

Time and Personal Identity in Nietzsche's Theory of Eternal Recurrence

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Abstract

Friedrich Nietzsche's theory of eternal recurrence is an essential part of his mature philosophy, but the theory's metaphysical commitments and practical implications are both obscure. In this essay I consider only the metaphysical elements of the theory, with the aim of determining whether it is possible that we live our lives infinitely many times, as the theory maintains. I argue that the possibility of eternal recurrence turns on issues in personal identity and the metaphysics of time. As I proceed, I also consider the relation between Nietzsche's theory of eternal recurrence and theories of recurrence found in the work of Heraclitus, the Pythagoreans, and the Stoics.

Friedrich Nietzsche's infamous doctrine of eternal recurrence receives its clearest expression in *The Gay Science*.

The heaviest weight. – What if some day or night a demon were to steal into your loneliest loneliness and say to you: 'This life as you now live it and have lived it you will have to live once again and innumerable times again; and there will be nothing new in it, but every pain and every joy and every thought and sigh and everything unspeakably small or great in your life must return to you, all in the same succession and sequence—even this spider and this moonlight between the trees, and even this moment and I myself. The eternal hourglass of existence is turned over again and again, and you with it, speck of dust!' Would you not throw yourself down and gnash your teeth and curse the demon who spoke thus? Or have you once experienced a tremendous moment when you would have answered him: 'You are a god, and never have I heard anything more divine.' If this thought gained power over you, as you are it would transform and possibly crush you; the question in each and every thing, 'Do you want this again and innumerable times again?' would lie on your actions as the heaviest weight! Or how well disposed would you have to become to yourself and to life *to long for nothing more fervently* than for this ultimate eternal confirmation and seal? (GS 341)¹

According to the theory of eternal recurrence sketched by Nietzsche's demon, the world consists of a single series of events that is repeated infinitely many times. Because your life is a part of this series, the theory maintains, you will live your life infinitely many times.

Most of the questions to be asked concerning this passage can be sorted into three general categories. First, there are straightforwardly exegetical questions. We might wonder why the doctrine of eternal recurrence is introduced by a "demon," why the passage addresses the reader directly, and why there is talk of moonlight, spiders, sighs, and so on. Second, there are questions concerning the practical significance of eternal recurrence. Nietzsche says that eternal recurrence would be "the heaviest weight," and he describes just two reactions to the doctrine – either crushing anguish or a longing for recurrence. We find the same pair of reactions in *Thus Spoke Zarathustra*, in which Zarathustra is initially overpowered by an "abysmal thought" closely related to eternal recurrence (Z III:13) but later comes to love this vision of eternity (Z III:16). Since these

reactions probably do not fit your own, we might ask about Nietzsche's reasons for thinking that eternal recurrence has this practical importance. Third, there are questions concerning the theory of eternal recurrence itself. We might ask what exactly the theory maintains about the world, what evidence or argument Nietzsche offers in support of the theory, and whether it is even possibly true that we will live our lives infinitely many times.

I will focus on the third set of questions, which have recently returned to the forefront of Nietzsche scholarship thanks to studies by Paul Loeb (2010) and Robin Small (2010). My aim will be to locate Nietzsche's theory of eternal recurrence within ancient discussions of cosmological recurrence, to determine whether Nietzsche's theory could be true, and to outline what must be the case if it is to be true. As we will see, the possibility of eternal recurrence turns on issues in personal identity and the metaphysics of time. These issues are of historical and philosophical interest even if it turns out that the practical significance of eternal recurrence does not depend upon the truth or coherence of the theory.²

1. Recurrence Cosmology

Today the idea of eternal recurrence is closely identified with Nietzsche's writings, but the idea has a long history that Nietzsche knew well from his training in classics. In *Ecce Homo* Nietzsche identifies eternal recurrence with the doctrine of "the unconditional and infinitely repeated circular course of all things" and maintains that the doctrine "may have been taught already by Heraclitus" (EH BT:3). This remark connects eternal recurrence with Heraclitus' view that the world "always was and is and will be," and that it changes states in "measures" (Fr. 30, Barnes 1979 1:61). The measured stages of the world occur through an inner necessity, forming an infinitely repeated cycle that Heraclitus is thought to have regarded as a "great year" (see Kahn 156). These notions appear often in Nietzsche's work. The animals that accompany Zarathustra attribute to him the thought that "there is a great year of becoming, a monster of a great year, which must, like an hourglass, turn over and over again [...] and all these years are alike in what is greatest and what is smallest" (Z III:13). Nietzsche himself speaks of the world as a "musical mechanism [that] repeats eternally its tune, which must never be called a melody" (GS 109). This denial that the series of events resembles a pleasing melody echoes Heraclitus' claim that the necessary structure of existence is not produced by a god or by humanity (Fr. 30, Barnes 1979: 1:61). Nietzsche's talk of renouncing a desire for an "ultimate peace" and willing the "eternal recurrence of war and peace" (GS 285) also recalls Heraclitus' view of war as common to all things (Fr. 80, Barnes 1979: 1:60). It would be a mistake, though, to regard Heraclitus as the only ancient source of eternal recurrence. Empedocles, one of Nietzsche's favorite ancient philosophers, also postulated the existence of cosmic cycles (Barnes 1979: 2:6–8). In an early work Nietzsche also mentions the Pythagorean doctrine of cosmological recurrence (HL §2), and he later acknowledges the importance of recurrence within Stoic physics (EH BT:3).

Nietzsche's demon asserts the theory of eternal recurrence independent of evidence or argument. But unless Nietzsche means to establish its truth through appeal to the authority of his ancient predecessors, he must provide us with some evidence or argument in support of the theory. Arthur Danto has influentially maintained that there could be no empirical evidence of recurrence because the act of discovering such evidence would distinguish this cycle of existence from other cycles, contrary to the theory's claim that the infinitely many cycles are indistinguishable (Danto 204). Paul Loeb has recently shown

that this view is mistaken because the act of discovering evidence could, in principle, occur in *every* cycle (Loeb 17–8).³ Loeb claims, in addition, that individual experiences can serve as evidence of recurrence. Suppose a demon whispers the recurrence doctrine in your ear, or you suddenly have the overwhelming feeling that all of this has happened before. Such experiences, Loeb argues, would be evidence of multiple cycles of existence. Even if Loeb is right about this (I return to this point in Section 3), it is still not clear that such experiences could ever justify belief in recurrence. People often hear voices or experience *déjà vu*, but even the most intense, emotionally resonant experiences of this sort would provide an insecure foundation for a theory of the cosmos.

If individual experiences are not sufficient to establish cosmological recurrence, a scientific or metaphysical demonstration of recurrence would be necessary. Zarathustra does provide a proof of sorts (Z III:2.2), and Nietzsche's notebooks contain multiple sketches of proofs. Nietzsche's best-known argument, perhaps inspired by the Stoics, aims to derive recurrence from the unboundedness of time and the finitude of energy and possible energy states. Stated succinctly, "the principle of the conservation of energy demands *eternal recurrence*" (Nietzsche 2003: 112). Much has been written about Nietzsche's proofs, and there is no consensus concerning the best formulation of the arguments, or concerning their philosophical merits (see Capek; van Fraassen 1962; Moles; Rogers; Soll; Whitlock). Even if Nietzsche's proofs are unsound, it seems possible for the cosmos to be ordered as Nietzsche and his predecessors maintain. For the sake of examining whether the theory of eternal recurrence could be true, I will assume that the cosmos consists of a single "great year" of events.

2. Personal Identity and Circular Time

Even if this cosmological theory is true, it does not obviously follow that persons will live their lives again, as Nietzsche's theory of eternal recurrence maintains. Suppose that some time after the bodily death of person P there comes into being someone who exactly resembles P, lives in circumstances that exactly resemble the circumstances of P's life, and lives a life that exactly resembles P's life. Call this person P2. We can say that P has lived his life over again only if P is not merely *qualitatively* identical with P2 but also *numerically* identical with P2. That is, the demon's claim that you will live your life again is true only if the person who exists in the future is you, and not just a person who exactly resembles you. But unless we accept an implausible version of the identity of indiscernibles – one that does not permit individuation through appeal to temporal properties – it is not obvious that P and P2, existing at different times, are one and the same person.⁴ The worry that cosmological recurrence does not ensure the recurrence of persons dates back to the work of the Stoics and Epicureans, and it must be addressed if we are to make sense of the demon's claim that you will live your life again innumerable many times.⁵

Nietzsche has a straightforward response to this worry. He will simply deny that P and P2 live at different times. Note that the demon states that even the *moment* in which he presents the idea of recurrence will itself "return" once the "eternal hourglass of existence" is turned over. From this it follows that P and P2 cannot be distinguished through appeal to time; they do not live at different times. Affirming a reasonable version of the identity of indiscernibles would then enable Nietzsche to claim that P is numerically identical with P2, and more generally that the cycles of existence consist of numerically identical entities. This connection between the recurrence of times and the numerical identity of objects also has an ancient precedent in the account of Pythagorean beliefs given by Eudemus of Rhodes.

One might wonder whether or not the same time recurs, as some say it does. Now we call things 'the same' in different ways: things the same in kind plainly recur—for example summer and winter and the other seasons and periods; again, solstices and the equinoxes and its other trajectories. But if we are to believe the Pythagoreans and hold that things the same in number recur—that you will be sitting here and I shall talk to you, holding this stick, and so on for everything else—then it is plausible that the same time too recurs. (Barnes 1987: 35)

The challenge is to make sense of the recurrence of times. The idea that this moment will occur at some other time in the future seems plainly incoherent. The recurrence of a moment in time also conflicts with our common conception of time, according to which the present moment continually slips into the past, to remain there forever. Thus it would appear that the demon's talk of a moment "returning" to you is deeply confused.

Nietzsche has a response to this problem, too. In his remark concerning Heraclitus, Nietzsche identifies eternal recurrence with the "circular course of all things." In *Thus Spoke Zarathustra* a dwarf declares that "time itself is a circle," and Zarathustra describes himself as an "advocate of the circle" who wishes for the "ring of recurrence" (Z III:2.2; Z III:13.1; Z III:16). These passages suggest that Nietzsche takes time itself to have a circular structure.

We can approach the idea that time is circular in structure in two different ways. First, this could be a claim about the topology of time considered as a metaphysically real thing. We could understand the claim by analogy with the topology of space – or the topology of an object in space. Just as traveling far enough along the circumference of a circle (say, the equator of the earth) results in a return to the starting point, we can imagine moving forward through time and arriving at the present moment. Zarathustra employs such an analogy in arguing that past and present are not "eternally opposed," just as paths leading east and west on the surface of the earth are not eternally opposed (Z III:2). Nietzsche was familiar with non-Euclidian geometry and the notion of curved space, so the possibility of curved time may have led him to the idea of closed, circular time independent of the cosmology of eternal recurrence (for more on this topic see Moles; Small; Whitlock).

The second way to approach the circularity of time involves appealing to cosmological recurrence itself. Suppose that the world is rigged up in such a way that its states form a "great year." For simplicity's sake, suppose there are only five such states, ordered like this: ...S1, S2, S3, S4, S5, S1, S2.... Suppose in addition that time is not absolute and real but rather non-absolute and relational (i.e. not Newtonian but Leibnizian). Since times, on this view, are only relations between states of the world, it follows that times are ordered like this: ...T1, T2, T3, T4, T5, T1, T2.... (see Grünbaum 197–8).⁶ This relation among times can be mapped onto a circle while preserving all of the relations between items on this list. For example, T4 is both before and after T1, just as Kenya is both east and west of Ecuador, and T3 is immediately before T4, just as Uganda is immediately west of Kenya.⁷

Nietzsche appears to advocate this second approach to the circularity of time. At one point Zarathustra infers the recurrence of moments in time from the repetition of all states of the world: "If everything has been there before – what do you think [...] of this moment? Must not this gateway too have been there before?" (Z III:2.2). The recurrence of times follows from the recurrence of states of the world only on a relational view of time, so it is reasonable to attribute relationalism to Nietzsche.⁸

Regardless of which view Nietzsche holds on the ontological status of time, he is maintaining that time possesses the topological properties of a circle. In particular, it is finite and unbounded.⁹ This view on the structure of time enables Nietzsche to avoid

the objection that his talk of the “return” of a moment in time is deeply confused. He is not making the absurd claim that a moment will exist at some different time in the future, and he is not denying that according to our common conception of time the present moment slips into the past and remains there forever.¹⁰ The view is, rather, that in virtue of the circular structure of time, all moments lie one “great year” in the future relative to themselves. The demon’s claim that everything will return to you, even this moment, is grounded in Nietzsche’s view that all temporal entities (such as objects, events, and moments) are both before and after themselves in time.

3. From Circular Time to Eternal Recurrence

If time has a circular structure, then it is correct for you to say, “my entire life occurs after my death.” The times at which you exist, and all the events of your life, lie in the future relative to the moment of death. But this is not yet the demon’s message. The demon maintains that you will live your life *again*, innumerable many times. The existence of multiple instances of you living your life does not follow from the fact that your life lies after itself in time. In fact, Nietzsche’s circular theory of time entails the finitude of time itself – the circle of time is exactly one great year in circumference. This makes it difficult to see how something extended in time, such as a human life, could possibly occur infinitely many times. The general problem is this. Nietzsche’s appeal to circular time addresses the worry concerning personal identity described above, but in doing so it seems to undermine the demon’s claim that you will live your life *again*. At the very least, circular time does not entail eternal recurrence (see Small 123).

We can approach this problem from a different angle by noting how an appeal to circular time and the identity of indiscernibles undermines the claim that there exist multiple occurrences of a life. Since all putative recurrences of a life occur over the same stretch of time, it is difficult to see how Nietzsche can postulate *numerically distinct* occurrences of that life (Magnus 67, 109). How could we distinguish them if they have all properties – even spatiotemporal properties – in common? To grasp the force of this point, imagine asking Nietzsche’s demon exactly *when* your life will recur. The demon would be forced to answer, “Well, over the same stretch of time, so I guess it’s happening right now.” This response reinforces the worry that circular time is incompatible with recurrence.

Paul Loeb has sought to overcome this problem by appealing to instances of what he terms “recurrence-awareness” – for example, an experience of hearing the demon’s message, or a sort of *déjà vu* experience – which he claims to be evidence for the theory of eternal recurrence (Loeb 17–8). Loeb maintains that such experiences demonstrate the coherence of eternal recurrence because “any evidence of the reality of eternal recurrence would have to numerically differentiate what is qualitatively indistinguishable” (17). This approach faces two significant difficulties. First, insofar as it implicitly rejects the identity of indiscernibles, it leaves Nietzsche’s talk of the eternal recurrence of the *very same things* without any clear sense.¹¹ Second, and more importantly, by arguing that certain experiences both provide evidence of recurrence and demonstrate the coherence of the theory by numerically distinguishing what is qualitatively identical, Loeb conflates two issues that ought to be kept separate. An experience can serve as evidence in favor of a theory – that is, can demonstrate some likelihood that the theory is true – only if the theory is coherent and thus possibly true. But if we cannot demonstrate that the theory of eternal recurrence is coherent, we have no right to regard any experience as an instance of “recurrence-awareness.” While Loeb is right to assert that if there is evidence of recurrence

then the theory is coherent, the success of his objection to Danto (see Section 1 above) is not sufficient to show that there is evidence of recurrence. In short, classifying some experiences as “recurrence-awareness” begs the question concerning the possibility of recurrence.¹²

We might conclude from all of this that Nietzsche is simply mistaken if he thinks that the question “Do you want this again and innumerable times again?” follows directly from the circular structure of time. If the time that orders the cosmos is circular, it would seem that we cannot give any sense to the thought that the events of one's life occur more than once (for this conclusion see Magnus 104–10; van Fraassen 1962: 375). Nietzsche has a response to this problem as well, though articulating it will take some time. I begin by noting that the circularity of time can easily give the impression that everything recurs infinitely many times. Circular time ensures that it is correct to say “my entire life occurs after my death.” From this claim, most people will naturally conclude “after I die, I will exist *again*” – after all, one's life lies in the future relative to the moment of death. And from this second claim, one could justifiably conclude “I will exist innumerable many times.” This third claim follows from the second, just as the infinity of the natural numbers follows from the fact that each number has a successor. The challenge is to justify the second claim, namely that one will exist *again*.

The natural thought that circular time entails that one will exist again following the moment of death presupposes something like the picture of time as a vast circle, around which a dot marking the present moment slowly and steadily moves (just as a “you are here” marker might move around a globe, documenting an equatorial journey). We assume that circular time entails eternal recurrence because we imagine this dot tracing out the time period of our lives once again (and innumerable many times again) after it passes over the moment of death.

As innocuous as this picture might appear, there are two ways in which it is at odds with the account of circular time presented above. First, it requires an infinite time in which the dot marking the present moment traces out innumerable many recurrences of one's life. But circular time is finite. Second, marking one point on the circle as the present moment introduces tense into what was previously a tenseless representation of time (see Small 140–1). Simply locating all temporal entities on a circle generates one set of relations between those entities (those commonly termed B relations, following McTaggart). For example, on a circle of circumference c , a moment in time T_y that is one hour later than another time T_x is c minus one hour earlier than T_x . But no point on the circle has the status of being in the immediate future or immediate past because no point has been designated as the present moment. Once we designate a time as the present moment, all points on the circle come to have a new status in relation to the present, and claims involving tense can be made about them. Points near the present moment become the immediate past or the immediate future, one point acquires the status of being exactly 10 seconds in the future, another the status of being a million years in the past, and so on. These statuses (commonly termed A properties) do not exist when all states of the world are simply mapped on a circle.

Nietzsche's inference from the circularity of time to the eternal recurrence of all existence thus requires an appeal to two different notions of time. The first is a B series that is circular in structure and finite in magnitude. The second, our common conception of time, is an A series that is isomorphic with a line unbounded in both directions.¹³ The involvement of two distinct notions of time might lead one to conclude that the theory of eternal recurrence is incoherent (for this conclusion see Newton-Smith 57). And the theory would be incoherent if Nietzsche's theory of the circularity of time were intended as a denial of the

reality of our common conception of time. That this is not Nietzsche's position is clear from the fact that Zarathustra carefully describes the features of our common conception and also postulates its reality. In an encounter with the dwarf to whom he relates the theory of eternal recurrence, Zarathustra describes our common conception of time as follows:

This long lane stretches back for an eternity. And the long lane out there, that is another eternity. They contradict each other, these paths; they offend each other face to face; and it is here at this gateway that they come together. The name of the gateway is inscribed above: 'Moment.' (Z III:2.2)

In relation to the present moment, the past and future stretch out infinitely in opposite directions. The time Zarathustra describes is an A series isomorphic with an unbounded line. The dwarf denies the reality of time, so understood: "All that is straight lies," the dwarf murmured contemptuously. "All truth is crooked; time itself is a circle" (Z III:2.2). Here the dwarf postulates the circularity of time and denies the reality of our common conception of time. We might think of the dwarf as claiming that because time is *really* circular, the linear time in which we order the events of our lives is somehow unreal.¹⁴ Zarathustra's response to the dwarf does not deny circularity, which is not surprising since he later refers to himself as the advocate of the circle (Z III:13). Instead, he cautions the dwarf, "do not make things too easy for yourself!" and continues to affirm the reality of linear time: "'Behold,' I continued, 'this moment! From this gateway, Moment, a long, eternal lane leads backward: behind us lies an eternity'" (Z III:2.2). This response forces the dwarf to consider points in time as past or future in relation to the present moment. Having reintroduced this notion of time, Zarathustra then proceeds to formulate the doctrine of eternal recurrence. Thus it would be a mistake to read Nietzsche as unwittingly combining elements of our common conception of time with his theory of circular time in order to generate the theory of eternal recurrence (*pace* Magnus 109–10). Nietzsche states explicitly that eternal recurrence requires both circular time and our common conception of time as an infinite, linear A series.

Since it would be plainly absurd to claim that time is both infinite and finite, as well as both linear and circular, Nietzsche's view must not be that time has these incompatible properties, but rather that there exist two different kinds of time. The first, which I will term *objective time*, is a B series that is circular in structure. The second, time as we experience it or *phenomenal time*, forms an A series that is isomorphic with an infinite line. Zarathustra's response to the dwarf maintains the reality of both objective time and phenomenal time. This enables him to embrace the picture sketched above of a dot marking the present moment forever circulating around the finite circumference of time. Thus, we distinguish between the innumerable many recurrences of a life by locating them at different points in phenomenal time.¹⁵

4. The Reality of Phenomenal Time

I have shown that Nietzsche's theory of eternal recurrence requires cosmological recurrence, the circularity of objective time, and the reality of linear phenomenal time. This is clearly a lot to accept. I will conclude with some brief remarks concerning the reality of phenomenal time.

Asserting the reality of phenomenal time with properties very different from those of objective time means, at a minimum, that we reject the dwarf's implicit inference from "time itself is a circle" to "all that is straight lies." Linear time would be an unreal "lie" if it were a merely subjective appearance. Consider how the apparent flatness of the Earth

is an unreal "lie" in light of Earth's objective spherical structure. If phenomenal time were just the appearance of a circular objective time with an undetectably low degree of curvature, phenomenal time would be similarly unreal.

Nietzsche provides no clear argument for the reality of phenomenal time. More generally, his remarks on the experience of time are scattered throughout his writings and do not obviously fit together into a coherent theory of phenomenal time. Nevertheless, one strategy for demonstrating the reality of phenomenal time does emerge from Nietzsche's writings – a strategy that appeals to the status of our common conception of time within our practical lives. Just as Kant argues that freedom is real "in a practical respect" due to the role it plays in agency (Kant 53), Nietzsche maintains the reality of phenomenal time through appeal to its practical role in our lives. Zarathustra's remark that the dwarf who denies phenomenal time makes things "too easy" for himself suggests that Nietzsche connects phenomenal time with the difficult and burdensome task of living one's life. This connection is clear in the case of tense, as Small notes in his discussion of time in Nietzsche's thought: "tensed language has an essential connection with our hopes, fears and regrets in a way that talk of 'before' and 'after' does not" (140).¹⁶ But simply connecting phenomenal time with our practical lives is not sufficient to rule out the possibility that phenomenal time is an unreal "lie". Nietzsche is famous for insisting that "the conditions of life might include error" (GS 121), and he would not regard phenomenal time as real simply because it is entrenched in our practical lives in some way or other.

Nietzsche's views on the most basic grounds of agency provide the key to his account of the reality of phenomenal time. Just as Kant aims to demonstrate the reality of freedom by tying freedom to an essential feature of agency (namely rationality), Nietzsche regards phenomenal time as real because it is tied to essential features of the drives that constitute all living beings. John Richardson has recently shown how Nietzsche's theory of drives yields two kinds of phenomenal time, a time that appears "for" a living being (which in the case of modern agents involves all kinds of illusion or mere appearance) and a time "of" that living being's relation to the world (215). The latter sort of phenomenal time provides the deep structure of any perspective on a world in general because it originates in a drive's orientation towards an intended future and out of a historical past (217–8). Time as an A series (arguably lacking curvature) is thus a real feature of any living being's relation to a world. This account of phenomenal time as the real structure of a drive's activity rules out the dwarf's position that phenomenal time is an unreal "lie". It is also compatible with the existence of an objective time possessing properties quite different from those of phenomenal time.¹⁷ If this derivation of phenomenal time from the notion of a drive in general is successful, the route from the circularity of objective time to the recurrence of human lives is secure.¹⁸

Short Biography

Scott Jenkins's research concerns Kant, post-Kantian Idealism, and Nietzsche. He has written on a variety of topics within this area of philosophy, including the foundations of Kant's critical philosophy, Hegel's theory of self-consciousness, and Nietzsche's views on truthfulness. His work has appeared in the *Journal of the History of Philosophy, Inquiry, The Routledge Companion to Nineteenth Century Philosophy* and the *Journal of Nietzsche Studies*. Jenkins currently teaches at the University of Kansas. Before coming to Kansas he taught at Reed College in Portland Oregon and studied at the University of Munich on a Fulbright Scholarship. He received a BA in Philosophy from Stanford University and a PhD in Philosophy from Princeton University.

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¹ Citations of Nietzsche's published work refer to section numbers in *The Gay Science* [GS], *Thus Spoke Zarathustra* [Z], 'On the Uses and Disadvantages of History for Life' [HL], and *Ecce Homo* [EH].

² Interpretations of eternal recurrence that take its practical significance to be independent of the truth of the theory include Nehamas (1985) and Reginster (2006).

³ Loeb credits Kain (1983) as the first to make this point (Loeb 14).

⁴ The identity of indiscernibles states that if A and B have the same properties, then A and B are one and the same object.

⁵ Simplicius asserts that the Stoics "ask with good reason whether the I now and the I at another time are numerically one, or whether I am fragmented by being assigned to a succession of cosmogonies" (Long and Sedley 309). Lucretius also raises the question of whether the recombination of particles would yield the same person. He asserts that "we keep no memory" of the earlier time, and that a "break occurred" between the person in the past and the recombined particles (Lucretius 110–1).

⁶ For a discussion of Nietzsche's time atomism, which makes possible 'contiguous' times that are not separated by other points in time, see Whitlock.

⁷ It is necessary to speak of the *immediate* past and future because all times are in the future and the past relative to one another. Being in the future or past relative to some time is not an interesting relation within circular time. A more precise account of circular time would involve the four-place relation of pair-separation, which can be used to describe the ordering of entities in circular time. See Newton-Smith 59–60.

⁸ For a different reading of this passage, see Small 128.

⁹ For a complete account of the features of circular time, see Newton-Smith 57–65. Though neither Newton-Smith nor Nietzsche considers the possibility of infinite circular time (likely because it rules out recurrence), Peirce discusses this possibility in his *Collected Papers*, 1.274–6. For the sake of examining Nietzsche's view, I will assume with Nietzsche that circular time is finite. (Thanks to an anonymous reviewer for bringing Peirce's remarks to my attention.)

¹⁰ As I argue below, however, Nietzsche's best strategy for making sense of eternal recurrence involves locating moments of objective, circular time at different points in phenomenal time.

¹¹ Though Nietzsche does not argue for the identity of indiscernibles, or even explicitly endorse the principle, he often treats particular things as mere bundles of properties (see GS 54). Such a view all but requires a Leibnizian understanding of identity.

¹² Loeb later presents his objection to Danto as a demonstration that awareness of recurrence is possible (Loeb 30). But this objection demonstrates only that Danto's argument against the possibility of empirical evidence of recurrence is flawed.

¹³ Strictly speaking, it is not necessary for the second notion of time to be A-theoretic. But tense is important for Nietzsche's general position on time and recurrence, as I note below.

¹⁴ Small locates this inference, made using similar terminology, in the work of Nietzsche's contemporary Gustav Teichmüller (Small 116). Thus the dwarf's position is likely a part of Nietzsche's philosophical context. Loeb argues, in contrast, that the dwarf implicitly denies that time is a circle (Loeb 55).

¹⁵ Locating recurrences of a life at different points in phenomenal time might undermine the claim that they are recurrences of the very same things (see the beginning of Section 2 above). This worry illustrates once again how recurrence and numerical identity pull in different directions – circular time ensures identity but undermines Nietzsche's claim of recurrence, while the reality of phenomenal time ensures recurrence while threatening to undermine Nietzsche's claim that it is the very same things that return innumerable many times.

¹⁶ Small does not appeal to the practical importance of the A series in order to argue for the reality of two sorts of time, but rather in order to provide an account of eternal recurrence through appeal to the realm of 'becoming' found in the A series. See Small 130–1, 141.

¹⁷ Richardson's claim that the temporality of an organism or agent presupposes an objective temporality (Richardson 225–6) has some affinities with the distinction between phenomenal time and objective time that I have sketched here.

¹⁸ This paper benefited from comments and questions from Troy Cross, Dale Dorsey, Cody Gilmore, Paul Hovda, Paul Loeb, Don Marquis, Joshua Tepley, and an anonymous reviewer for *Philosophy Compass*.

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