The philosopher, keen to his path, handed to the poet the task of bringing into being whatsoever meaning of eternity, after he had called eternity to reside in the temporality of time. The poet accordingly, observes eternity in that which is white. Thus, insofar as eternity is white, the poet, in his description of the whiteness of the clouds, observes that eternity is that which is eternal. And eternity is, in fact, the eternal state of change. This is the eternal change of the ever-changing forms of the white clouds, which seem to be like the work of art: like the poem or, equally, like a mural that is being unceasingly painted on the wall of the universe.

Then, (white) eternity is the eternal flux of being that has no finality. In this way, the work of art, or equally the mural on the wall of the universe, defeats death: *Mural* itself has been a dialogue with death seeking after the possibility of the eternity of the work of art.[12] And Darwish, the poet describing the whiteness of eternity, proclaimed himself Troy's poet: if Homer narrated the victory of the Greeks, Darwish saw himself as the poet narrating the forgotten voices of the defeated Trojans. At one and the same time, and as quoted here above, this poet is not the dictating subject: he becomes "living and free" once he himself becomes forgotten as "person and . . . text," for he is part of the way, or "for the way," interpreting and interpreted, following and being followed, in a future past:

A past tomorrow precedes me. I'm the king of the echo.
I have no throne but the margins. And the way
is the how. My predecessors might have forgotten to describe
something, in which I may awaken a memory and a sense.[13]

12 See Darwish, *Ǧidāriyah*, 29.

13 Darwish, *La ta'tathir 'amma fa'alt*, 72; also see note 6 above.

CHAPTER FIVE

Eternity in Twentieth-Century Analytic Philosophy

Kris McDaniel

What parts of reality enjoy eternity? Let us provisionally understand eternity in such a way that anything that is eternal is *atemporal*, that is, neither in time (and hence not in space-time) nor subject to temporal (or spatiotemporal) properties or relations. This provisional conception of eternity is merely negative: it tells us what eternal things are not like. But it is a conception that is consistent with the possibility that anything eternal has positive aspects that are ultimately responsible for its atemporality. This provisional conception of eternity is also partly stipulative, but of course it does capture one long-standing traditional use of the word.

That at least some entities enjoy eternality has come to enjoy widespread acceptance from contemporary analytic philosophers, who for the most part are happy to traffic in mathematical entities such as numbers or pure sets, propositions, properties construed "platonically,"

and possible worlds construed either as complexes of properties or propositions or as sui generis abstracta in their own right, as opposed to complex concrete particulars. Given this ontological menagerie it is hard to know where to begin. I'll focus on propositions.

One philosopher whose work anticipated contemporary views about propositions is Bernard Bolzano, who called his abstract and atemporal bearers of truth-value *sentences-in-themselves*.[1] Later philosophers, such as Lotze, Frege, and Husserl, would endorse similar doctrines, although none of these philosophers would comfortably describe these entities as being part of reality.[2] Most contemporary metaphysicians do not distinguish between what is a part of reality and what there is, but the conflation of these concepts is a relatively recent development. And though I am happy to distinguish these concepts and understand reality as a specific mode of being that not all of what there is partakes in, I won't fight this fight here. Let's focus on the question of what entities among all of what there is enjoy eternity, setting aside issues pertaining to their specific modes of being.

As noted, Bolzano, Frege, and Husserl each recognized a class of entities that we can reasonably call *propositions*. Propositions as understood by these philosophers are eternal, that is, atemporal, bearers of truth and falsity that are nonetheless often made true by how things are in space and time. (Lotze seemed to recognize entities that have

1 The source of Bolzano's doctrine is his *Wissenschaftlehre*, published in 1837; an English translation of large portions of this book is *Theory of Science*, trans. Jan Berg (Dordrecht: D. Reidel, 1973). Bolzano called propositions "sentences-in-themselves." Bolzano is explicit that we must not ascribe being to propositions.

2 Hermann Lotze, *Lotze's System of Philosophy, Part I: Logic*, trans. Bernard Bosanquet (Oxford: Clarendon Press, 1884), accepts (some) things that seem to have the structure of propositions, but they are ideal truths rather than parts of reality. Husserl, *Logical Investigations*, though should include first name "Edmund" too (1900–1901), vols. 1 and 2, trans. J. N. Findlay (London: Routledge, 2001), is an important of proponent of propositions, who also hesitates to ascribe the same kind of being to them as to "concrete" things. Things are less clear with Frege: although he embraces propositions, which he calls *thoughts*, he denies of them not being or reality but rather *actuality*. Incidentally, my understanding is that it is unlikely that Frege directly read Bolzano's work, although it appears that Lotze did, and Frege was a student of Lotze; thanks to Sandra Lapointe for discussion here.

the structure of propositions—for example, his ideal laws—but it is not clear to me whether it is appropriate to attribute to him the doctrine that there are propositions, since it is unclear to me whether he accepts timeless entities that are false. It is also not clear whether it is right to think of these entities as something more like truth-makers rather than truth-bearers.) In addition, Bolzano, Frege, and Husserl each recognized a larger domain of timeless entities, called "ideas in themselves," "concepts," and "meanings," respectfully.[3] Each of these philosophers offered a variety of interesting arguments for embracing these ideal entities, but I will focus on only one of them, which I will call the argument from antipsychologism about logic. The gist of this argument is that since we cannot understand the discipline of logic as being a subdiscipline of psychology, the best account of the subject matter of logic construes it as being about the domain of ideal entities. More on this argument momentarily.

The interest in the eternal stemming from the philosophy of logic and language was prominent in the late nineteenth and early twentieth centuries. In the middle of the twentieth century there was a revival of systematic, speculative natural theology, which was (surprisingly enough) practiced by self-described analytic philosophers. And with the return of systematic, speculative natural theology, questions concerning whether there is an eternal God were once again attended to.[4]

3 These figures were not the only advocates of propositions or meanings, so understood. G. E. Moore, "The Nature of Judgment," *Mind* 8 (1899): 176–193, is also an important and influential advocate of propositions, and Alexius Meinong, "The Theory of Objects" (1904), trans. Isaac Levi, D.B. Terrell, and Roderick Chisholm, in *Realism and the Background of Phenomenology*, ed. Roderick Chisholm (Glencoe, IL: Free Press, 1960), recognizes a species of proposition-like entities that he calls *objectives*. And of course, the importance of Russell cannot be overstated; see David Goddin and Nicholas Griffin, "Psychologism and the Development of Russell's Account of Propositions," *History and Philosophy of Logic* 30 (2009): 171–186, for an overview of the development of Russell's views on propositions and how they connect up with issues concerning psychologism.

4 Recall that eternity is here is construed as atemporality—and the claim that a thing is eternal by itself leaves open other interesting metaphysical questions about the thing itself. So saying that, e.g., both propositions and a divine being are eternal does not commit one to saying that propositions and God have the same mode of being, or are both abstract entities, and so forth.

Perhaps the most exciting thesis is that *everything enjoys eternity*. The possibility that this is true has intrigued philosophers in every epoch, and the twentieth century is perhaps exceptional only in that during that time this conclusion was pursued more rigorously than ever before. At the end of the nineteenth century and through the beginning of the twentieth, many attempts were made to demonstrate by means of speculative metaphysics that time is a mere appearance. The most famous of these purported demonstrations is McTaggart's argument for the unreality of time. Although this argument is not widely viewed as successful, it did set the agenda for analytic philosophers pursuing the philosophy of time in the second half of the twentieth century.

Complementing the arguments of speculative metaphysics are the arguments of speculative philosophy of physics. The theory of special relativity appeared to many philosophers to show that temporality per se was not metaphysically fundamental but should instead be seen as an aspect of spatiotemporality. Of course the demotion of time to an aspect of space-time does not by itself imply that the things previously thought to be in time are in fact atemporal. But it does force us to rethink any ontological theory that trades on a sharp separation of spatial and temporal features. For example, certain "Cartesian" views of the nature of mental substances on which mental substances enjoy temporal properties but no spatial properties seem harder to sustain. On a standard interpretation of special relativity, nothing perfectly matches our ordinary conception of time, since there is no well-defined relation of simultaneity. But there is a well-defined relation of simultaneity relative to a reference frame, which can be used to define up the notion of a time relative to a reference frame: say that a time relative to F is a maximal class of space-time points that are pair-wise simultaneous to each other relative to F; being at a time relative to F consists of partially occupying one of these space-time points. And we can define up a notion of a region of space relative to a time relative to a frame as well: a region of space relative to a time t relative to a frame F is any subset of t relative to F; partially occupying a region of space (relative to a time relative to a frame) consists in occupying one of the members of the relevant subset in question. An upshot of these definitions is that anything in time must be in space. If being immaterial implies being nonspatial, then anything immaterial is thereby eternal.

Although this conclusion is interesting, it only takes us so far. Arguments from physics for the unreality of time were to come. Kurt Gödel argued for the unreality of time by appeal to considerations stemming from the theory of general relativity (rather than special relativity), although he was familiar with and probably influenced by the arguments of McTaggart. And more recently some physicists and philosophers of physics have entertained the hypothesis that spatiotemporality is itself a derivative feature that emerges from a more fundamental nonspatiotemporal framework.

My plan accordingly is as follows. In section 1 of this chapter, I will discuss in more detail arguments for the eternality of some entities, specifically focusing first on the case for ideal meanings, including propositions, and then turning to questions concerning the purported eternity of God. In section 2, I will first critically discuss some of the arguments of speculative metaphysics for the unreality of time, and I will follow this discussion by tracing some of the highlights of twentieth-century philosophy of time. I will then turn to a discussion of the hypothesis of speculative philosophy of physics that space-time derives from a more fundamental basis. This hypothesis has received comparatively little attention from metaphysicians, despite the tempting prospects for speculation it invites. Accordingly, I will discuss how the truth of this hypothesis would impact various other disputes in metaphysics, including disputes about what it is to be an abstract rather than a concrete object, the nature of material composition, and the relationship between necessity and eternity.

1 Are Some Things Eternal?
Antipsychologism in Logic

Although a number of philosophers fought against doctrines under the label of "psychologism," for the sake of space I will focus on just one of them, specifically, Edmund Husserl.[5] In 1900 and 1901, Husserl published volumes 1 and 2 of his *Logical Investigations*, which is one of the founding texts in the phenomenological tradition. It is also an excellent work of philosophy, in which the following topics (and many more) are explored in great detail: the metaphysics and epistemology of logic, the analytic/synthetic distinction, the nature of a priori knowledge, abstraction and the metaphysics of properties, the logic of parts and wholes, and puzzles and paradoxes of intentionality. But since my concern here is with that which is eternal in the Husserlian texts, I will focus on Husserl's antipsychologism in logic.

"Psychologism," like "empiricism," "rationalism," "neo-Kantianism," is really a name for a general class of doctrines that bear some family resemblances to each other. For this reason, it is not always clear which particular version of psychologism is being targeted when a historical figure argues against it (or, for that matter, in favor of it). In Husserl's case, the primary target seems to be the view that logic is properly construed as a subdiscipline of psychology, and more specifically as a subdiscipline devoted to normatively evaluating the mental states and processes, primarily judgments and inferences, that are the province of the other subdisciplines of psychology. Husserl's argumentative strategy is to provisionally concede that logic is a normative science concerned with evaluating mental states and processes but then to argue that (1) all normative sciences have as their foundation some nonnormative, that is, theoretical, science, and (2) the theoretical foundation

5 For an extensive discussion of the many varieties of psychologism and antipsychologism, see Martin Kusch, *Psychologism: A Case Study in the Sociology of Philosophical Knowledge* (London: Routledge, 1995).

of the normative science of logic is not psychology but rather a discipline Husserl calls *pure logic*. Pure logic is the discipline that studies the necessary connections between an ideal realm of meanings, specifically propositions and their component parts. On Husserl's view, the normative science of logic does not rest on the findings of empirical psychology, for if it did, the claims of logic would be empirical rather than a priori, merely credibly believed rather than certainly known, and perhaps true only for human cognizers rather than just plain true. The normative science of logic rests instead on pure logic, which is an a priori science that is based on epistemically certain insight into a realm of meanings and that concerns itself with relations of consequence obtaining between these meanings. On Husserl's view, an inference understood as a concrete mental process that begins with judgments and ends with a judgment is a good inference just in case the proposition that is the content of the final judgment stands in appropriate atemporal relations of logical support by the propositions that are the contents of the initial judgments. In general, the evaluations of mental processes produced by the normative discipline of logic are parasitic on the relations between atemporal meanings.[6]

Husserl was not the first to find solace from psychologism in the realm of the eternal; Frege also argued that the province of logic is a third realm of entities he called thoughts and concepts. And, as noted earlier, both Frege and Husserl were anticipated by Bolzano and, to a lesser extent, Lotze.[7] But Husserl's critique of psychologism seemed

6 In addition to pure logic, Husserl also recognized a second a priori discipline called *pure ontology*, which studies the formal relations between categories of objects such as states of affairs, properties, relations, substances, and so forth. In fact, sometimes Husserl seems to conceive of pure logic as encompassing pure ontology and pure (propositional) logic.

7 One central text is *Lotze's System of Philosophy, Part I: Logic*. There is substantial controversy about the extent of Lotze's influence on Frege and the extent to which Frege's views on thoughts stem from positions of Lotze. Good starting points on these issues include Michael Dummett, *The Interpretation of Frege's Philosophy* (Cambridge, MA: Harvard University Press, 1981), and Hans Sluga, *Gottlob Frege* (London: Routledge, 1980).

to play a larger role in carrying the day, although of course there were sociological factors in play as well.[8]

Temporalism about Propositions

One might well accept the arguments against psychologism in logic and, as a result, embrace an ontology that includes propositions as mind-independent representational entities. But what is the motivation for holding that propositions are eternal entities as opposed to entities that are located in times? Is there work in the philosophy of logic that eternal propositions are more suited to perform than propositions in time? Or are there direct arguments for the timelessness of propositions?

It is difficult to distill clear answers to these questions from the works of these authors, which are in other respects remarkably clear. In Bolzano, it is clear that he does not wish to say that his sentences-in-themselves exist in the same way that ordinary concrete objects—in fact he goes further and denies that these sentences-in-themselves exist in any way whatsoever.[9] Perhaps for Bolzano being in time is sufficient for existing in some way. I detect in Husserl similar motivations; he does not wish to affirm the *reality* of the ideal, although he is committed to there being ideal entities. Moreover, Husserl is explicit that being temporal is a sufficient condition for being *real*, a mode of being that not everything shares.[10] As far as I can tell, then, their motivation for ascribing eternality to propositions, rather than omnitemporality, stems not ultimately from considerations having to do with psychologism in logic but rather from an inclination to affirm the being of propositions while denying that they have the mode of being that things like us and our surroundings enjoy.

8 For a lengthy discussion of the various philosophical and sociological factors involved in the controversy of psychologism, see Kusch, *Psychologism*.

9 Although of course on his view there are such entities as sentences-in-themselves, i.e., propositions.

10 See, for example, *Logical Investigations*, vol. 2, 351.

With respect to Frege, this motivation seems less prominent. Frege does deny that thoughts are real in the way that things are real, and he contrasts timeless thoughts with changeable things.[11] But what seems to be of central importance to Frege is not that thoughts are eternal but that their intrinsic representational properties are essential and unchangeable, and that thoughts cannot *cease* to exist. I read in Frege no deep inclination to deny that an omnitemporal being could have this kind of unchangeable and essential intrinsic nature.

Perhaps the reasons for ascribing eternity to propositions are relatively weak. Perhaps propositions needn't be timeless to be mind-independent bearers of truth and falsity. It is worth contemplating, however, whether propositions must be *necessary beings*, that is, existing in all possible worlds, in order to be suitable objects for a science of logic. And if so it is worth contemplating whether being in time is sufficient for being a contingently existing being. (Being at only some times rather than all times seems sufficient for being contingently existing beings, but it is far from clear that an omnitemporal being must be contingent.)

It is also worth contemplating whether there are positive arguments for the temporality of propositions. Some sentences are now true that once were false: "You are reading this paragraph" is now true, but it once was false. (Unless your reading habits are remarkably strange, this should strike you as a plausible example of a sentence whose truth-value changes over time.) What should we say about how propositions relate to sentences whose truth-value can change at different times? One might claim that a sentence changes truth-value from one time to another because that sentence expresses a different proposition from one time to another, while these propositions themselves do not change their truth-values. This is the position that Frege and Husserl endorse, and perhaps Bolzano as well.[12] And for what it is worth, it

11 Frege, "The Thought: A Logical Inquiry," *Mind* 65 (1956), 311.

12 See Frege, "The Thought," 309–310; Bolzano (1973), sec. 25; and Investigation 1 of vol. 2 of Husserl's *Logical Investigations*.

seems that this view is the dominant view among those who consider the question.

The alternative view is that a sentence changing truth-value from one time to another does so because the sentence expresses the same proposition at these different times and the truth-value of this proposition itself changes from one time to another. Would this view support the claim that propositions are temporally located? After all, they're truth-values, so mustn't they be in the times at which these changes in truth-value "occur"?

Not obviously. If a sentence like "Kris is eating a cookie right now" expresses a proposition that is true at some times and false at others, what should we say about "I am eating a cookie at 3:56 p.m. on July 10, 2012"? When uttered by some people, this sentence expresses a truth; when uttered by others it expresses a falsehood. Should we say that this sentence expresses a single proposition that is true at some persons but false at others? Should we then also say that this proposition is "in" persons or that it has some sort of spatial location? (Is it wherever it is true?) In general, even if we grant that truth-values of propositions can change at different indices, such as times, persons, locations, worlds, or whatnot, it is not obvious that we should grant the further step that the propositions in question are *located* at those indices, or even located at all.

Obviously, systematically examining the arguments for and against the eternity of propositions is a task too large to undertake here. I will now turn to another strand of eternity in twentieth-century analytic philosophy.

Eternity in Analytic Theology

Long thought dead and buried, rigorous systematic philosophy of religion enjoyed a resurrection (or perhaps a reincarnation) in twentieth-century analytic philosophy. Whether they deserve praise or blame is perhaps a matter of contention, but no one can argue with the claim that the bulk of responsibility for revitalizing the field falls on theistic

philosophers such as William Alston and Alvin Plantinga. And with the return of rigorous, systematic philosophy of religion, a return to old concerns about the divine attributes was inevitable. What is germane to my purposes is the renewed attention to the question of how God relates to time.

God must not be limited by time in the way God's creatures are, that is by having temporal boundaries. I am an example of a temporally limited creature; I came into existence in 1976 and will go out of existence sometime around 2076. These years enclose my temporal boundaries. But is God unlimited by time by occupying every time, that is, by being omnitemporal? Or is God unlimited by time by virtue of being outside time altogether, that is, by being eternal in the sense used at the start of this chapter?

Or is there a third possibility for how God could be unlimited by time? One of the interesting conceptual developments is the idea of ET-simultaneity, which was developed by Eleanor Stump and Norman Kretzman.[13] The fundamental idea is that God is simultaneous with everything that is temporal even though not everything temporal is simultaneous with everything else that is temporal. On the face of it, the fundamental idea represents a distinctive way in which God might be unbounded by time; but on the face of it, the fundamental idea seems incoherent. If God is somehow simultaneous with me, and God is somehow simultaneous with Julius Caesar, how is it that I and Julius Caesar fail to be simultaneous with each other? In short, isn't simultaneity a transitive relation?

Stump and Kretzmann argue that, given what we know about simultaneity from modern physics, namely that it is not even a two-place relation but is relative to a frame of reference, we should be cautious in assuming the incoherence of the fundamental idea. Moreover, two things might be simultaneous at one frame of reference but not

13 Eleanor Stump and Norman Kretzman, "Eternity," *Journal of Philosophy* 58 (1981): 429–458.

simultaneous at a different frame of reference. Stump and Kretzmann further develop it by introducing the notion of a divine "frame of reference" and the notion of ET-simultaneity; at the divine frame of reference, everything is simultaneous with God; this is ET-simultaneity. But at "ordinary" frames of reference, it is not the case that everything is simultaneous with everything else. Our intuition that I am not simultaneous with Julius Caesar is mollified on this view by making it clear that there is no ordinary reference frame at which Julius Caesar and I are copresent.

Whether Stump and Kretzmann's fundamental idea helps make sense of how God can be unlimited by time but still be a casually productive agent remains to be seen; but we shouldn't doubt that Stump and Kretzmann have articulated an interesting new way in which that which has been thought to be eternal can nonetheless relate to what is in time.

2 Is Everything Eternal?

I've examined some reasons to think that some objects are eternal. I will now turn to arguments for eternality of all things. As I mentioned in the introduction, I will examine two kinds of arguments: arguments from speculative metaphysics and arguments from speculative physics. I begin with the former.

Arguments from Speculative Metaphysics for the Unreality of Time

McTaggart was not the only philosopher of his period to argue for the unreality of time. Figures such as F. H. Bradley, who was perhaps the dominant mind of his generation, also argued against the reality of time, yet it is McTaggart's arguments that have commanded and continue to command the most attention. Before turning to the details of McTaggart's arguments, it is worth considering why this is the case.

I will briefly examine the case made by Bradley against the reality of time, which appears in chapter 4 of his masterwork *Appearance and Reality* and occupies a sum total of three and a half pages.

The first argument poses a dilemma: either time is a relation between durationless units, or it is not. If it is a relation between durationless units, then the whole of time is without duration—for how can something made wholly out of things with no duration have itself a duration? But if time is not a relation between durationless units, then it must be a relation between units with duration. But the notion of units with a duration is, according to Bradley, inconsistent. Reading between the lines here is tricky, but the idea behind this claim seems to be this: if the units themselves have duration, then something must unify them—and what could this thing be besides time itself? And so time itself "resolves" into nothing more than a relation between things that in turn require time to relate and so on without end. And this, according to Bradley, is impossible.[14]

Bradley seems to think that this first argument turns on conceiving of time as being analogous to space, and accordingly turns to an argument that purports to be independent of such a conception. So we should focus only on time as it is presented, which requires that we not consider more than the time that is now. Either the time that is now is simple and indivisible, or it is complex. It can't be simple, though, because time exists only if there are relations of before and after, so the time that is now must contain parts so related in order to even be time. But as soon as we concede that the time that is now has parts related by relations of before and after, the worries generated by the first argument arise here again.

Some things are worth noting about Bradley's arguments. First, like McTaggart's, they are ultimately detachable from the particularities of the metaphysical systems that their proponents defend. It

14 A similar argument can be found in a highly condensed form in Bradley, *Collected Works of F. H. Bradley*, 12 vols. (Bristol: Thoemmes Press, 1999), vol. 3, 109.

is actually surprising that Bradley's arguments for the unreality of relations and for the incoherence of the notion of inherence play so little of a role in chapter 4, given that these arguments first appear in the chapter immediately prior. (Bradley could have written off space and time understood as systems of relations or qualities as a mere corollary to chapter 3, and such a move is hinted at in chapter 3.)[15] So Bradley's arguments have interest independent of his other metaphysical commitments.

Now it is true that Bradley's other metaphysical commitments do seem to mollify the conclusion of these arguments, namely that the Absolute is nontemporal and that time is not real but rather mere appearance. For, nonetheless, Bradley says that time exists, although I take him to be saying that time exists *as an appearance*.[16] And since Bradley accepted degrees of truth, it was open for him to say that it is to some degree true that things are temporal. This muddies the waters; McTaggart on the other hand accepted neither degrees of truth nor degrees of reality, so the conclusion he offered is apt to seem clearer to contemporary analytic metaphysicians: on McTaggart's view, it is just flat-out false that things are temporal. McTaggart's view that objects apparently ordered by a temporal series really are ordered by some other series that in some way gives rise to the illusion that objects are temporally ordered in no way leads him to hold that it is true to any degree that things are temporal.

Perhaps this muddying of the waters is one reason why Bradley's arguments against the reality of time did not receive the scrutiny they deserved. An illustration of the tendency to spend more time on the conclusion rather than argument for it is Moore's lecture "Is Time Real?," which was delivered sometime during the winter session of

15 F. H. Bradley, *Appearance and Reality* (1893), 9th ed. (Oxford: Oxford University Press, 1930), 29.

16 Bradley, *Appearance and Reality*, 191.

1910–1911 and printed in *Some Main Problems of Philosophy* roughly four decades later. The vast majority of the lecture is spent on determining what Bradley is up to by saying that time is unreal yet exists, but nowhere in this lecture does Moore address the reasoning that led Bradley to this conclusion.

Bradley's arguments do not lack intrinsic interest either. I find the second argument to be pregnant with potential. Bradley, like McTaggart, accepted that time exists only if time passes. For example, Bradley complained that Russell's view of time as a (merely) objective ordering is not adequate because it does not account for the flow of time.[17] And if we accept that time passes only if there is a metaphysically distinguished part of time that is present, then something a lot like Bradley's second argument is compelling. Call *presentism* the view that that presently existing entities are the only entities that there are. On the presentist view, the present is metaphysically distinguished by way of being ontologically distinguished; note that it does seem to be a presupposition of Bradley's second argument that time is real only if presentism is true. Now either the time that is present is temporally extended or it is not. If it is not, then time is not real, since nothing bears the temporally before or temporally after relations to anything. If it is extended, then there are present parts of time that are not simultaneous with each other. But this seems impossible as well. So presentism must be false. Since time is real only if presentism is true, then time is unreal.

The argument I've just presented is definitely inspired by Bradley's second argument; in fact, I'd say it is basically his argument presented in a cleaned-up and streamlined way. And by my lights, regardless of whether it is ultimately successful, it is of as much intrinsic interest as McTaggart's more famous argument against the reality of time.

17 *Collected Works of F. H. Bradley*, vol. 4.

In this context, let me also note that Bradley anticipates the idea that the directionality of time is subjective.[18] Here is Bradley on the subject:

> For the direction, and the distinction between past and future, entirely depends on *our* experience. . . . But, if this is so, then direction is relative to *our* world. . . . For let us suppose, first, that there are beings who can come in contact in no way with that world which we experience. . . . And let us suppose next, that in the Absolute the direction of these lives runs opposite to our own. I ask again, is such an idea either meaningless or untenable? Of course, *if* in any way *I* could experience *their* world, I should fail to understand it. Death would come before birth, the blow would follow the wound, and all must be seem irrational. It would seem to me so, but its inconsistency would not exist except for my partial experience.[19]

This thesis of Bradley is also of intrinsic interest and is assessable even when one abstracts from the particularities of Bradley's larger metaphysical system. Bradley's interesting challenges to what were the dominant views about space and time have mostly been forgotten.

Let's turn now to a discussion of McTaggart's argument, which has many complex layers despite the apparent ease in which it can be initially summarized.[20] According to McTaggart, time is real only if there is genuine change in time as opposed to mere change of events in time. Events are located in time; most, perhaps all, have temporal extent, and so have temporal boundaries, roughly when they begin and end.

18 This view was later made prominent by Adolf Grunbaum, *Philosophical Problems of Space and Time* (New York: Knopf, 1963), 324–326; Grunbaum does not discuss Bradley, probably because Bradley's views on space and time were not seriously discussed by many philosophers at all during the time this book was published.

19 Bradley, *Appearance and Reality*, 189–190.

20 See my entry on McTaggart in the *Stanford Encyclopedia of Philosophy*, winter 2013 ed. Edward N. Zalta, http://plato.stanford.edu/archives/win2013/entries/mctaggart/, for more detailed background on McTaggart's views on time and eternity.

A change of events happens in an interval of time D just in case some event E either begins or ends at some part of D. But a mere change of events in time is not the same thing, according to McTaggart, as a change in time itself. Consider an event that begins in 1907 and ends in 1908. It will always be the case that this event begins in 1907 and ends in 1908, and it was always the case that this event has the temporal boundaries that it has. Moreover, this event bears temporal relations to other events; it is, for example, before McTaggart's death, and it is after McTaggart's birth, and moreover, it is always the case that these temporal relations obtain. It never will be the case that McTaggart's death comes before McTaggart's birth, and it will always be the case that E occurs between them. The existence of sequence of differentiated events in time does not suffice for real change in time.

There is real change in time just in case there is some feature F, had either by events in time, or by parts of time itself, such that although right now some time has this feature, it wasn't always the case that it had it, and it won't be the case that it has it. This condition is satisfied if there is a property of being present that is always had by one time and no others, but which time has the property of being present changes. Let's focus on this way of implementing the idea that there is real change in time.

According to McTaggart, real change in time is impossible. On McTaggart's view, were time to exist, it would have the following features. First, time, whatever its exact ontological constitution, would have something like parts—call them *times*—and each time would be as real as the others. (It might be that each time is identified with the sum total of what exists at that time, or it might be that times are sui generis entities. As far as I can tell, nothing in McTaggart's argument turns on this.) In McTaggart's argument against the reality of time, unlike in Bradley's, nothing like presentism is presupposed. These times are available to be quantified over, and we can attribute properties to them. The property of being present is supposed to be a property that some time simply has and other times simply lack. But there is

one core commonality, namely that time is real only if time genuinely passes.

How then does McTaggart derive the claim that real change in time is impossible? It would be extraordinarily tedious to go through the myriad different interpretations of this part of his argument, so instead I will offer a quick gloss. First, put yourself in the position of someone in 1908 who thinks of her time as being present and our time as future. Surely 1908 is present, at least to her. Next, put yourself in the position of someone in 2208 who thinks of his time as being present and our time as past. Surely 2208 is present, at least to him. But if being present is a property that some times simply have—rather than, say a relation that a time can bear to an intelligent being who is located at that time—then it can't be that all of these times are present, for then they would each be past and future as well, and nothing can have all three of these incompatible temporal determinations. We can't deny that the determinations are incompatible without eliminating their use as agents of real change in time: if all three determinations are compatible, then every time has them—save perhaps the first and last time, if any of those exist—and so there is no genuine change in time that is marked by their exemplification.

Since time exists only if there is real change in time, and real change in time is impossible, time does not exist.

This is McTaggart's argument in a nutshell. Why was McTaggart's argument so important to the development of philosophy of time in twentieth-century analytic philosophy, while Bradley's argument had substantially less impact? There is no way to decisively answer this question, but the following factors strike me as playing a large role. First, McTaggart's argument for the unreality of time was first published as a stand-alone article and only later revised and incorporated into a substantially larger work (specifically, the second volume of *The Nature of Existence*), while Bradley's arguments for the unreality of time in *Appearance and Reality* appeared first in that work, where they occupy a substantially smaller quantity of pages. Moreover, other

aspects of the book, such as the chapter immediately prior to it on relations and inherence themselves, were very influential. (A search on the *Philosophers Index* using the term "Bradley's regress" reveals a sizable and still growing secondary literature.)

Second, McTaggart enjoyed productive working relations throughout his career with many of the leading analytic philosophers of the early twentieth century, many of whom were affiliated with Cambridge University, where he worked to the end of his career. These philosophers of course included Russell and Moore, and Moore read through an entire draft of the first volume of *The Nature of Existence*, and so did well as C. D. Broad, who wrote a gigantic commentary on *The Nature of Existence*. It is fair to say that by the 1920s Bradley's shadow had already begun receding. On the other hand, by 1957, John Passmore would write that besides McTaggart no other contemporary philosopher had been commented on so extensively.[21] It also helped that McTaggart had as a champion a philosopher as influential as Peter Geach, whose father was a student of McTaggart and who exposed Geach to McTaggart at an early age.[22]

Finally, the project of dissecting McTaggart's argument proved fruitful. Through Russell, among others, it led to the development of an alternative theory of time as a manifold related by relations of before, simultaneous with, and after but in which the notions of past, present, and future were merely relative notions.[23] Sometimes this view is called "eternalism," since on it there is no change in time, and location of time is analogous to location in space: just as Syracuse, New York, is real although it is not here, so too Julius Caesar is real even though he is not now. On this view, the reality of time does not require the reality of passage or temporal becoming. Such a view of the nature of time immediately leads to interesting questions about how it is to be reconciled with our apparent perception of temporal

21 See John Passmore, *A Hundred Years of Philosophy* (London: Duckworth, 1957), 75.

22 See the preface to Peter Geach, *Truth, Love and Immortality: An Introduction to McTaggart's Philosophy* (Los Angeles: University of California Press), 1979).

23 Russell time and experience.

passage, our apparent possession of free agency, and our apparent possession of rational time-asymmetric preferences, such as our preferring that our pains be in the past rather than in the future. These projects of reconciliation are apt to generate a large secondary literature.

Various defenders of "absolute becoming," "real tense," and "genuine change in existence" collectively reacted to McTaggart's argument by developing a variety of distinctive and interesting ways in which these slogans could be cashed out. In addition to presentism, new views enjoyed prominence, such as C. D. Broad's growing block view, according to which (1) the present and the past are equally real while the future is unreal, (2) the universe can be conceptualized as a four-dimensional block in which the present corresponds to an outer surface, and (3) change in time consists of new layers being added to this block, embedding the moment that once was present in successively stacked slices of further reality.[24]

And one promising response to McTaggart's argument led to the development of tense logic. One might worry about McTaggart's treatment of phrases like "Queen Anne's death is past" as subject-predicate sentences in which the property of being past is attributed to the event of Queen Anne's death. But an alternative logical treatment is available, one that makes use of the idea that tenses are best represented by special sentential operators. Roughly, a sentential operator is a linguistic expression for which the operation of prefacing a grammatically complete sentence with it yields a more complex complete sentence. "It is not the case that" and "it is possible that" are sentence operators. On the alternative picture, we have (at least) three special operators, "it was the case that," "it is now that case that," and "it will be the case that." On this alternative view, "Queen Anne's death is past" is better represented as "It was the case that Queen Anne died."

24 See C. D. Broad, *Scientific Thought* (Paterson, NJ: Littlefield and Adams, 1959), chap. 2; Broad's book was originally published in 1923. It should be noted that, although Broad's formulation of the growing block view is clearer and more precise, an earlier formulation of it seems to appear in Arthur Lovejoy, "The Obsolescence of the Eternal," *Philosophical Review* 18 (1909), 482.

The idea that past, present, and future are incompatible determinations simply drops out from this picture, since there are no such determinations. Furthermore, on this kind of picture, it is metaphysically misleading to think of times as a manifold of entities related by relations of before and after: "it was the case that" is meant to be a primitive expression. We shouldn't, on this view, understand "It was the case that P" along the lines of "P is true at some time that is before now," where perhaps "now" simply indicates the time at which the utterance occurs. Rather, on this view, time is more like possibility than space—at least, time is more like possibility on a view in which talk of possible worlds is a mere figure of speech and modal claims are best expressed using primitive modal operators.[25]

3 Arguments from Speculative Physics

In 1949, a very interesting and very short article by Kurt Gödel was published in a volume in the *Library of Living Philosophers* series that focused on Albert Einstein. In this article, Gödel outlines an argument for the unreality of time that stems from considerations of the theory of general relativity. In this article, Gödel explicitly links his project to the speculative attempts of earlier philosophers and even cites McTaggart's 1908 article. For better or for worse, Gödel's argument against the reality of time does not seem to have captured the attention of philosophers in the same way McTaggart's argument has, a fact Yourgrau has noted with much regret, although in recent times interest in it has been revived.[26]

25 For a nice in-depth discussion of tense logic both as a semantic theory of tensed claims and as a metaphysical theory, see Ulrich Meyer, "Time and Modality," in *The Oxford Handbook of the Philosophy of Time*, ed. Craig Callender (Oxford: Oxford University Press, 2011), 91–121.

26 Palle Yourgrau, *A World without Time: The Forgotten Legacy of Gödel and Einstein* (New York: Basic Books, 2005). In addition to Yourgrau's work, see also Mauro Dorato, "On Becoming, Cosmic Time, and Rotating Universes," in *Time, Reality and Experience*, ed. Craig Callender (Cambridge: Cambridge University Press, 2002), 253–276, and Steven Savitt, "The Replacement of Time," *Australasian Journal of Philosophy* 72 (1994): 463–474.

Before formulating Gödel's argument, two preliminary remarks are in order. First, Gödel's way of presenting the argument suggests that he assumes that time exists only if presentism is true. (Recall that a similar assumption seemed to have been made by Bradley.) Gödel explicitly writes that time exists (at least in the ordinary sense of the word "time") if and only if there is what he calls "an objective lapse of time," and he also says that the essence of an objective lapse of time is "that only the present really exists."[27] Furthermore, there is an objective lapse of time only if reality consists in an infinite sequence of nows that come into existence successively.[28] But whether Gödel wants to firmly commit himself to the view that time exists only if presentism is true, he definitely commits himself to the logically weaker thesis that time exists only if some version of the A-theory of time is true.

Second, Gödel grants that one might employ an argument based only on considerations stemming from special relativity: if special relativity is true, there is no well-defined relation of absolute simultaneity. But if there is no well-defined relation of absolute simultaneity, then there is no well-defined notion of "the now," hence presentism must be false. This argument or ones essentially similar to it have been well discussed in the literature. But it is not one that Gödel here rests on; Gödel claims that the existence of matter and the curved spatiotemporal structure it induces could allow for the privileging of certain ways of partitioning space-time into "local times,"[29] although he also indicates difficulties with certain attempts to privilege specific partitions.

Here is a concise summary of Gödel's argument. First, there are possible worlds in which general relativity is true and in which space-time

27 Kurt Gödel, "A Remark About the Relationship Between Relativity Theory and Idealistic Philosophy," in *Albert Einstein: Philosopher-Scientist*, edited by Paul Schlipp, Open Court Publishing, 1970/1949, 562. Dorato, "On Becoming," 601–602, proposes an anodyne reading of Gödel according to which "the objective lapse of time . . . referred to by Goedel amounts to the rather nonmetaphysical, almost self-evident claim that if "event E occurs (or, equivalently, tensely exists) at time t', at a later or earlier time", other events occur (or exist)." It strikes me as very implausible that Gödel intended a claim as weak as this. Interestingly, Dorato does argue that even a claim as weak as this faces Gödel's argument.

28 Gödel, 558.

29 Gödel, 559.

contains a timelike path from a region in space-time that terminates back at that region. If one traveled from such a region in space-time along this path in one direction one would emerge at the same region where one began. (Initially, a world like this might seem to be a world in which time travel is possible, but whether time exists in these worlds is one of the things that is at issue.) Second, these worlds are in fact physically possible worlds, since these worlds have the same laws as the actual world. But, third, in such worlds, no dimension of space-time is a temporal dimension, since time exists only if there is genuine passage of time, and there cannot be genuine passage in such worlds. For time can genuinely pass only if there is a global partitioning of slices of space-time into times. But in space-times of the sort considered by Gödel, there is no such partition. In short, there is no time in these worlds. Fourth, if there is no time in these worlds, then there is no time in the actual world either. Conclusion: there is no time in the actual world.

Although the first conclusion was originally contested—see Yourgrau for a brief discussion[30]—my understanding is that it is now conceded that Gödel's first premise is correct. The second premise, however, should be more contentious, since it is not actually clear that these worlds have the same laws as the actual world. Gödel focuses only on solutions to equations relevant to general relativity, but general relativity is arguably inconsistent with quantum mechanics. And so the conjecture that general relativity is but a mere approximation to correct laws of the actual world is not implausible.[31] Nonetheless, I won't focus on the second premise; frankly, I'd be speaking out of school if I did. The third premise turns on the idea, stemming at least as far back as McTaggart, that time is real only if time genuinely passes. Since I've already examined that premise earlier, I won't revisit it here.

30 *A World without Time*, 119–121.

31 Jill North has suggested to me a second consideration against the second premise. Suppose that a possible world is physically possible only if it contains time, and that these "Gödel worlds" do not contain time. Then these Gödel worlds are not physically possible. That is, although the possibility of Gödel universes is in some sense a mathematical consequence of the laws of general relativity, this possibility is nonetheless not a physical possibility.

So I will turn to the fourth premise. Why should we accept it? Gödel is explicit that there is no contradiction to denying it, so why think we can move from claims about what is possible to what is actual? First note that there are similar arguments as precedents both in earlier debates about the nature of space and in current debates in metaphysics. Recall Newton's famous rotating bucket argument for the existence of absolute space. Consider the difference between a bucket of water at rest and one undergoing rotation. As the bucket is rotated, the surface of the water is disturbed and creeps up the bucket's interior. Only sometime after the bucket comes to a rest does the surface of the water became a flat plane once more. Imagine a possible world with the same laws as ours (a putatively physically possible world) in which only a bucket of water rigidly rotating exists. In such a world, there is no external system of material objects for the bucket to be rotating *relative to*, yet the effects of rotation will (allegedly) still be present. So what explains them? In that possible world, the entity responsible for the effects of rotation must be absolute space itself: the bucket rotates relative to some fixed parts of absolute space. So absolute space exists in that other world.[32]

What should we conclude about the actual world? If we rely on the following general principle, we conclude that absolute space exists in the actual world: the facts about the nature and existence of the structured entity or entities that are occupied by material objects do not vary across worlds that are physically possible relative to the actual world. Some principle of this sort seems to be playing a role in both Newton's and Gödel's respective arguments.[33]

It's not clear to me that we should accept such a principle. Perhaps the following consideration tells against it. I see no necessity in thinking that space-time must be topologically unified, so consider a possible world

32 For a somewhat different take on Newton's bucket, see Robin Le Poidevin, *Travels in Four Dimensions: The Enigmas of Space and Time* (Oxford: Oxford University Press, 2003), 46–50.

33 I am confident that the analogy between Newton and Gödel's arguments has been made elsewhere and hence that this discussion is probably not original to me, but I have been unable to locate a source in which this analogy is discussed.

that consists in two completely disconnected space-times.[34] For simplicity's sake, let's consider a possible world that consists of two disconnected duplicates of the actual universe. Offhand, it is not clear to me why we would be forced to say that this world is not physically possible: perhaps general relativity governs the interactions of objects in both universes in this other world, so it is correct to say that the laws are the same in both worlds. *If* this is correct, then the general principle is incorrect. And it might be obvious, but it is worth pointing out that Gödel does allow that different "spatiotemporal" structures are physically possible, so some variation in the nature of "the arena in which objects find themselves" is allowed across physically possible worlds.[35] If we are trying to formulate a principle that bridges physical possibility and actuality, we need to formulate it in such a way that the above considerations do not serve as counter-examples to it. This seems to me to be a difficult task.[36]

But perhaps this not the principle that motivates Gödel. He writes:

> The mere compatibility with the laws of nature of worlds in which there is no distinguished absolute time, and, therefore, no objective lapse of time can exist, throws some light on the meaning of time also in those worlds in which an absolute time *can* be defined. For if someone asserts that absolute time is lapsing, he accepts as a consequence that whether or not an objective lapse of time exists (i.e., whether or not a time in the ordinary sense of the word exists) depends on the particular way in which matter and its motion are arranged in the world. . . . a philosophical view leading to such consequences can hardly be considered satisfactory.[37]

34 See Phillip Bricker, "The Fabric of Space: Intrinsic vs. Extrinsic Distance Relations," *Midwest Studies in Philosophy* 18 (1993): 271–294.

35 Compare with Chris Smeenk Earman and Christian Wüthrich, "Time Travel and Time Machines," in Callender, *The Oxford Handbook of the Philosophy of Time*, 597.

36 Compare with John Earman *Bangs, Crunches, Whimpers, and Shrieks: Singularities and Acausalities in Relativistic Spacetime* (Oxford: Oxford University Press, 1995), 198).

37 Gödel, 562.

In light of what Gödel says above, perhaps he accepts the following rationale for why the absence of time in some physically possible worlds entails the absence of time in the actual world. First, if time exists in one world rather than the other, it is only by virtue of the difference of the distribution of matter across the respective spatiotemporal manifolds at those worlds. (One consequence of general relativity is that there is a correlation between spatiotemporal curvature and the distribution of mass across space-time.) But, second, wouldn't one have thought that whether a dimension of space-time is a temporal dimension is determined entirely by the intrinsic nature of space-time rather than by the way it is occupied by material objects? So the different distributions of matter in the merely possible space-time and the actual space-time can't account for whether time exists in the actual world. Since time is absent in the merely possible and nothing extra in the actual world could account for the presence of time, time is absent in the actual world as well.

This does not strike me as a compelling argument. First, there are very tricky questions we must ask ourselves about the nature of the dependence between space-time and its occupants: there is a correlation between physically possible space-time structures and physically possible distributions of matter. But does space-time have the structure it has *in virtue of* material objects possessing certain properties and standing in certain relations to each other? (I am asking a question here not about causal dependence but about a strong kind of modal or essential dependence, just as one is not concerned with causal dependence but rather a stronger form of dependence when one asks whether something is good in virtue of God's loving it or whether God loves something in virtue of its being good.) If space-time does have the structure it has in virtue of facts about material objects, the second claim in the above rationale looks shaky.

But if spatiotemporal structure is not metaphysically determined by facts about the occupants of space-time, the first claim in the above rationale is dubious as well. If spatiotemporal structure is not

metaphysically determined by facts about the occupants of space-time but is merely nomically (and so merely contingently) connected, then one could endorse the following package: there is a set S_1 of all the metaphysically possible worlds in which space-time has the structure that it has in one of Gödel's physically possible worlds and is completely empty of material objects; there is a set S_2 of metaphysically possible worlds in which space-time has the structure that it has in the actual world yet is completely empty of material objects; time exists in none of the worlds in S_1 in virtue of the intrinsic structure of space-time found in those worlds; time exists in all of the worlds in S_2 in virtue of the intrinsic structure of space-time found in those worlds. If this package of claims is correct, then the first claim in the reconstruction of Gödel's rationale is false.

There are many other ways to try to defend Gödel's claim that the lack of time in one of these physically possible worlds implies a lack of time in our own world. For example, Yourgrau and Savitt argue that inhabitants of a rotating universe world would have the same "experiences of temporal passage" that we have, yet time would not pass in those worlds, so we lack sufficient evidence to think that time passes in our world.[38] I confess to having inchoate worries about the style of argument this seems to exemplify: in an evil demon world we would have the same experiences of material objects that we in fact have, but this doesn't mean that we lack evidence for the existence of material objects. Does the fact that the relevant scenario is physically possible rather than merely metaphysically possible make a difference? Maybe. Perhaps a belief that P counts as knowledge only if the believer can rule out any *relevant* proposition that is logically inconsistent with it; perhaps being true in some physically possible world suffices for being a relevant proposition; but a proposition's merely being true in some metaphysically possible world does not suffice for

38 Palle Yourgrau, *A World without Time: the Forgotten Legacy of Goedel and Einstein*, (New York: Basic Book, 2005), 53; Savitt, "The Replacement of Time," 467–472.

it to be a relevant proposition. On this kind of epistemological view, we might be able to know that we have hands without being able to know that time is real.

One final attempt, and then I will move on. Some philosophers think that questions concerning the nature of time belong to a family of fundamental ontological questions such that answers to these questions are metaphysically necessary if true at all. Included in this family of questions are questions about the nature of possibility—are there really possible worlds or is talk of possible worlds merely a useful fiction?; questions about the structure of objects—are ordinary objects composites of form and matter, or complexes of substratum and attribute, or bundles of properties?; and questions about the nature of mathematics—are there Platonic mathematical objects or is some sort of "nominalism" correct? It is no surprise that philosophers who think that questions about the nature of time are like this have tended to be philosophers who believe in "objective lapsing of time." Perhaps Gödel thought it was part of the ordinary conception of time that questions about the nature of time cannot be merely contingent, so the question whether time passes cannot be merely contingent.[39] If so, then a proof of the physical possibility of worlds without time suffices for a proof for the nonexistence of time, since physical possibility suffices for metaphysical possibility.[40] But the *physical* possibility of these worlds is not an idle wheel, since one could quite reasonably hold that, in general, it is easier to acquire evidence for what is physically possible than for what is merely metaphysically possible but physically impossible. If Gödel had simply described a putatively merely metaphysically possible world in which space-time had an unusual structure, the dialectical and epistemological forces of his argument would have been much weaker.

39 This line of thought is suggested by Earman, *Bangs, Crunches, Whimpers, and Shrieks*, 197–199.

40 Steven Savitt, "The Replacement of Time," *Australasian Journal of Philosophy* 72 (1994): 466, suggests a related line of reasoning.

Gödel attempted to show that time was unreal by way of considerations from fundamental physics. More recently philosophers of physics have worried about the reality of time under the guise of what is called "the problem of time" in quantum gravity. This problem, as I dimly comprehend it, concerns the cancellations of any variable for temporal measurement in certain fundamental theories that attempt to reconcile quantum mechanics and general relativity.[41] If time is real, its reality is not explicitly expressed by these fundamental theories, which seems to suggest that time is merely an emergent feature of a manifold rather than a fundamental one. For example, Kiefer writes that "both the familiar time and its arrow can thus be understood from quantum gravity, which is fundamentally timeless."[42] But perhaps the nonfundamentality of time is not a radically new view, since it has an ancestor in the view that time is a mere aspect of space-time. So it is worth pointing out that some philosophers of physics have argued that spatiotemporality itself is nonfundamental. For example, Witten writes, "Contemporary developments in theoretical physics suggest that another revolution may be in progress, through which a new source of 'fuzziness' may enter physics, and space-time itself may be interpreted as an approximate, derived concept."[43]

Given that whether spatiotemporality is fundamental is currently a live issue, it's worth pausing to ask whether Gödel's argument could be modified. The basic idea is that a manifold counts as a spatiotemporal manifold only if certain constraints are met by it, one of which is that

41 A number of papers in Craig Callender and Nick Huggett, *Physics Meets Philosophy at the Planck Scale: Contemporary Theories in Quantum Gravity* (Cambridge: Cambridge University Press, 2001), discuss this issue. See also Claus Kiefer, "Time in Quantum Gravity," in Callender, *The Oxford Handbook of the Philosophy of Time*, 663–678.

42 Kiefer, 2011), 678.

43 Edward Witten, "Reflections on the Fate of Spacetime," in Callender and Huggett, *Physics Meets Philosophy at the Planck Scale*, 125. The idea that space and time might be real without being fundamental is of course not a new idea; for example, Bernardino Bosenquet, "The Impossibility of Creation from Eternity According to St Bonaventure," *Proceedings of the American Catholic Philosophical Association* 48 (1974): 121–135, endorses it. But that this possibility is now seriously entertained by philosophers of physics is part of an exciting new phase of the exploration of this idea.

there is some aspect to that manifold that can be at least roughly in the neighborhood of what we conceptualize as being temporal. But it is a contingent matter whether this constraint is met, and possible worlds containing manifolds with strange enough structures are not worlds in which the constraint is met. So being spatiotemporal is an emergent, contingent feature of a manifold and not a fundamental one.

If it is a central part of our concepts of space and time that they are metaphysically fundamental phenomena, then the conclusion that space-time is an emergent, nonfundamental aspect of the manifold suffices to show that there is no time. But frankly I doubt that it is a part of our concepts of space and time that they are fundamental; there might nonetheless be interesting philosophical conclusions to learn about them. (It is obviously a central part of the A-theory of time, for example, that time is not a mere aspect of the spatiotemporal manifold.)

There are a number ways space-time could fail to be fundamental. But I'll focus on the following possibility, which I will put in more metaphysical terms. It might be that being spatiotemporal is a complex and *extrinsic* property of things that are "smaller" than the universe. In order for me, for example, to enjoy spatiotemporality, I must be a part of something that contains me that has the emergent property of being spatiotemporal. Only the universe as a whole is a candidate for having any kind of intrinsic (yet nonfundamental) spatiotemporality. Arguments that then turn on the intuition that spatiotemporal features such as shape are intrinsic would be in trouble. For example, David Lewis objects to one popular view about how material objects persist through space-time by appealing to the idea that shape properties are intrinsic; this is the kind of argument that would be deeply problematized.[44] Briefly, Lewis's argument is as follows: things either persist through time by having temporal parts at each time they exist

44 David Lewis, *On the Plurality of Worlds*, (Basil: Blackwell Ltd., 1986), 204.

at or by being wholly present at each time they exist at. If something is wholly present at times t1 and t2 (or at space-time regions R1 and R2) and changes its shape from t1 to t2, then strictly the shapes it successively enjoys are not intrinsic properties but are something like relations to times (or space-time regions). But, according to Lewis, shape properties are intrinsic properties rather than relations to times (or space-time regions). So things that persist by being wholly present cannot undergo intrinsic change. But ordinary things do undergo intrinsic change as they persist through time. So ordinary objects have temporal parts. This interesting argument can be challenged in many ways, but for my purposes it suffices to say that the argument is completely undercut if shapes are extrinsic, nonfundamental features.

A second example: theories about the nature of parts and wholes that tie the possession of certain mereological features to the possession of certain spatiotemporal features would also be problematized. For example, Ned Markosian raises what he calls "The Simple Question," which asks for the necessary and sufficient conditions a thing must satisfy to be without proper parts and defends the claim that, at least for physical objects, this necessary and sufficient condition is being a maximally spatially continuous object.[45] But being maximally spatially continuous is a contingently possessed extrinsic property (if spatiotemporality is nonfundamental in the respect just mentioned) of the things that have it, whereas being without parts is an intrinsic property. So the latter cannot be necessarily equivalent with the former.[46]

A third example: if to be physical is to be spatiotemporal, then perhaps physical objects are only contingently physical. And if this is so, then, if to be abstract is to be nonspatiotemporal, physical objects

45 Ned Markosian, "Simples," *Australasian Journal of Philosophy* 76 (1998): 213–226.

46 The view that I prefer, according to which, roughly, there is no informative necessary and sufficient conditions for being a simple is not refuted by this possibility. See Kris McDaniel, "Brutal Simples," *Oxford Studies in Metaphysics* 3 (2007): 233–266, for an exposition and defense of this view.

could have been abstract objects. There is a worry that we will lose whatever grip we might have had on the concrete/abstract distinction if one consequence of spatiotemporality's being a nonfundamental and extrinsic feature is that nonspatiotemporality is also an accidental feature.

In general, we must be cautious, for any intuitive connections between spatiotemporality and modality are in danger of being severed if spatiotemporality is nonfundamental. We might have been inclined to explain or tie together the necessary existence of abstract objects such as numbers with their status as atemporal beings. Recall, for example, my earlier discussion about whether being a necessary being required being eternal. But on the hypothesis I am considering, some of the beings that are in fact spatiotemporal could have existed without being spatiotemporal, and some of these beings might still be good candidates for being contingently existing objects. Eternity on this view must not be taken as either a sufficient condition for or an indication of the enjoyment of necessary existence.

In short, the required changes to our worldview might be quite extreme. We should begin to consider the ramifications of space-time's being nonfundamental for our metaphysical inquiries. We might find them to be just as interesting as the consequences of older arguments for the unreality of time.

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Reflection

BORGES ON ETERNITY

William Egginton

Throughout his writing Borges gravitates again and again to the same paradox: we are ineluctably temporal, which is also the reason why we inevitably desire eternity; and dreams of eternity can only fail, condemned as we are to temporality. While this paradox is expressed in the very title of one of his collections, *The History of Eternity*, Borges's thoughts on both time and its negation are scattered throughout his work, even as they reflect a remarkable consistency

"The New Refutation of Time," published in 1952 as part of Borges's *Other Inquisitions,* consists of two versions of the essay: one published in 1944 and a more concise revision of that essay republished in 1946. In the second section of the original 1944 essay Borges recounts an anecdote conveying a mystical sense of pure repetition he experienced on returning to a village he had visiting during his childhood: "I write it, now, like this: That pure representation of homogeneous facts—night in serenity, limpid little wall, provincial odor of the deep jungle, fundamental earth—is not merely identical to that of this corner from so many years ago; it is, without similarities or repetitions, the same. Time, if we can intuit that identity, is a delusion: the indifference and inseparability of a moment from its apparent yesterday and