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Le Poidevin, R orcid.org/0000-0002-7185-9440 (2017) *Memory and the Metaphysics of Time*. In: Bernecker, S and Michaelian, K, (eds.) *The Routledge Handbook of Philosophy of Memory*. Routledge , pp. 219-227. ISBN 9781138909366

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Memory and the Metaphysics of Time

Robin Le Poidevin

I. Introduction

To understand the nature of memory is to understand the nature of time itself. That rather bold thesis is the subject of the following discussion. The idea that we can simply read off the mind-independent nature of reality from our mental representations of it does seem rather doubtful, of course. But a rather more promising line of inquiry is to see whether some positions in debates about time's true nature sit rather better than do others with some widespread beliefs about remembering. So that is how this discussion will proceed, by first introducing a metaphysical debate about time, and then exploring the alleged connection with memory. The aspects of memory that we will be particularly concerned with are its role in structuring our perceptual experience, and its role in providing knowledge of our experiential pasts. And the metaphysical views of the nature of time those aspects (arguably) connect with concern the passage of time, the reality of the past, and the basis of time's direction.

II. Why do we experience time as passing? The role of memory in temporal awareness

The most obvious aspect of time that experience affords is its passage: what we are now perceiving tends to be fleeting, and soon consigned to the past. But does time really pass? According to the A-theory of time, it does. By 'really' here is meant that it is a feature of time itself, independently of us or our beliefs, that it passes. What is it for time to pass? Intuitively, we think of it as present events ceasing to be present, and receding into the past. Or we might

think of events as ceasing to exist altogether when they cease to be present. Quite how the idea is expressed varies from one version of the A-theory to another, but what they have in common is the thought that the distinction between past, present and future is an objective, mind-independent one. Remove all sentient life from the world, and there would still be a fact of the matter as to what was happening now. And that state of affairs does not remain fixed. It is the nature of presentness to be transient: whatever is now present will cease to be so. At that point, it may cease to be part of reality altogether (as ‘presentists’ hold). Or it may simply become a different part of reality, one that stands in a relation of precedence to the present (as ‘growing block’ theorists hold). The question of the reality of the past is one we shall examine more closely in the next section. The key beliefs unifying A-theorists are that there is a privileged time which is present, that whether or not something is present is mind-independent, and that what is present does not remain so. This is what it is for time to pass in reality.

Intuitive though those beliefs are, they are taken to be false by the B-theory of time. For the B-theorist, once you remove all sentient life from the world, there is no longer any question as to what is going on now: the term simply has no application. Terms like ‘now’, ‘then’, ‘last year’, ‘tomorrow’, ‘past’, ‘present’ and ‘future’—tensed terms, in short—simply reflect our perspective on events. We correctly judge it to be raining now, or in the present, when a (typically, local) episode of rain is simultaneous with our judgement: mind-independent presentness does not come into it. The B-theory conceives of time as consisting of a series of times (or events, or states of affairs) related by precedence or simultaneity. That event E_1 precedes E_2 in the series is a mind-independent fact.¹ That E_2 is present and E_1 past is a perspectival matter, true from the perspective of someone who has a mental

¹ By ‘fact’, here and throughout the paper, I mean a part of reality, not some true statement. Facts are the items that make true statements true.

representation of the two events. In short, ‘now’ for the B-theorist is the temporal analogue of ‘here’. However, the relations of earlier than and simultaneous with are not mind-dependent:² these relations, which order events in time, are entirely objective. As the B-theorist might put it: there is order, but no passage.

Why is it the A-theory that has the most immediate appeal, indeed that almost seems to be stating the obvious, whereas the B-theory appears to be revisionary, doing violence to our pre-theoretical conceptions? Both sides typically admit that it is ordinary experience that seems to press on us the notion of time passing. Indeed, so pervasive is this sense of passage supposed to be that it constitutes what we might call the argument from experience for time’s real passage. There is, however, no one aspect of experience that is thought responsible for (apparently) intimating passage. Here are three ways in which experience could be thought to do so:

- We are aware that things used to be different from the way they are now
- We directly perceive change and succession
- Our awareness of things as being present or as past does not appear to us as merely perspectival, but as objective, or absolute

If it is accepted that these features are what lead us to believe in passage, then the onus is on the B-theorist to suggest a mechanism underlying these aspects of experience, a mechanism which does not involve actual passage (as opposed to its representation). Alternatively, the B-theorist may deny that experience does have the feature in question. The first two of these, at

² It might be thought that the Special Theory of Relativity implies that simultaneity is not objective. But, on the standard interpretation of the Special Theory, simultaneity is held to be relative to an inertial frame, and frame-relativity is not the same as mind-dependence, or subjectivity. That two events are simultaneous with respect to a frame is itself entirely objective and mind-independent.

least, will hardly be challenged by the B-theorist, who will nevertheless insist that they fall some way short of constituting direct awareness of a real passage of time. The third is, perhaps, a different matter.

The first surely just involves a comparison between current awareness and memory, the discrepancy between which does not have to be explained in tensed terms. Instead, that is, of reporting the facts in this way: it is the case that p and it was the case that Not-p, we can say simply that p obtains at one time but does not obtain at an earlier time. This is inferential knowledge. Perception of change and succession, in contrast, is arguably more direct, and non-inferential: we just see one horse pass the finishing line after the other; we don't need to infer it from a perception/memory contrast. Nevertheless, memory may be involved in a less obvious way. The perception of the first horse crossing the line is not simultaneous with the perception of the second horse doing so. But the perception of the first is still retained, and colours the perception of the second, in such a way as to give rise to the experience of one event as following the other. The retention of perceptual information is a form of memory, even if it does not present itself as a memory. So here the perception of succession could be explained simply by a causal connection between memory and perception, a process that need not involve passage.³ This does not necessarily rule out other mechanisms of change perception. The visual perception of motion, for example, may be a direct result of changes in retinal stimulation, without the need for some information-retaining process (Gregory (1958)). But again, there is no necessity to appeal to real passage here.)

The third alleged feature of experience is a little more controversial. It is certainly true that perception and memory both give rise to tensed beliefs: present- and past-tensed beliefs respectively. It is also true that these tensed beliefs are essential to action: only if I believe

³ See, e.g., Mellor (1998), Chapters 10-11.

that I am now in a minefield will I take appropriate action; the tenseless belief that I am in a minefield at 12 noon on 20th January, 2016, will not by itself have the same effect (Perry (1979)). But does my awareness that it is, or was, the case that p present itself to me as non-perspectival? Experience by itself might be neutral on that point, and only reflection on experience give rise to a further belief that time's passage is objective. Moreover, there is a case for saying that, by confronting us with different temporal perspectives on events, memory actually intimates the perspectival character of temporal experience (Percival (1994)). This is particularly true of what is known as episodic memory: memory of our own past experiences. For that memory both presents me with the content of a past experience, an experience of something as happening now, while simultaneously providing the knowledge that the experience in question is past. To resolve what would otherwise be a contradiction (the event both is present and is wholly past), we need to view the two tenses as different perspectives.

None of this shows directly that time does not in fact pass. What it does show, however, is that appeal to memory can provide the B-theorist with the resources with which to undermine the argument from experience. Experience may give rise to the belief in time's passage, but if we can explain the character of that experience without appeal to such a notion, experience no longer tells decisively in favour of the A-theory.⁴

III. Do we remember a real past? Realism and the epistemology of memory

One motivation for the A-theory, less directly connected with experience than the features just mentioned, comes from the thought that there is an ontological difference between past and present, that whereas the present enjoys full concrete reality, the past is no longer part of

⁴ See Le Poidevin (2007), Chapter 5 for further elaboration of this.

that reality—and the future is not yet part of reality. This is presentism. Like the A-theory in general, it arguably corresponds to our ordinary conception of time. But if we are drawn to some version of the correspondence theory of truth, or more broadly the view that (as it is sometimes put) ‘truth supervenes on being’ (Bigelow (1988)), then there is immediately a question over what the truth-makers are for our memory beliefs. I believe, on the basis of memory, that the river burst its banks last week, flooding the village. What, if not past reality, makes that true, or false? The only (concrete) reality available to supply those truth-makers is present reality. So a natural solution to the difficulty is to take the present causal traces of the past to the truth-makers of our beliefs about the past.⁵

An early (mid-twentieth century) version of this approach had an epistemological focus: the relevant truth-makers are what we would count as evidence for past-tensed truths. So my memory of last week’s flood is made true by the observable remains of that flood: the broken-down wall, the sodden sandbags outside houses, the quantity of debris in the road, etc. The motivation for this view is essentially a verificationist one: that the meaningfulness of our statements (and the coherence of the corresponding beliefs) depends on our knowing how to go about verifying, or at least confirming, their truth. Those epistemological concerns apply quite generally, of course, and not just to the past. But the resulting ‘anti-realism’ about the past (the name Dummett gives to this brand of verificationism—see e.g. Dummett (1969)) has something in common with its ontological counterpart, namely that the notion of ‘past fact’ is problematic. If we are not driven by verificationist concerns, then we need not worry about the accessibility of evidence for past-tensed truths: the present causal traces of the past

⁵ This is one version of presentism, and arguably the one which meets the obligation to provide an explanation for the determinate truth-value of past-tensed statements head on. Not all presentists, however, concede the need for presently-existing truth-makers. For some varieties of presentism, see Bourne (2006), and for a defence of a form of presentism which sidesteps a potentially problematic truth-maker ontology, see Tallant and Ingram (2015).

need not be restricted to those that are in principle available to us. But to guarantee that all statements/beliefs about the past have a determinate truth-value by virtue of what is now the case, we would need to commit to determinism. That is, the belief that it was the case at some specified date that *p* is true if and only if it is necessitated by the current total state of the universe together with the laws of nature. Without this, present causal traces (whether accessible or hidden) will be insufficient to deliver determinate truth-values for past-tensed statements: they could only be rendered more or less probably true or false.

This view that memories have present truth-makers does not sit well, however, with how we understand the epistemology of memory. Memory provides us with knowledge of the past (though see final section for a crucial qualification of this remark). But there is something indirect about it. It is only a route to knowledge because the original experience on which it is based was a route to knowledge. This feature John Campbell (1994) calls the ‘stepwise’ character of memory, and as he points out, it is a feature memory shares with testimony.⁶ Someone’s testimony only provides us with knowledge because the testifier had an independent route to that knowledge. The belief we form just on the basis of testimony is only as secure as the belief on which the testimony was based. Suppose someone witnesses what they take to be a meteor shower, and tells their credulous friend the following morning that there had been a meteor shower last night. If what was witnessed was actually a distant firework display, then the friend’s belief, formed on the basis of ill-grounded testimony, cannot count as knowledge—even if as a matter of fact there was a meteor shower last night. Now, as we might put it, memories are originally formed on the basis of the testimony of the senses. If that testimony, that is, the original experience, was unreliable, then the memory

⁶ See Campbell (1994), p. 233. This analogy between memory and testimony is also drawn by Audi (1994), p. 410, and Fricker (2006), pp. 603-4. I am grateful to Sven Bernecker for drawing my attention to these references.

inherits that unreliability. There is a close connection, then, between what grounds the memory belief, and what grounds the veridicality of the original experience. Indeed, for some cases we might even think of the relevant relation between the two as one of identity, which is as close a connection as one could have. Suppose the original experience was one of an explosion, giving rise to the belief that an explosion occurred. Sometime later, the observer remembers that experience, again forming the belief that an explosion occurred. Is it not plausible to say that the experience belief and the memory belief have the same grounds, namely the explosion itself?

We might capture the relationship between a memory and the original experience whose content it preserves in the following ways: both the experience and the memory are tracking the same facts, the same bit of reality, through changing perspectives on that reality. It is as if we are keeping a moving object in view: the perspective on that object changes, but the object does not. We might also put the point in terms of truth-makers: what made the original experience veridical also makes true the later memory (Le Poidevin (2007), Chapter 4).

Now put these remarks on the epistemology of memory in the context of anti-realism about the past. The truth of the original experience belief is grounded in the evidence available at the time of that belief. But the memory belief is grounded, not in that evidence, but rather in the evidence available at the time of the memory, and this may be very different. Compare seeing the raging torrent of water causing havoc in village, with inspecting the remains of the devastation in the now dry village a week later. The two sets of grounds, one for the original experience and the other for the later memory, are quite separate, and indeed independent of each other. It now looks as if the experience and the memory are answerable to two independent sets of data. So what has become of the stepwise character of memory?

That, essentially, is Campbell's challenge to anti-realism about the past, for which the notion of evidence is key.⁷ What if we move to non-verificationist presentism, and the ontological thesis that the past is unreal? On this view⁸, the truth-makers of past-tensed beliefs are, insofar as they are concretely real, must be present facts, facts which do not necessarily have to be accessible as evidence. Again, it looks as if there is going to be a disparity between the two truth-makers. The truth-maker for the original experiential belief was a present fact (at the time of the experience). But by the time of the memory, that fact – for the presentist – has gone out of existence, and what provides the truth-maker for the memory belief is a fact that is now present. So, again, it seems that the two beliefs are answerable to different facts. We can no longer preserve the intuitive thought that memory and experience are tracking the same reality through changing perspectives. Instead, we have to say that they are tracking a changing reality.

But it might be said that, although the truth-makers for the experience and the truth-maker for the memory are indeed different facts, they are not independent facts, and this is a significant difference between presentism and anti-realism about the past. Recall that the presentist approach to the truth-makers of past-tensed beliefs can only guarantee a determinate truth-value for those beliefs by a commitment to determinism. So the two facts, one past, the other present, are bound together by a necessary connection. Past facts are no longer real, but that they once obtained is necessitated by present fact (given the laws of nature). However, the idea that the presentist really is binding together facts from different times is an illusory one. Rather, we have a connection between two propositions which are

⁷ See especially p. 239f of Campbell (1994).

⁸ Or at least, the version of it that we are now considering. See note 5.

true now, one a present-tensed statement concerning the present state of the universe, and one a past-tensed proposition concerning how things were.

Why is this not enough? Because of a further aspect of memory. We said that memory provides us with knowledge of the past. How does it do that? Not simply by providing true past-tensed beliefs. Those might turn out to be accidentally true. It also matters how the memory was acquired: its causal history. What we find in cases of genuine knowledge (or at least, of knowledge of concrete things, as opposed to mathematical or logical knowledge) is a close connection between the truth-makers of the knowledge belief and the causal story behind its acquisition. But, according to the presentist (at least in the version we have been considering), the truth-makers of the memory are in the present. But then they can be playing no part in the causal history of the memory. That story involves facts now past, and so no longer available as truth-makers.

Presentism is often put forward, with some justification, as the natural view of time, the one that we are drawn to before encountering the philosophical debates surrounding it. But once we put it in the context of temporal experience, and in particular what we understand about the structure of memory, it starts to look quite revisionary. It disrupts the connection between memory and the original experience that give rise to the memory. And the very notion of memory as having a causal history, one we want to appeal to in explaining how memory provides us with knowledge of the past, is thrown into confusion by presentism. For causation is, surely, a transtemporal relation: it spans times. Yet, on the presentist picture, there is only one time: the present. So there aren't enough relata for the causal relation to relate!⁹

⁹ For presentist responses to this challenge, see Bourne (2006), Chapter 4.

IV. What can memory tell us about the arrow of time? Remembering and the causal theory of time order

Along with the passage of time, and the (un)reality of the past, the fact that time appears to have a direction is one of the most-debated topics in the metaphysics of time. Even if we do not identify the direction of time with its passage, but take a strictly B-theoretic view, it would surely be a step too far to treat time as exactly akin to a spatial dimension. There is no intrinsic direction to space, only directions in space which we conventionally mark out. In contrast the difference between earlier and later is not, surely, a purely conventional one. But what is it that grounds the direction, or ‘arrow’ of time?

A popular, but decidedly unsatisfactory account is in terms of entropy. According to the Second Law of Thermodynamics, energy becomes increasingly degraded over time. That is, it tends to become less organised, and more dissipated in the form of heat. ‘Entropy’ is the name given to the degree to which energy has been degraded in this way. The more degraded and randomly distributed, the greater the entropy. Even though we may organise local packets of energy in order to do useful work (by winding up a clockwork mechanism, for example), thus bringing about a local decrease in entropy, we do so only at the cost of a global increase. Now we could say that the arrow of time consists precisely in the fact that entropy increases. But here we face a dilemma. If we say that entropy increases over time, we presuppose time’s direction, since ‘increases’ is a temporal term: the increase of entropy aligns itself in the earlier to later direction, not vice versa. So the increase in entropy does not explain time’s direction, but is just one more puzzling asymmetry to explain. We could get around that problem by defining the earlier-to-later direction in terms of entropy: a time is later than another by virtue of the fact that entropy is greater at that time. But now we risk saying something that is just false, for we now rule out by fiat the possibility of global

entropy decreasing, however briefly. Insofar as the Second Law of Thermodynamics is to do with the statistical probability of energy distributions, however, such a global decrease in entropy, though perhaps vanishingly unlikely, is not actually impossible.

If we are to attempt to reduce the direction of time to some other direction, then a more promising candidate is the direction of causality, that is, the direction from causes to effects. Let us for the time being work with the simplest version of this theory: x is earlier than y if and only if x is a cause of y. Causally unrelated items are therefore also temporally unrelated. That will no doubt seem far too strong a commitment, but for now let us see how this account of time's arrow fits with some fairly basic aspects of memory.

As we have already said, memory provides us (or can provide us) with knowledge of the past. Moreover, in the case of episodic memory, it provides us with singular knowledge of the past: that is, it enables us to have a singular thought about a particular past experience we had. You may remember, for example, not simply that you once visited St Paul's Cathedral, but also remember actually doing so, looking down Ludgate Hill at the enormous dome, perhaps also having an image in your mind at the time an image of the cathedral during the Blitz surrounded by smoke and flames. Finally, memory presents us with the past as the past: it represents its content as something that happened earlier than the present time. We have already noted the role memory plays in our awareness of succession, of one event succeeding another. And though we may be mistaken in the actual order of external events, we cannot similarly be mistaken when memory presents an experience of ours as earlier than the present memory of it. All this is fairly uncontroversial. But it still needs explaining.

What explains, then, the content of memory? What makes this memory a memory of that event? The most influential answer to this question has been a causal one: the original

event is the original cause of the memory (Martin and Deutscher (1962))¹⁰. And the causal connection is mediated by the original experience, which thus transmits its content to the memory. That the memory constitutes knowledge of the event is guaranteed (as we noted above) by the coincidence of cause and truth-maker, insofar as the event plays both roles. But what now of the fact that memory also provides us with knowledge that the experience is earlier than that memory? This is where the causal account of time order comes in. We have already appealed to a causal connection between experience (E) and memory (M) to explain their shared content. But now that very causal connection also guarantees the truth of the belief that E is earlier than M, and so once again we have the truth-maker for the belief that M succeeds E as part of the causal story behind the acquisition of that belief. So the belief that E is earlier than M is not only true, but also constitutes knowledge. Causal connections between event, experience and memory thus explain the salient features of episodic memory.

Two objections may be raised against this account. First, it might be suggested that we do not need anything as strong as a reductive theory of the ‘earlier than’ relation to guarantee the truth of the belief that experience precedes the memory of the experience. All we need is the fact that causes invariably precede their effects. But unless we opt for a reductive account, either from time to causation, or from causation to time, what guarantee is there that causes do invariably precede their effects? It looks just like a brute fact, and where we are compelled to accept some brute facts, the coincidence of time order with causal order does not look like one. But now (to develop the objection a little further), it might be asked why, if we have to opt for a reductive account, we should aim to reduce time to causation, rather than the other way around? It might, that is, be constitutive of the causal relation, that

¹⁰ For a detailed discussion of this classic paper, criticisms of the causal theory of memory, and how the causal theorist might respond to those criticisms, see Dorothea Debus’s contribution to this volume (Debus (2017)).

causes are the earlier relata.¹¹ But this is not the only asymmetry in causal relations. If it were, we would not suppose the asymmetry of causation to be particularly significant, but would take it simply as marking something like a grammatical distinction between ‘cause’ and ‘effect’. However, causes are supposed to explain their effects in a way in which effects do not explain their causes (Mellor (1995), p. 60)). Causes make their effects much more probable than effects make their causes. And, relatedly, effects are supposed to be counterfactually dependent on their causes, not the other way around. How could mere precedence explain those other asymmetries?

The other kind of objection to the account of memory offered above is that it is vulnerable (of course) to the various objections to the causal account of time order. To identify time order with causal order, as in the rather basic account offered above, is, it will be said, too strong, for (i) we can conceive of causally isolated systems which share a common time series; (ii) causation is a two-place relation, whereas temporal precedence is a three-place relation, the third relatum being the inertial frame, for (as the Special Theory of Relativity allegedly teaches us), whether one event is simultaneous with, or earlier than, another, is relative to inertial frame. Causality is not so relative, ergo they are different relations. QED. We can, however, accommodate both objections by a modification of the strong causal account: x is earlier than y if only if x is simultaneous with a cause of some event which is simultaneous with y . So x and y can stand in the relation of precedence even in the absence of a causal connection. The frame-relativity of simultaneity will then imply that some relations of precedence will vary from frame to frame. Some, but not all. For when x and y are causally related, then the fact that x precedes y is something that does not vary from

¹¹ For Hume, temporal priority is precisely what introduces the asymmetry in what would otherwise be a symmetric relation, the other key aspects of causality, on his account, being contiguity and constant conjunction. See Hume (1739-49/1978), p. 173.

frame to frame. We can thus define time order by means of causal order, without identifying time relations with causal relations. Perhaps something of the simplicity of the strong reduction is lost, but what is preserved is the insight that a world without causality is a world devoid of temporal direction.

V. A questionable model for memory?

The foregoing discussion has been an attempt to connect issues in the metaphysics of time with what was described as ‘widespread beliefs about remembering’. The beliefs in question were that our memories provide us with knowledge of our past, by preserving a reliable connection with that past, a connection constituted by causal links, both between the memory and the original experience that led to the memory, and between the experience and what the experience was of.

If we take that characterisation to be a statement of necessary conditions for something to count as remembering, it corresponds to the ‘epistemic theory of memory’: to remember at t_2 that p obtained at t_1 is to know that p obtained at t_1 because one knew at t_1 that p obtained then. But, influential though that theory has been, it is not, as Sven Bernecker ((2007), (2010) has shown, beyond criticism. Bernecker argues that there are counterexamples both to the present knowledge condition (that remembering that p entails that one now knows that p) and to the past knowledge condition (that remembering that p entails that one knew then that p). As a counterexample to the past knowledge condition: one might now remember seeing the Loch Ness Monster, even though at the time of the perception, one had good reasons (now discredited) for thinking that one was hallucinating. The past knowledge condition is not satisfied here because knowledge entails justification, and one was not justified in believing at the time that one was seeing the Loch Ness Monster. And as a counterexample to the present knowledge condition: one might remember that one’s

sister wore a blue blouse even though one now has evidence that the blouse was in fact green, undermining both justification and belief that one did in fact see a blue blouse.¹²

If, then, the epistemic theory of memory is vulnerable to objections such as these, does this not undermine the previous attempt to use features of memory to motivate certain views of time. Were we, after all, operating with a questionable model? The arguments canvassed in the previous sections, however, need not rest on anything as strong as the epistemic theory, which is intended as a conceptual analysis of memory. It can be conceded that not all cases of remembering constitute knowledge of the past, and that remembering does not entail having had past knowledge. It is, however, important, that paradigm cases of remembering exhibit the features identified above. Memory is at least capable of providing a reliable link to our experiential past, and where it does so, the reliability of that part of our present mental state that constitutes the memory (in distinction to any other beliefs we might have acquired by the time of the memory) inherits its reliability from that of the original experience. Nevertheless, by chipping away at the epistemic theory, the various objections to it might prompt a revisionary account of memory, leaving the door open for the possibility of jettisoning altogether the idea of memory as providing a means to preserve reliable connections with the past. And that radical step might be motivated further by a commitment to the metaphysical views of time targeted above, and perhaps in particular to those brands of the A-theory that posit the unreality of the past. Even the causal theory of memory has not been free from criticism (see, e.g., Squires (1969)). But the point of this discussion was not to offer knock-down arguments for theories of time, but rather to display the interesting ways in

¹² See Bernecker (2007), pp. 144-5, (2010), Chapter 3.

which they link with views on memory. Quite which dialectical direction one should move in when exploring them I leave to the reader.¹³

FURTHER READING

Connections between features of memory and debates over the nature of time are discussed in Campbell (1994) (specifically in relation to the reality of the past), Mellor (1998) (in relation to the direction of time) and Le Poidevin (2007) (in relation to the passage of time).

BIOGRAPHICAL NOTE

Robin Le Poidevin is Professor Metaphysics at the University of Leeds, where he has taught since 1989. His interests include the metaphysics of space and time, and their intersections with other areas of philosophy, in particular philosophy of mind, religion and aesthetics. He is the author of *Change, Cause and Contradiction* (1991), *Arguing for Atheism* (1996), *Travels in Four Dimensions* (2003), *The Images of Time* (2007), and *Agnosticism: A very Short Introduction* (2010). He is one of the co-editors of *The Routledge Companion to Metaphysics* (2009)

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