

SIMON PROSSER

TEMPORAL METAPHYSICS IN Z-LAND

1. INTRODUCTION

John Perry (1986) has argued that language, thought and experience often contain *unarticulated* constituents. John Campbell (1993, 1994, 1998) has taken up a similar theme with his distinction between monadic and relational notions and the related notion of *causal indexicals*, as has Sydney Shoemaker (1994). I shall argue (using Perry's terminology) that the presence of unarticulated constituents in temporal thought and experience is the key to understanding and explaining away the intuitive appeal of the A-theory of time. I shall also make some slightly more cautious remarks suggesting that a similar idea can explain away the intuitive appeal of the endurance theory of persistence. I shall not offer direct refutations of these doctrines (though I shall offer some criticism of the A-theory); rather, my aim is to show that the opposing doctrines, the B-theory and the perdurance view, are entirely consistent with the strong impression that many people have that time is tensed and objects endure.

2. UNARTICULATED CONSTITUENTS

Consider an utterance of the sentence 'it is raining here now' produced at time t in place p . The utterance expresses the proposition that it rains at time t in place p , or *rain* (t, p) for short. But in many circumstances a token of the sentence 'it is raining' will serve equally well to communicate the proposition *rain* (t, p). Perhaps the tensed 'is' might serve to designate the time t , but certainly no part of the utterance designates a place. Yet the utterance is true if and only if it rains in place p at time t . The place p is thus an *unarticulated* constituent of the utterance.

It is tempting to tell a story along the following lines about the example just described: the speaker believes a proposition of the form *rain* (t, p) but some feature of

the context of the utterance makes it unnecessary to make the entire proposition explicit. The context leads both the speaker and the audience to take it for granted that it is the speaker's location that is being talked about, so an utterance of 'it is raining' suffices. According to this story, although no component of the utterance designates a place the corresponding thought entertained by the speaker and the audience nevertheless contains a component that designates the place.

No doubt some such story is often correct. Sometimes, however, there are unarticulated constituents at the level of thoughts as well as language. Perry illustrates this using his example of 'Z-land':

Consider a small isolated group, living in a place we call Z-land. Z-landers do not travel to, or communicate with, residents of other places, and they have no name for Z-land. When a Z-lander sees rain, he will say to others not in a position to look outdoors, *It is raining*. His listeners then act appropriately to there being rain in Z-land: they close the windows in Z-land, cancel plans for Z-land picnics, and grab umbrellas before going into the Z-land out-of-doors. They have no other use for 'It is raining'. They do not call their sons in far-off places, or listen to the weather news, or read newspapers with national weather reports [Perry 1986, p. 144].

We should assume that Z-land is small enough that it cannot rain in one part but not in another; from the Z-landers' point of view it simply rains or does not rain. Consequently the Z-landers have no use for an articulated thought component that designates Z-land in their beliefs about rain. A Z-lander belief that it is raining is made true or false by whether or not it is raining in Z-land, but the belief involves no component that designates a place. What makes Z-land the place that is relevant in determining the truth value is that Z-landers' perceptions of rain are always of rain that falls in Z-land and their actions are those that are appropriate to rain in Z-land. Z-land is thus an unarticulated constituent in the Z-landers' beliefs about rain.

Although the truth-value of a Z-lander's belief that it is raining is determined by whether it is raining in Z-land, things do not look that way to the Z-landers. From the Z-landers' point of view rain seems to be a property of times, not of times and places. To them, an utterance of 'it is raining' seems to express a proposition of the form *rain (t)*

rather than *rain* (t, p). Thus the Z-landers cognise what we should really regard as a propositional function – in this case, a function from places to propositions – as though it were a complete proposition. But complete propositions are always determined by the Z-landers' thoughts and utterances because these always occur within the context of Z-land. In Perry's terminology, the propositional contents of the Z-landers' beliefs are propositional functions rather than complete propositions, and these beliefs are true or false relative to Z-land. Their beliefs *concern* Z-land, but they are not *about* Z-land.

Examples of unarticulated constituents can easily be found beyond Z-land. The general phenomenon is that an n -place predicate is used in dealing with an $n+1$ -ary relation. To borrow another example from Perry (1993, p. 221), we tend to regard simultaneity as a two-place relation; to say, or think, that e_1 is simultaneous with e_2 is to say, or think, something of the form *simultaneous* (e_1, e_2). But as we now know from relativity theory, simultaneity is in fact a three-place relation between events e_1, e_2 and a frame of reference. So the sentence ' e_1 is simultaneous with e_2 ', uttered by someone who knows nothing of modern physics, *concerns* a frame of reference (it is true or false relative to the frame of reference of the speaker) but it is not *about* a frame of reference (the speaker need not even know what a frame of reference is).

Should we instead say that we have a fully articulated two-place concept of simultaneity and beliefs expressed using it are false, albeit useful? Sometimes we do communicate truths by making false utterances, of course, but this is a feature of communication; it is hard to see how something comparable could be said about an individual's thoughts. So on the proposed alternative view, instead of unarticulated constituents we would simply have useful false beliefs. But there is an important difference between beliefs involving concepts from false theories such as 'phlogiston' and beliefs containing unarticulated constituents. In the former cases is not possible to turn false beliefs into true ones by adding a missing constituent that is picked out systematically for a given context. The speaker cannot be interpreted, from a third person point of view, as consistently using words in such a way as to express true beliefs. Yet this could be the case where there were unarticulated constituents. An omniscient radical interpreter trying to make sense of the Z-landers would be charitable enough to interpret utterances such as 'it is raining' in such a way as to make them true; this could not generally be done with utterances concerning 'phlogiston'. But although this means

that under one description the Z-landers can be said to believe that it is raining in place p at time t we would miss something important about Z-lander psychology if we only described Z-landers in this way.

Examples of unarticulated constituents can also be found in the contents of perception. If an object is perceived as being *near*, for example, the perception is veridical only if the object is near to the perceiver. But the perceiver need not be represented in the perception at all; an invisible person can still see objects as being near, far and so on. The perceiver may therefore be an unarticulated constituent in the content of a perception. There are also examples of what John Campbell (1993, pp. 82-8, 1994, pp. 41-6) calls *causal indexicals*. These are expressions whose extensions are partially determined by the subject's own causal powers. If an object is simply believed to be *heavy*, for example, then whether or not the belief is true is determined by whether it is heavy *for the subject* (see also Shoemaker 1994, p. 28, for discussion of this and similar examples). But in principle the subject could fail to be aware of this; for such a subject, the predicate 'is heavy' would be monadic in both language and thought.

In many such cases a constituent that is initially unarticulated can become articulated; one comes to appreciate that what had seemed to be an intrinsic property was actually a relation involving oneself. When this happens one moves from an egocentric way of understanding the world to a more objective understanding; one comes to appreciate that the same objects or states of affairs can seem different from another point of view. But although one's understanding of one's experiences changes, the experiences themselves remain the same. An object that is *near* or *heavy* still looks or feels the same even when one comes to appreciate that it is really *near to me* or *heavy for me*. This, I shall suggest, is what happens when we move from believing the A-theory to believing the B-theory.

3. THE A-THEORY OF TIME

Equipped with the notion of an unarticulated constituent we can now turn our attention to the A-theory. The A-theory says that A-series properties like pastness, presentness and futurity are intrinsic, mind-independent properties of times.¹ By contrast the B-

theory says that times stand in relations such as ‘earlier than’ and ‘later than’ to one another but no time is simply past, present or future. A standard problem for the B-theorist is to explain why it is that most people feel that only the A-theory correctly captures the experienced nature of time. This is where unarticulated constituents can help.

According to the A-theory an utterance of the form ‘*t* is past’ expresses a proposition of the form *past* (*t*); thus, according to the A-theory, ‘past’ is a monadic predicate and pastness is an intrinsic property.² Most B-theorists these days advocate the ‘new’ B-theory, according to which the meaning and cognitive significance of a tensed sentence cannot be captured by any tenseless translation but the truth conditions of a tensed sentence are nevertheless specifiable in tenseless, B-series terms. There are currently two schools of thought about the correct B-theory semantics for tensed predicates. According to the *date* version of the new B-theory, an utterance of ‘*t* is past’ expresses a proposition of the form *past* (*t*, *t*), where ‘*t*’ is the time (‘date’) at which the utterance of ‘*t* is past’ occurs. Pastness is thus a relation between *t* and *t*; an utterance of ‘*t* is past’ is true if and only if *t* is earlier than *t*. According to the *token-reflexive* version, by contrast, an utterance of ‘*t* is past’ expresses a proposition of the form *past* (*t*, *u*), where ‘*u*’ stands for the utterance. The utterance, *u*, is true if and only if *u* occurs later than *t*. This, at least, is how the token-reflexive view is sometimes interpreted (see for example Mellor 1998, pp. 32-4). I shall, however, discuss a different interpretation of the token-reflexive view below; one that makes it closer to the date version.³

Some philosophers have abandoned the token-reflexive view because of its apparent implication that there would be no present, past or future if there were no utterances (see, for example, Mellor 1998). Heather Dyke (2002) has recently defended a token-reflexive view against this objection by pointing out that although truth is token-dependent (in the sense that the question of truth only arises relative to a token utterance) this does not imply that the way the world is depends on what we happen to say about it. I think that Dyke is right, given the kind of token-reflexive theory she advocates (see below), but I do not think that the difficulty can be avoided for the kind of token-reflexive view described above. The objection concerns the kind of state of affairs that one claims to obtain when one makes a tensed utterance. This can be illustrated in terms of truthmakers. The token-reflexive theory, interpreted as the

objector I have in mind (e.g. Mellor) interprets it, implies that a tensed utterance is its own truthmaker. This seems implausible. There are, of course, some utterances that are their own truthmakers. An example would be a token of ‘an utterance is occurring now’ (other contemporaneous utterances would also make this true, of course). But these are special cases; it seems implausible that tensed utterances should in general belong in the same special category.

There are, however, different notions of what constitute the truth-conditions of an utterance depending on what one is trying to capture (see for example Perry’s (1990) distinction between ‘incremental’ and other truth conditions). Sometimes by ‘truth conditions’ one means ways the world would have to be for *what is said* by an utterance (e.g. its Kaplanian content) to be true. On this interpretation a token-reflexive account of truth-conditions seems highly implausible for the reasons given above. Alternatively, however, the truth conditions of an utterance could be the conditions under which the *utterance* would be true (this corresponds to Perry’s ‘non-incremental’ truth conditions). Since no utterance can be true unless an utterance is made, and since the truth or falsity of a tensed utterance depends on the time of the utterance, it is perfectly plausible that the truth conditions of a tensed utterance are token reflexive, given what is meant here by ‘truth conditions’ (this is the sense in which Dyke’s (2002, 2003) view is token-reflexive).

The distinction between the two interpretations of the token-reflexive theory can be thought of in the following way. In order to understand a token utterance of ‘it is raining now’ one must understand that a token of ‘now’ refers to the time at which the token is produced. But whether the token is its own truthmaker depends on the role of the definite description ‘the time at which the token is produced’. If the definite description states a feature of the way the world has to be in order for what is said by the utterance to be true then we have the implausible view according to which the token is its own truthmaker. But the description could instead be understood as having a ‘reference fixing’ role; perhaps there is an implicit ‘dthat’ in front of the description, so that only the time, not the token, is a component of what is said by the utterance. This view is much more plausible; but it is also much closer to the date theory (in what follows I shall treat them as equivalent).

Advocates of all of the above views could, in any case, accept the central idea of this paper, which is that the intuitive appeal of the A-theory can be explained away by appeal to unarticulated constituents in a manner to be described below. The differences between them would concern only the nature of the constituents that are unarticulated. I shall, however, argue that none of the above views is quite correct. The date theory gives the correct truth conditions for many tensed utterances but it is incorrect for the basic case in which a subject simply says, or thinks, ‘*t* is past’, ‘*t* is present’ or ‘*t* is future’. In such cases I claim that the utterance is true if and only if the temporal part of the subject at the time of utterance stands in the relevant relation to the time *t*. The temporal part of the subject, however, is an unarticulated constituent of the thought.

The motivation for this theory becomes clear when we try to apply equivalent theories to spatial indexicals. If we focus on standard examples of spatial indexicals such as ‘here’ both kinds of theory may seem promising. But consider a thought of the following form, entertained by a subject *S* at time *t* about a place ‘*p*’:

(1) *p* is to the left

It makes no sense to say, without qualification, that *p* is to the left of a place or a token utterance, so neither a spatial equivalent of the date view nor the token-reflexive view can deal with this utterance in a straightforward manner.⁴ Since subjects do have left-hand sides, it is natural to assume that (1) picks out a proposition involving the subject:

(2) *p* is to the left of me

(1) is of the form *left* (*p*) whereas (2) expresses a proposition either of the form *left* (*p*, *S*, *t*) or of the form *left* (*p*, *S_t*), where ‘*S_t*’ is the temporal part of the subject, *S*, at the time of utterance, *t*. Which of these two versions of (2) one accepts depends on one’s views about the metaphysics of persistence. Since I advocate the B-theory and since I prefer the temporal parts account to its metaphysical alternatives I shall put matters in terms of temporal parts in what follows; this will, in any case, make the exposition clearer. Advocates of alternative versions of four-dimensionalist metaphysics could, however,

adjust the account to suit their views (and so could three-dimensionalists for spatial examples like (2), though temporal cases might be trickier).⁵

Someone who thinks (1) is normally aware that it abbreviates (2). But notice that the nature of experience, especially visual experience, is better captured by (1) than (2). In order to judge that a place (or an object) is to the left one does not have to look at one's body and judge where the place is in relation to it. A person of normal discriminatory capacities whose body was perfectly left-right symmetrical would have no difficulty judging that a place was to the left, yet this could not be done by observing where the place was in relation to the subject's body (not, at least, without making use of just the kind of non-relational capacity to distinguish left from right that is in question). The same would be true of an invisible person. In fact one need only pay attention to the place itself to be able to judge that it is to the left. So clearly one's visual experience presents objects and places as having properties like *right*, *left*, *here* and so on without presenting these properties as explicitly relational.

Moreover we can imagine someone who was an A-theorist about space because she was unable to move voluntarily through space and consequently never became aware that changes in the degree of leftness or rightness of a place depended on changes of her own location (imagine, for example, that she always faced in one direction and only perceived what was to her left or right). Suppose there were another such person who was always at the same point on the left-right axis as the first. If the first said: '*p* used to be very much to the left but now it is only slightly to the left' the second would normally agree. Both could be under the illusion that they were observing changing intrinsic properties of *p*. Such people would be rather like Perry's Z-landers. One of them who thought: '*p* is to the left' would entertain a propositional function *left* (*p*) that would pick out a proposition of the form *left* (*p*, *S*_{*t*}). Their thoughts would *concern* temporal parts of themselves, but they would not be *about* temporal parts of themselves. When someone else, in the same place, thought: '*p* is to the left' they would entertain the same propositional function and consequently, although this would pick out a different proposition, it would appear that they were expressing the same proposition provided they were at the same point on the left-right axis as everyone else with whom they communicated.

I hope that the analogy with tensed predicates is clear. My claim is that when someone thinks: ‘*t* is past’ they entertain a propositional function *past* (*t*) that picks out a proposition of the form *past* (*t*, *S*_{*t*}). Because the propositional function contains a monadic predicate it is very easy to make the mistake of thinking that pastness is an intrinsic property. This is analogous to the way in which the Z-landers mistakenly think that rain is a property of times. Time *seems* to us to be intrinsically tensed in just the same way that an object might in principle seem to someone to be intrinsically heavy if they had never interacted with other people. Experience does not present pastness, heaviness or other such properties to us as explicitly relational; the fact that the experiencing subject is one of the relata makes this unnecessary. Much of the time it is possible to deal with the world by treating subject-involving relations as though they were intrinsic properties. But someone who thought that heaviness was intrinsic would realise their mistake when they became aware that what was heavy for them was not heavy for other people; and the Z-landers would soon realise their mistake if they acquired the capacity to move from place to place at will (they would find that they could change whether or not it was raining by moving, for example). Someone who thus came to articulate their own role in their thoughts and experiences would move from an egocentric conceptualisation of the world to a more objective conceptualisation. But the phenomenal character of their experiences would not change. Now, perhaps if we could travel through time at will or engage in conversations with persons existing at other times the true nature of tense would become apparent to us as readily as the true nature of nearness, heaviness and other subject-involving relations. But we cannot do this. Consequently it is easy to take experience at face value and accept the A-theory. One takes tensed properties to be intrinsic because the nature of one’s experience allows one to use monadic predicates to deal with what are really relations. When one becomes convinced by the B-theory one conceptualises the world more objectively, but one’s temporal phenomenology remains unchanged.

When we communicate using words like ‘past’ we tend to agree with one another because we tend to communicate with contemporaneous temporal parts of other people (so to speak). This is analogous to the point made above about communication between individuals situated at the same point on the left-right axis. We do, of course, receive messages from persons in the past and then our ascriptions of tensed predicates may

differ from those of our correspondents. But if the message says ‘1950 is future’ we find it natural, so long as we continue to accept the A-theory, to imagine that the tensed property that was ascribed to 1950 when the message was written is no longer a property of 1950 when the message is received.⁶

Let us call the view that the truth conditions of at least some tensed sentences involve a temporal part of the thinking subject the *person-reflexive* view.⁷ I shall offer some further reasons for adopting the person-reflexive view with respect to simple ascriptions of tensed predicates in the next section. The person-reflexive view has the appealing consequence that a person who thinks or utters nothing nevertheless has a past, present and future. But we can never say of a world containing no persons that there is any time in it that is past *simpliciter*, for such predicates are only ever applied *simpliciter* by a person located *within* the world in question. We cannot, however, leave our account of B-theory semantics here. For the one-place predicate ‘is past’ is used in dealing with the same two-place relation expressed by ‘earlier than’, and this is not *essentially* a relation that holds between times and temporal parts of persons, even though it can do. The same relation can hold between different times. Consider:

(3) In 2080, 2079 is past

This is true even if no people exist after 2078. The proposition it expresses is *past* (2079, 2080), which is just the same proposition as ‘2079 is earlier than 2080’. Much the same can be said about leftness; it is not essentially a relation between places and temporal parts of persons, even though it can be.⁸ Consider:

(4) From outside the post office, facing the village green, the church is on the left

This describes a spatial arrangement of the post office, the village green and the church (and, implicitly, the Earth’s surface) that would remain just the same even if all people suddenly ceased to exist. The use of the word ‘facing’ in (4) manifests the fact that it is natural to understand utterances like (4) by imagining that one is standing outside the post office, facing the village green. One can then picture the direction of the church. In this way, a frame of reference is implicitly fixed relative to which the word ‘left’ gets its

content. But this is an epistemic point; the same state of affairs could be described without even an implicit mention of persons. For example one could make use of Fleming's left-hand rule of electromagnetism:

- (5) The post office, village green and church are located such that if, outside the post office, there were a wire carrying a current away from the Earth's surface in a magnetic field oriented in the direction from the post office toward the village green, then there would be a force on the wire in the direction of the church

Now, perhaps it is natural to understand (3) by imagining existing in 2080; one could then imagine 2079 being past. One could grasp the significance that this would have for the actions of someone living in 2080, for example. Understanding (3) in this way is nonetheless consistent with the supposition that no persons exist after 2078:

- (6) If no people exist after 2078, it is nonetheless true that: if someone had existed in 2080, 2079 would be in their past

It may be, however, that one could pick out the same state of affairs (no people existing and 2079 being earlier than 2080) using physical phenomena to distinguish past from future in a manner analogous to (5) (though this is slightly more controversial).

Why do terms like 'left' and 'past' have a dual character whereby they sometimes pick out a relation involving a person and sometimes a relation involving only places or times? The answer is very simple. Consider spatial terms like 'left'. For an ascription of leftness to be made an origin and frame of reference must be determined. But frames of reference may be attached to different things. A body-centred frame of reference, for example, has its origin in the subject's body and axes defined relative to the subject's bodily axes. When the subject moves around, a body-centred frame of reference moves with her, so to speak. So if a place is to the left in a body-centred frame of reference it is to the left of the subject. It is no longer to the left if the subject turns around. If we are to think in terms of temporal parts of subjects then we should no longer talk about what happens when the subject moves, but we can still talk about what would have been the case if a certain temporal part of a subject had been oriented differently. If I were facing

the other way right now, the wall that is to the left (i.e. my left) would have been to the right.

But the actual or counterfactual position and orientation of the subject's body can also be used to fix a frame of reference that is not body centred, much as a definite description can be used to fix the reference of a name without being synonymous with the name. When the subject is in the relevant position and orientation something that is to the left is, as a matter of fact, to the left of the subject. But when the subject moves the frame of reference stays put, so to speak. Something that is to the left in that frame of reference would still be to the left if the subject were somewhere else, or did not exist. Here the leftness relation only contingently applies to the subject, if at all.

There is no reason to think that tensed predicates should be any different, at least given the B-theory. Sometimes when one uses a tensed predicate one picks out a relation that essentially involves a temporal part of oneself. Paradigmatically this is when one thinks something of the form '*t* is past'. But sometimes, when one utters something a little more complex, one picks out a relation that only contingently involves oneself, if at all. With regard to the former case, it must be admitted that in order for S to truly utter '*t* is past' it must be the case that a certain temporal part of S stands in the relevant relation to the time *t* (something equivalent could be said about tokens). One might therefore feel tempted to claim that the date theory is correct for all utterances; the state of affairs described by '*t* is past' is a relation between times and the subject only enters the picture derivatively because it is a condition on the subject making a true utterance of '*t* is past' that the subject has a temporal part at *t*, the time of utterance. But the spatial case suggests that this would be a mistake; when S says '*p* is to the left' it is clear that this picks out the same state of affairs as when S says '*p* is to the left of me'. This explicitly relates S (or a temporal part of S) to the place *p*.

It is worth noting that the very possibility of unarticulated constituents undermines certain arguments for the A-theory. A-theorists have sometimes tried to defend their view by arguing that a tensed statement such as 'it is raining now' not only denotes a time but also ascribes a property to the time using a monadic predicate (the property of *presentness*, in this example). It is then argued that the ascribed property is intrinsic because the predicate used to ascribe it is monadic. Now as a matter of fact I agree that an indexical term like 'now' ascribes a property to a time as well as denoting it (see

Prosser, forthcoming). In my opinion, however, although a significant amount of the debate between A- and B-theorists has revolved around this issue, it does not settle the issue of whether the A- or B-theory is correct.⁹ For the fact that a predicate is monadic does not always have the ontological implications that the A-theorists have assumed it does. When there is an unarticulated constituent a monadic predicate can be used to deal with a relation. This, I claim, is true of terms like ‘past’, ‘present’ and ‘future’.

4. THANK GOODNESS THAT’S OVER

The explanation just given for the intuitive appeal of the A-theory also helps address the difficulty posed by Arthur Prior’s (1959) challenge to the B-theory. Prior invites us to consider what it is we are thanking goodness for when we say ‘Thank goodness that’s over!’ As Prior observes:

It certainly doesn’t mean the same as, e.g. ‘Thank goodness the date of the conclusion of that thing is Friday, June 15, 1954’, even if it be said then. (Nor, for that matter, does it mean ‘Thank goodness the conclusion of that thing is contemporaneous with this utterance’. Why should anyone thank goodness for that?)[Prior 1959, p. 17]

The standard versions of the new B-theory do provide at least a partial answer to Prior’s challenge because they accept that the meaning of ‘over’ is not the same as the meaning of either of the expressions that Prior suggests, even if ‘over’ has the same extension as one or other of them. The ‘thank goodness’ problem is thus treated as an example of the familiar phenomenon of intensional contexts in which one can have differing attitudes to expressions that describe the same state of affairs.¹⁰ But a feeling may still persist that the states of affairs described by ‘the conclusion of that thing is Friday, June 15, 1954’ or ‘the conclusion of that thing is contemporaneous with this utterance’ – the states of affairs, that is, that are implied by the date and token-reflexive versions of the new B-theory – are not the sorts of states of affairs that it makes sense to thank goodness for, no matter which linguistic expression is used to describe them.

Our theory, however, allows us to give a further response. The theory suggests that ‘over’, like ‘past’, is a one-place predicate that we use to deal with a two-place relation. Let e be the event toward whose conclusion the ‘thank goodness’ attitude is directed. Then the state of affairs for which a subject, S , thanks goodness at time t is described by the complete proposition *over* (e, S_t). But the thinker’s ‘thank goodness’ attitude takes the form of an attitude to the propositional function *over* (e), which the thinker mistakes for a complete proposition. So from the thinker’s point of view it seems that the unpleasant event has the intrinsic property of being over, a property that it did not have at earlier times and which the thinker thanks goodness it now has.

The state of affairs for which one thanks goodness is therefore that a certain temporal part of one (the very same part that is thanking goodness) stands in a certain temporal relation to the unpleasant event. This is a state of affairs that it makes sense to thank goodness for, even though one does not think of it under that description. For the location of a temporal part of oneself relative to the unpleasant event has consequences for which actions it is appropriate for that temporal part to perform. A recent paper by James Maclaurin and Heather Dyke (2002) helps explain why one’s attitudes are the appropriate ones. Maclaurin and Dyke point out that the new B-theorist must explain why it makes sense to adopt the ‘thank goodness’ attitude only at times later than the unpleasant event. To this end they propose an evolutionary explanation; roughly speaking, they suggest that since it is only at times earlier than e that one can do anything about whether e occurs, natural selection has tended to favour organisms whose attitudes differ in appropriate ways according to whether e is earlier or later than the attitude.

This seems correct. Given the person-reflexive theory we can put the point as follows: it makes evolutionary sense for the subject to have temporal parts whose attitudes toward e differ according to their different relations to it. Those that are slightly earlier than e are in a position to try to prevent it. Those that are much earlier than e might better serve the subject (the sum of the temporal parts) by directing their energy elsewhere. Those that are later than e can do nothing to prevent it, but are at least freed from the burden of trying to prevent it and can focus on other matters. It is perfectly reasonable for the subject to have temporal parts with attitudes that vary in this way, given that it is the interests of the subject (the sum of the temporal parts) rather than the interests of the individual temporal parts that should matter. A degree of diachronic

irrationality is of course possible (we do not always do what would be good for us in the long term), but it is the subject's interests that are favoured by natural selection, not the interests of its temporal parts.

5. ENDURANCE

Some philosophers believe that objects *endure*; they are wholly present at every moment at which they exist. Others believe that objects *perdure*; they are spread out through time and all that is encountered at any given time is a temporal part of the object. I have, in effect, taken the perdurance view for granted in the temporal parts formulation used above, though I have stressed that opponents of temporal parts could still accept much of what I say about the A-theory with only minor changes.

It seems to me that the endurance view, like the A-theory, captures our naïve, pre-philosophical view of the world; it is the view that most people would hold unless they had reason to believe otherwise. The view that objects perdure would therefore benefit from an explanation of why it can seem natural to believe that they endure. The presence of an unarticulated constituent, or at least a related phenomenon, can help with this. Human perceptual apparatus is, I suggest, hard wired to present objects in experience as enduring. Consequently it is natural for us to think of objects as enduring, and it is only by reflection at a higher cognitive level (further downstream in the processing of perceptual information) that we come to consider perdurance.

This claim might sound a little odd at first. One might easily imagine that endurance and perdurance are both equally consistent with the way in which we experience objects. In a sense, I agree; I doubt very much that any features of our temporal experiences could settle the issue between endurantists and perdurantists. Much the same can be said about the A- and B-theories.¹¹ But I do think there is a sense in which experience presents objects as enduring (even if they really perdure), which I shall try to explain.

First, however, it might help to consider the following intuition pump, which is intended merely to give a glimpse at the possibility of a distinction between experiences of endurance and perdurance. In the 'phi' phenomenon, much studied by cognitive scientists, a series of still images at shifting locations is experienced as a continuously

moving object (this is how moving TV and film images are perceived). Imagine seeing a sequence of momentary spots of light, each one a little to the right of the previous one. Then imagine the sequence repeated a number of times, with the number of spots increasing and the time interval between them decreasing with each sequence. At some point, one's perceptual system would start to interpret the sequence as a continuous moving spot rather than a series of separate flashes. This, I suggest, is an experience of endurance. But now imagine that the processing that produced this experience was disabled, so that the flashes were always perceived separately. As the time interval between the flashes tended to zero an infinite series of momentary flashes would be experienced and this would not, I suggest, be the same experience that one would have with one's perceptual processing switched on. It would, instead, be more like an experience of perdurance.¹²

Since the kind of perdurance experience just described would require an infinite amount of processing (assuming, at least, a continuum of temporal parts), it is not surprising that nature should look to economise. I suggest that the solution adopted was that the distinction between temporal parts is omitted in the processing of perceptual information about a given object. Assume for the purposes of argument that objects endure. Then at time *t* what one perceives is not the object, *O*, but a temporal part *O_t*. Suppose that at time *t* one veridically perceives that *O* is red and at time *k* one veridically perceives that *O* is green. Assume that being red and being green are incompatible. Describing things this way is problematic because it implies that *O* has the incompatible properties red and green. But suppose that the temporal subscript on 'O' is omitted – unarticulated, so to speak – in the content of perception. When at time *t* one judges that *O* is red one entertains a propositional function *red* (*O*) that yields the proposition *red* (*O_t*) because it is entertained at time *t*. And when, at time *k*, one judges that *O* is green one entertains a propositional function *green* (*O*) that yields the proposition *green* (*O_k*) because it is entertained at time *k*. There is no conflict between the propositions *red* (*O_t*) and *green* (*O_k*). Similarly, if *O* does not change colour one entertains a constant propositional function, *red* (*O*), that yields a series of different propositions, *red* (*O_t*), *red* (*O_k*)...etc., at times *t*, *k*...etc. The perceptions, and the beliefs formed on the basis of perception, concern specific temporal parts of *O* but they are not about specific temporal

parts of O . This explains why it seems to the perceiver that the very same thing is red at one time and green at another.

Now, it would perhaps be misleading to describe a missing subscript as a case of an unarticulated constituent. Strictly speaking, a series of discrete temporal parts is mistakenly treated as a single entity and no constituent of a proposition is unarticulated. But there are significant similarities between this and the phenomenon of unarticulated constituents. When a constituent is unarticulated the subject needs to pay attention only to n entities in order to deal with an $n+1$ -ary relation. In order to judge explicitly that O_t is red one would have to pay attention to both O_t and to the time, t , in order to be able to discriminate O_t from other temporal parts of O . But in practice one simply pays attention to what is, as a matter of fact, O_t , and consequently one does not discriminate O_t from other temporal parts of O . So it seems reasonable to say that one's perceptions and beliefs *concern* O_t but they are not *about* O_t .

The experiences and thoughts about objects that we have over a period of time are similar to the experiences and thoughts the Z-landers would have while moving from one place to another. They would perceive one place, then another, but from their point of view nothing would seem different except, for example, whether it was raining. They would entertain a constant propositional function that would yield a series of different propositions. In a similar way we experience one temporal part of an object at one time and another temporal part at another time, but from our point of view it always seems to be the same entity. And, of course, the same principle applies to thoughts about oneself. Each temporal part of an object is experienced by a corresponding temporal part of the subject, but from the subject's point of view the experiences all seem to belong to a single subject that wholly exists at each moment in time.

6. CONCLUSIONS

For B-theorists and perdurantists I hope that the foregoing discussion has helped to allay any worries about the counterintuitive nature of their positions. For A-theorists the discussion presents a challenge. The tensed nature of temporal experience is no longer a factor in favour of the A-theory; the fact that the world seems tensed gives us no reason

to believe that it is tensed. Certain arguments for the A-theory are thus undermined. Moreover, if the account of tensed experience, thought and language suggested above is correct then it is hard to see how words like ‘past’, ‘present’ and ‘future’ could be used to designate the intrinsic properties that the A-theorist claims to exist. It is less clear that the endurance theory is directly threatened, though presentist versions might be threatened by the rejection of A-properties.

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NOTES

¹ For the A-series and B-series see McTaggart 1908, 1927.

² I shall restrict myself here to considering explicit ascriptions of A-properties. In doing so, I avoid the need to worry about whether an indexical term such as ‘now’, as it appears in the sentence ‘it is raining now’, ascribes a property as well as denoting a time. For more on this issue see below and see also Prosser, forthcoming.

³ Quentin Smith (1993) makes a number of criticisms of both the date version and the token-reflexive version. I think that at least some of Smith’s criticisms are valid.

⁴ There can be a direction that is left from a certain place but only relative to a frame of reference, which must be defined relative to something else (see below). Whether there is any sense at all to the notion of ‘the left of a token’ depends on what counts as a token. A written sign that says ‘keep left’ may be thought of as having a conventionally defined left hand side, though it may be that the relevant tokens in this scenario are token thoughts of people who read the sign, and it is *their* left hand sides that matter. This is especially clear if the sign is next to a road with a bend in it after the sign; one must keep to a lane that is to one’s left, but this might not be a constant direction relative to the sign. In any case, it is hard to see any sense in which tokens in speech or thought have left hand sides.

⁵ I shall gloss over the distinction between parts (Lewis 1986) and stages (Hawley 2001, Sider 2001); either view seems compatible with the spirit of the view to be advocated here.

⁶ Suppose Smith shouts ‘1950 is past’ in 1949, but from so far away that the sound waves do not arrive at Jones’s location until 1951. The heard utterance was true even though the temporal part that uttered it existed in 1949 and said something false. Determining the temporal part relevant to evaluating an utterance is a complex matter, but in this case I think that if Jones is unaware of the time delay and takes the message at face value then it is Jones’s temporal part’s relation to 1950, not Smith’s, that is relevant in determining whether the thought Jones entertains is true. A similar treatment could be given for answering machine messages and other problem cases in which it might initially appear that there is an utterance without a relevant temporal part of a person. In some cases, however, truth conditions will only involve dates rather than temporal parts of persons in the way to be described below (consider, for example: ‘if no one had heard the message it would still have been true’).

⁷ The person-reflexive account is similar in certain ways to David Lewis's (1979) account of indexical thoughts as attitudes *de se*. According to Lewis, when one entertains a thought expressible using an indexical term one locates oneself (qua temporal part of a counterpart of an individual) both spatiotemporally and in logical space. It seems to me that the plausibility of Lewis's account (according to which *all* propositional attitudes involve self-ascription of properties) is increased by the view that the thinker is an unarticulated constituent.

⁸ In putting things this way I intend no commitment with regard to relational or substantival theories of space and time. It may be that one kind of relation (e.g. between objects, or between places) is in some sense more fundamental, and it may be that ultimately the theory should be restated in terms of it. Perhaps relations between places, for example, are really complex relations that should be stated in terms of objects. But I take it that the present way of describing matters will suffice for present purposes.

⁹ See for example essays 7-12 in Oaklander and Smith 1994, and Smith 1993.

¹⁰ For discussions of the new B-theory response see MacBeath 1983, Garrett 1988, Oaklander 1992 and Mellor 1998.

¹¹ In fact I believe that an argument against the A-theory can be based on the fact that although the putative A-properties are usually assumed to feature in experience it can make no difference to the nature of experience whether such properties exist. See Prosser 2000.

¹² In a genuine persisting object each temporal part causally influences the next temporal part, but it is not clear that this would make a difference to the experience.

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