliefs, the particularist approach misses a significant distinction that Azande themselves attend to and hence this response to relativism is undermined.

[27] It has been suggested, on the basis of these and similar examples, that the model of the lone researcher, boldly going where no one has gone before, is no longer an adequate

epistemic representation (Hardwig 1985, 1991).

[28] The difference, then, is essentially a pragmatic one concerning the pressures for change. Such pressures may come from competing beliefs (see, for example, Horton 1982, p. 225 and pp. 238–56) leading to the further articulation and development of the semi-propositional representation along certain lines, as in the scientific case.

[29] The appropriate doxastic logic will then be a paraconsistent one as already noted; see da Costa, Bueno and French 1998.

[30] Slightly more details of this approach can be found in Bueno, da Costa and French 1998.

[31] Here I differ from Henderson as to *why* it should be employed: he assumes that only classical logic will serve at the first-approximation level and thus begs the question against paraconsistent approaches. As indicated, no such assumption is made here but I agree that a classical formulation may be the most appropriate at this level for entirely practical reasons (see Bueno, da Costa and French).

[32] Namely the cultural limitations imposed on the sharing and flow of information.

[33] Douglas considered this the '... only study which has caught the spirit of the Azande book and applied its lessons.' (1970, p. xxii)

[34] In his earlier 1967 paper he favoured a Popperian approach, with the difference between traditionalist/non-Western and modern/scientific thinking marked out in terms of a 'closed' versus 'open' contrast (1982, pp. 210–1).

[35] Miller attributes to da Costa, Bueno and myself the 'doctrine' that contradictions are permanent features of the intellectual landscape, rather than as problems to be resolved or as indicators that our beliefs have gone astray (2006, p. 246). Even a casual reading of da Costa and French (2003) or the present essay should indicate that this is a rather crude summary of the position being defended. In the case of Zande witchcraft beliefs, as I have stated, contradictions at the 'factual' level are not tolerated, for practical reasons, whereas those at the representational level are accommodated, in a 'partial' manner, with the rider that further consideration by those who expert in such matters will resolve any difficulty. Further discussion of Miller's criticisms will be presented in Bueno and French (forthcoming).