

Gallifrey Falls No More: *Doctor Who's* Ontology of Time

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Abstract

Despite being time-travel adventure series, both classic *Doctor Who* (1963-1989, 1996) and its reboot (2005-present) have not seen the development of a coherent ontology of time for their fictional universe. As such, it is extremely difficult to review established theories of the nature of time in an attempt to shoe-horn *Doctor Who* into an existing framework. Difficulties include the evolution of the views of the central character, the alien "Doctor," from a position that insists "time can't be rewritten" to its opposite as well as a curious anthropomorphizing of the temporal through show concepts like "fixed points in time." I argue that one way to draw a coherent philosophy of time from the program is to treat the Time Lords as establishing not only the possibility of time travel but also the universe's timeline itself. This leads to an examination of four-dimensional realism as characterizing the ontology of *Doctor Who's* fictive timeline.

Some 100,000 years ago, an anachronistically dressed old man, his long white hair in a bob style, raises a heavy stone in a Paleolithic jungle. His target is the skull of a Stone Age hunter named Za, who has been tracking the old man, "the Doctor," as well as his three young companions. Attacked by a predatory animal, Za is near death on the forest floor. The old man's intent is clear: a safe getaway requires that Za be killed. Despite the fact that the old man is a traveler through time, he does not for a moment seem to consider the possible repercussions for the course of history of killing a prehistoric human ("An Unearthly Child," 1963).

Fast forward to Alabama, 1955, and "the Doctor," an energetic, blonde woman in a long lilac-colored coat and sans-culottes is facing a terrible decision, one that requires not action, but inaction. She and her companions have stopped a time traveler from the future from interfering with the genesis of the civil rights movement in the United States.

Unfortunately, they've also ended up on the same bus as Rosa Parks, and if they leave, there will be enough seats for white passengers such that Parks won't be asked to get up, snuffing the spark of her defiance. Graham, the Doctor's white companion, is aggrieved at having to be on the wrong side of history: "No, no, no, I don't want to be part of this." The Doctor sorrowfully replies, "We have to. I'm sorry. We have to not help her" ("Rosa," 2018).

The old man and the young woman share the name "the Doctor" because they are the same person, an impossibility that only a program like *Doctor Who* could present as plausible. But the Doctor is also an alien, and a traveler in time; in these cases, the Doctor has to make moral decisions that will quite possibly change the course of history. The old man, the First Doctor, is normally a principled fellow—is he being careless with his responsibilities as a time traveler in moving to kill Za, or does he know something we don't? The young woman, the Thirteenth Doctor, considers her role to "sort out fair play throughout the universe" ("The Woman Who Fell to Earth," 2018). Is it possible, however, that the nature of time and structure of causality in the Doctor's universe does not need her to fill this role?

In this paper, I will engage both the metaphysics and the history of *Doctor Who* to compare two sets of concepts in search of a cogent ontology of time for our favorite Time Lord's world. I contrast two theories which must concern the potential time traveler about the reality of past and future. "Presentism" says that since all our experience occurs in the moving present, only the present (and not the past and future) is real. By contrast, "eternalism" treats the past and future as being equally as real as the present. Both concepts are naturally allied to theories about the nature of change that are relevant to the consideration of whether a time traveler's moral choices can be causally efficacious in disparate time frames. Presentists, in acknowledging that time, like a river, seems to "flow," also accept a version of the common-sense picture that natural change does occur; this is a "dynamic" view of time. It may be, however, that our perception of change is closer to the way in which a film projector handles film, producing the *appearance* of flow out of many static images, one after the other. Denying the reality of natural change in this way, a move characteristic of eternalism, is called the "static" view of time.

I will argue that the Doctor's universe is best understood as *static* from the *eternalist* perspective—an ontology of space-time referred to as "Four-Dimensionalism Realism" (4DR). Four-Dimensionalism Realism extends to points in time the Newtonian insight about points in space—each one is equally real and, in their own ways, co-existent with the others. However, *Doctor Who* has also introduced its own unique perspective on the nature of time as *self-correcting*. In *Doctor Who*, times' very structure is one in which certain historical events are "locked" while others are changeable. The arguments for eternalism and whether the self-correcting feature of time in the Whoniverse can be squared with it are the primary issues I address in what follows.

Time Travel in *Doctor Who*

At the beginning of “The Paradoxes of Time Travel,” David Lewis (1986) writes that he will be concerned with “the sort of time travel recounted in science fiction,” a type of travel he claims is possible. He continues: “Not all science fiction writers are clear-headed, to be sure, and inconsistent time travel stories have been written. But some writers have thought the problems through with great care, and their stories are perfectly consistent” (67). (To be specific, he has in mind two Robert Heinlein stories: 1941’s “By His Bootstraps” and 1959’s “—All You Zombies—”.)

Contrast this with the longest-running science fantasy show, *Doctor Who*, which boasts 286 discrete episodes over 37 seasons. The program is the product of a creative team—screenwriters, script editors, actors, directors, producers—who are primarily interested in producing entertaining yarns that twist time and not in creating a coherent theory of the temporal dimension. *Doctor Who* exists in both its original run and a one-off telefilm (1963-1989, 1996) as well as a newer series that claims canonical continuity with the “classic” iteration and has now cast Jodie Whittaker as the thirteenth and newest version of the perpetually wandering time traveler (2005-present).

For Lewis, the logical possibility of time travel involves “a discrepancy between time and time...” (Lewis 1986, 68) and this criterion is one met adventure after adventure by the alien Doctor with the use of his time machine-cum-police call box, the TARDIS (Time and Relative Dimension In Space). According to Lewis, “Any traveler departs and then arrives at his destination: the time elapsed from departure to arrival ... is the duration of the journey. But if he is a time traveler, the separation in time between departure and arrival does not equal the duration of his journey” (Lewis 1986, 68). Lewis introduces two useful terms that can aid us in making some sense of this discrepancy: *personal* time and *external* time. In the ordinary world of everyday experience, external time and personal time coincide. In contrast, in the very first *Doctor Who* story from 1963, “An Unearthly Child,” the TARDIS takes approximately one and a half minute of screen time (personal time) to dematerialize from Earth in 1963 and rematerialize near a caveman in 100,000 BC. The difference between this personal time and the one hundred centuries that have elapsed between 100,000 BC and 1963 AD indicates that time travel has taken place.

There are many different ways, all currently theoretically possible but beyond our present technological capabilities, to create this kind of discrepancy between personal and external time. One trope that appears frequently and perhaps most notably in the film *Planet of the Apes* (1968), cryogenic or chemical suspension of the body’s living processes, is not a form of time travel. The best-known prospect for travelling through time would be to create a vehicle capable of *relativistic acceleration*, that is, travel at speeds close to the speed of light. Yet both this method and the lesser-known *Tipler Cylinder*—a massive, kilometers-long cylinder that warps spacetime through a “frame-dragging” effect—are physically impossible given their cost in energy and natural resources (Tipler 1974). Alternatively, space-time could, through the influence of natural, massive gravitational attractors (such as black holes), be distorted in such a way that a spacecraft’s trajectory

through spacetime could curve back upon itself. This would produce the possibility of travel to the past.

Fictional time travel, beginning with Mark Twain's *A Connecticut Yankee in King Arthur's Court* (1889) and H.G. Wells' *The Time Machine* (1895), have produced a variety of explanations for how such journeys could be understood (cf. Nahin 1993). Enter Gallifrey, *Doctor Who's* home planet of the Doctor and others of his race, the Time Lords. In many ways, Time Lord society resembles the same kind of bureaucracy deployed in films like *The Adjustment Bureau* (2011, George Nolfi, dir.) and the television series *El Ministerio del Tiempo* (2015, Javier and Pablo Olivares, creators). The view that temporal order can only be reclaimed from chaos through a vigilant civil service, in turn, probably harkens back to Isaac Asimov's 1955 novel *The End of Eternity*. Here, the "Eternals" compulsively use trans-temporal powers to remodel history; they "form a closed hierarchical society, meritocratic but authoritarian" (Gleick 2016, 155). The late Stephen Hawking theorized the need for something like the Time Lords, or at least the force of a yet-undiscovered natural law, that would rule out time travel to the past "to make the world safe for historians" (Hawking 1992, 603).

Compared to these possibilities, the basis for Gallifreyan time travel technology is purely science-fictional: a "tamed" black hole called the "Eye of Harmony." Control over the Eye was engineered by the Time Lord pioneer Omega from a star in the Sector of Forgotten Souls ("The Three Doctors," 1973; "Omega" audio 2003). Omega "left behind him the basis on which Rassilon founded Time Lord society," the Doctor claims ("Remembrance of the Daleks," 1988). The *Doctor Who* telemovie of 1996 establishes that the Eye not only powers, but is somehow *present in*, each and every TARDIS. More important for our purposes, it is established that Rassilon, the cunning and rapacious founder of Time Lord Society, had utilized advanced predictive technology to determine which alternate timelines to his would be dangerous to Gallifrey and eliminate them, "creating one unified history" (Parkin 2007, 383; *Doctor Who: Neverland* audio 2002; *Doctor Who: Zagreus* audio 2003).

If eternalism is the correct description of the universe of *Doctor Who*, then it makes sense to ask why its continuum of events exist and are ordered in past, present, and future in the way they are, and not another way. My notion is that the Whoniverse has a fourth, or time-like dimension *due to* Rassilon's "temporal engineering" of the continuum millions of years ago. Further, it makes sense of *Doctor Who's* portrayal of the power of the Time Lords to say that the Doctor's people are at least partially responsible not just for the constitution of time as the fourth dimension, but also for the order of events (the world's history) that make it up. But why think this?

An ontology of time that fits with facts of the show's continuity must also take account of the program's details that (a) Gallifreyans do not (perhaps *cannot*) travel into the past of their own planet, and (b) that despite the capacities of TARDISES to travel everywhere and everywhen, the "personal time" within Gallifreyan time machines is synchronized with the "external time" of Gallifrey. In turn, Gallifreyan time machines travel

through the fictive “space-time vortex,” the appearance and properties of which were established in a number of early *Doctor Who* stories, including “The Chase” (1965), “The Enemy of the World” (1967-68), and “The Time Monster” (1972). Finally, an ontology of time in *Doctor Who* that offers interest in understanding time in our own universe is one that must deal with the thorny issue of “fixed points in time.”

Before going into these details, it would be useful to note that many of *Doctor Who's* plots exploit a particular kind of epistemic uncertainty often found in time travel narratives: the Doctor and his companions claim to be confused about the “true” course of events in cases where events go differently than our protagonists remember them. Have the characters *altered* history, or were they simply *ignorant* of its true path, while in fact no alteration has occurred? In *Doctor Who*, the first story to address the question of changing history is “The Aztecs” (1964) written by John Lucarotti. Materializing in an Aztec city in the sixteenth century, companion Barbara Wright—a history teacher—adamantly declares that she wants to use her influence to stop human sacrifice. “You can’t rewrite history, not one line!” the Doctor chides her. “What you are trying to do is utterly impossible. I know, believe me, I know!” Intriguingly, this same restriction does not seem to apply to the future. In the first story that verifiably takes place in the future— “The Sensorites” (1964)—the Doctor and friends are instrumental in mediating an explosive conflict between the titular aliens and a space probe from 28th century Earth. Yet the Doctor intimates that his own home time is much farther into the future, so that the events of “The Sensorites” are just as much in the past for him as “The Aztecs.” Clearly, the demands of the narrative—that we, the audience, experience adventures from the perspective of the contemporary companions—outweighs the consistent acceptance of this implication.

The *Doctor Who* production team’s attitude toward temporal integrity softened as the show went on to its second series, the audience enjoying historical “in-jokes” in, for example, “The Romans” (1965) as it is revealed that the Emperor Nero’s inspiration for the destruction of Rome came from the Doctor’s eyeglasses functioning as a burning glass on a map of the city; similarly, in “The Chase,” we discover that were it not for the terrifying appearance of the Daleks, the Doctor’s cybernetic arch-enemies, the crew of the *Marie Celeste* would not have jumped overboard in 1872. In even later historical stories such as “The Myth Makers” (1965) and “The Massacre” (1966), the involvement of the Doctor and company in key events of the Trojan War and the St. Bartholomew’s Eve Massacre turn out to be instrumental in keeping history on the “right track.” Eventually, the Doctor is separated from his companions and put on trial by the Time Lords for “repeatedly [breaking their] most important law of non-interference in the affairs of other planets.” Found guilty, the Doctor is forced to change his appearance yet again and exiled to Earth in the late 20th century with a non-functional TARDIS.

This sequence from 1969’s “The War Games” is not only notable for ushering out the Second Doctor, played by Patrick Troughton and for ushering in (in the next series) *Doctor Who* in full color, but also in view of the fact that interfering in history is a crime on Gallifrey. Later, the Doctor reveals that the Time Lords, new at space-time exploration,

aided the people of planet Minyos with “medical and scientific aid, better communications, better weapons,” but were then “kicked out at gunpoint. Then they [the Minyans] went to war with each other, learnt how to split the atom, discovered the toothbrush and finally split the planet” (“Underworld,” 1978). These episodes about cosmic interference seem to reveal the limits to Time Lord temporal engineering: if universal history is set in stone in the way that eternalists holds, then either individuals like the Doctor can change this set pattern, or the Time Lords have criminalized one of their kind being implicated in the pattern. To get some clarity on this, we must look at our choice between ontologies of time closely.

A Choice: Eternalism or Presentism?

It is manifest that *Doctor Who*, throughout its history, has placed different emphases on the preferability or even possibility of changing events in history, but there is one crucial feature of any fictive universe that admits time travel that must be pointed out. Any time traveler, in going from point A in space and time to point B elsewhere and elsewhere, must have a place and time to go. Realism about the co-existence of past, present and future is key to *Doctor Who's* moral questions and dilemmas: if the Thirteenth Doctor, in Alabama of 1955, is concerned about the effects that her actions will have on the civil rights movement as she knows it, then she is attributing existence to future facts which she does not want to be changed. Furthermore, the realism of “Four-Dimensional Realism” is grounded by the idea, as David Lewis puts it, that “the world—the time traveler’s world, or ours—is a four-dimensional manifold of events” (Lewis 1976, 68). Unlike the three dimensions of the spatial manifold, however, time is uniquely asymmetrical in that changes in time seem to be “one-way”: past to present to future, or earlier to later. Adrian Bardon isolates three senses of the asymmetry, or “arrow” of time:

- *psychological*: “we remember (and never anticipate) the past, and anticipate (but never remember) the future”;
- *thermodynamic*: “the tendency of systems to move from overall orderliness to overall disorderliness”;
- and *causal*: “causes always precede their effects” (Bardon 2013, 113, 114, 116).

Even as I note that there is not space here to discuss these asymmetries, I also want to make it clear that none of these senses is philosophically uncontroversial. For present purposes, it will be enough to state that, for Four-Dimensional Realism, (1) objective properties of the space-time manifold at least partially constitute our experience of time and (2) that events past, present and future are coexistent and *equally real*. The 4DR theory therefore accords with eternalism, which is the view that “events exist timelessly in an eternal, unchanging order” (Bardon 2013, 88). This is analogous to taking a first-person observer perspective in space: wherever I stand, all points north and west simultaneously *exist* despite the fact that I stand south and east of them at the current moment and cannot view them from where I stand.

In *Doctor Who*, the Doctor claims to be able to redeem promises like, “All of time and space, everything that ever happened or ever will – where do you want to start?” (“The Eleventh Hour,” 2010). That events have an eternal order in *Doctor Who* is further confirmed by episodes in which action in two different time zones make up the episode’s events (“City of Death,” 1979; “Mawdryn Undead,” 1983); more confirmation is provided by episodes in which characters communicate between two separate time zones. As examples, take when companion Martha Jones is able to phone up her mother in the 21st century for rock ‘n’ roll trivia answers while trapped on a 42nd century spaceship falling into a sun (“42,” 2007) and Clara Oswald in 2119 communicates with the Doctor, who is in 1980 in “Before the Flood” (2015).

The alternative to *eternalism*, as I stated in the introduction, is *presentism*, which denies the reality of past and future in favor of the time frame that *can* actually be experienced at any moment: the present one. What is true is true now, and not at any other time, because other times simply do not exist. Presentism does have a way to deal with the psychological asymmetry of time: we can only anticipate events in the future because they do not presently exist in any cogent sense. But the presentist must also confront the question of whether any memories of the past can be said to be “true” or to be pieces of knowledge, if the truth-makers for memories no longer exist.

Similarly, there are ongoing questions about whether presentism can be a valid theory if there is no such thing as an objective “present.” As counter-intuitive as this notion seems, Einstein’s Special and General Theories of Relativity imply it through the idea of the “relativity of simultaneity”—that an event happening “now” is relative to an inertial framework. This implication is perhaps most familiar in the form of the “twin paradox”:

...[S]omeone departing from Earth on a fast spaceship, after accelerating away sharply and later returning, will find a difference between his or her clock and clocks back home. Imagine a pair of twins, one of whom departs for just a journey. Upon returning, she will find that time has “passed” more slowly for her than for her twin back on Earth. (Bardon 2013, 134)

The relativity of simultaneity shows that concepts of past and future are necessary to make sense of the experience of the twins travelling in different inertial reference frames. Using models like Minkowski diagrams, it can be shown that switching from one inertial frame to another requires an adjustment in what slice through spacetime counts as the “present,” so Einsteinian relativity theory denies the existence of an *absolute present* (Dowden, n.d.). However, the extent to which presentism is contradicted by Einsteinian relativity is still an open question, as shown in recent work by Dean Zimmerman (Zimmerman, 2011) and Nicholas Maxwell (Maxwell, 2006), among others.

Eternalists like David Lewis will maintain that there must be an objective past, present and future (“external time”) in order for time travel to be possible. Recall to mind his definition of time travel as a discrepancy between external time and personal time. As mentioned earlier, for the non-time-traveler, external time and personal time always

coincide. But by use of a TARDIS to displace himself in external time, the time traveler's personal time becomes disconnected from external time.

Within the dimension of external time, certain temporal parts of the time traveler (Lewis calls them "stages") that exist *later* in his personal timeline may actually exist earlier than other temporal parts that are *earlier* in his own personal timeline. Lewis writes:

The time traveler's life is like a mountain railway. The place two miles due east of here may also be nine miles down the line, the west-bound direction. Clearly we are not dealing with two independent dimensions. Just as distance along the railway is not a fourth spatial dimension, so a time traveler's personal time is not a second dimension of time. (Lewis 1986, 71)

Episodes of *Doctor Who* that hinge on the latest incarnation of the Doctor meeting his or her predecessors invoke the possibility that the Doctor can use travel through external time to allow earlier and later stages of his personal time to meet (and usually, argue with) each other. Despite the fact that "crossing his own timestream" is expressly forbidden by Gallifrey's "First Law of Time" ("The Three Doctors," 1973), the Doctor seems to constantly be bumping into his other selves ("The Five Doctors," 1983; "The Two Doctors," 1985; Parkin, *Cold Fusion*, 1996; "The Sirens of Time" audio, 1999; "The Light at the End" audio, 2013; "Day of the Doctor," 2013; and others). The "Blinovitch Limitation Effect," a pseudo-scientific explanation for why time travelers cannot simply go into their own past to clean up mistakes or "try again," at the peril of being trapped in a time loop ("Day of the Daleks," 1972), also specifies that earlier incarnations of the same time traveler will lose their memories of events that occur while crossing their timestream.

A powerful argument against the dynamic view that time in some way "flows," converting the present to past as the future "approaches"—in other words, presentism—can be found in J. Ellis McTaggart's "The Unreality of Time" (McTaggart 1908). According to McTaggart, there are two ways of explaining the ordering of events in time. What he calls the "A-series" order uses the predicates of "past," "present" and "future" in order to explain the dynamic reality of what we observe as natural change. For example, the premiere of *Doctor Who* on November 23, 1963 was "in the future" on November 1 of the same year, became present twenty-two days later, and has been past ever since. Clocks allow us to judge whether an event is upcoming or over with, and they are the symbols of A-series dynamic change. And as Adrian Bardon puts it, thinking about events in terms of the A-series commits us "...to events having the intrinsic temporal properties of pastness, presentness, and futurity, which they lose or gain over time" (Bardon 2013, 81). Further, we express A-series properties in language through the use of tenses; to say "William Hartnell, the first Doctor is alive" would be to make a true claim on November 23, 1963. That claim is not now true; Hartnell passed away of heart failure in 1975.

To affirm eternalism (which denies the reality of dynamic change) is to point out that there is something wrong with this picture and to present an alternative. What McTaggart called the "B-series" order of events uses terms such as "earlier" or "later,"

“before” or “after.” These terms are *relational* predicates, since they must take more than one object; thus “The premiere of *Doctor Who* occurred before its cancellation in 1989” is true, and timelessly so. Calendars help us make sense of these type of events: so if a wall calendar for 1963 indicates Hartnell’s birthday (January 8) and the later premiere of *Doctor Who* in November, a true B-series description of these events will always be true, whether the related events occur today, yesterday, or a thousand years from now. Because true statements of B-series relations using “before” and “later than” are timelessly true, they do not involve changeable properties, as the A-series does, like “is past” or “will be in the future.” This is not a *dynamic*, but a *static* picture of the ontology of temporal events; while the truth of A-series claims require us to specify *when* the claim was uttered (assuming time will flow, future must change to present, then past), the truth of B-series claims does not compel us to admit the passage of time.

McTaggart then moves on to isolate the flaw in A-series temporal orders. When we ask questions about true B-series orders, like “*When* is it true that ‘William Hartnell’s birthday occurs before the original premiere of *Doctor Who*?’” the answer is, “Always.” According to McTaggart, the same thing can’t be said of A-series orders. When is a tensed statement like “Yesterday was the original premiere of *Doctor Who*” true? It is true on November 24, 1963 and false either before or after that date. McTaggart’s point is to show that explanations merely in terms of A-series order involve us in an infinite regress of the use of temporal properties “past,” “present” and “future.” As the claim above about *when* the tensed statement “Yesterday was the original premiere...” shows, we always have to bring in B-series relational predicates like “earlier than” or “later than” to invoke the truth conditions for A-series statements. McTaggart concludes that the notion of the passage of time—a concept central to presentism’s location of the “now” between a non-existent past and yet-to-be-existent future—is conceptually incoherent.

However, McTaggart also rejects eternalism. If nothing can have the A-series properties of pastness, presentness, or futurity, then there is no change in respect to these properties, and no qualitative change (“While we were watching the original premiere of *Doctor Who*, the broadcast of the episode was present. But now it’s past.”). Conversely, for the eternalist, “change, on the static theory, is to be understood as referring merely to the world being timelessly one way at one moment and timelessly another way at a subsequent moment” (Bardon 2013, 87). McTaggart maintains that if there is no natural change, then there can be no B-series relations, either. But McTaggart is using a very limited conception of change here: he is talking about change in events, or A-series change. However, Heather Dyke offers another (Parmenidean) possibility:

McTaggart is assuming that the paradigm subjects of [natural] change are events. It is events that change from future to present to past. But a proponent of B-series change need not accept this assumption. She can argue instead that the paradigm subjects of change are objects. It is objects that change by having incompatible properties at different times. (Dyke 2002, 138)

If time is real (a fact which McTaggart ultimately directs his arguments to deny) but natural (A-series) change is not, then “change” in the sense that Bardon uses above has to have not one, but two senses. On the one hand, change is, to perceiving creatures like us, the appearance of A-series, qualitative change (a blooming flower withers; a well-prepared meal is devoured). On the other hand, from a “view from nowhere” *sub specie aeternitatis*, history will not be a variety of events ordered on any given year’s calendar, but “everything that ever happened or ever will” laid out in one crystallized chronology. I suggest this is the way that Time Lords—at least those sheltered behind their advanced technology on Gallifrey—see space-time: they see it as they have created it.

But Can You Change History?

For St. Augustine, a paradigmatic eternalist, the crystallized order of events is comprehensible in its entirety only by God, who is also its creator. In the Whoniverse, though, gods typically want to devour us (“The Time Monster,” 1972; “The God Complex,” 2011) or turn out to be the Doctor (“The Face of Evil,” 1977).

The Time Lords, despite all their flaws, play the role of gods in *Doctor Who*. Despite being one of their august number, the Doctor has always had a love/hate relationship with his ancient and notoriously corrupt race. Given all this back story, perhaps it was better that the series beginning in 2005 assumed they were all dead. It is well known that the Time Lords do not figure into the first two years of the reboot series, the result (so the Doctor claims) of the “burning” of Gallifrey at the end of the Last Great Time War. With the apparent destruction of Gallifrey and Time Lord society, “The walls of reality closed, the worlds were sealed, gone forever,” the Doctor explains. “The Time Lords kept their eye on everything. It’s gone now. But they died, the Time Lords! All of them, they died. I’m the last of the Time Lords” (“The Waters of Mars,” 2009).

Clearly, the Time Lords know a lot more about the nature of time than we do. They were keen to prevent other races from possessing temporal secrets, perhaps spurred on by the damage to the continuum done by the Daleks (“The Chase,” 1965; “Resurrection of the Daleks,” 1984; “The Two Doctors,” 1985). The Time Lord policy of non-interference with the rest of the universe arose, as we saw, from their catastrophic experimentation with the planet Minyos, whose inhabitants saw the Time Lords as god-like beings. And yet their own involvement in the affairs of the universe continued, despite the “one unified history” created by their founder, Rassilon, suggesting that the timeline that he set forth is not as rigidly determined as the nature of eternalism might suggest.

To see what the essential problem is with changing history, let us first assume that the laws of physics in Doctor’s universe are the same as in ours (for purposes of argumentation, I do not consider the first or last few moments of the universe, cf. Weinberg 1993 and Penrose 2004). In “The Shakespeare Code” (2007), new companion Martha Jones questions the Doctor about time travel protocol, invoking familiar tropes about changing history including “the butterfly effect” and the grandfather paradox:

MARTHA: But are we safe? I mean, can we move around and stuff?

DOCTOR: Of course we can. Why do you ask?

MARTHA: It's like in the films. You step on a butterfly, you change the future of the human race.

DOCTOR: Tell you what then, don't step on any butterflies. What have butterflies ever done to you?

MARTHA: What if, I don't know, what if I kill my grandfather?

DOCTOR: Are you planning to?

MARTHA: No.

DOCTOR: Well, then.

Let's assume that Martha tries to kill her great-(x11)-grandfather before he has had any children in 1599, the year in which the episode takes place. Would Martha have been able to do so? If not, what could stop her?

The answers to these questions depend upon what kind of ontology reigns in *Doctor Who*. An eternalist who embraces Four-Dimensional Realism (4DR):

...typically refer[s] to the world of unchanging events in space-time as a block universe. This refers to the notion of a four-dimensional block depicting everything happening in space over time. Observers in different reference frames will produce different representations of the block; that is to say, they will locate events in space and time somewhat differently. (Bardon 2013, 92)

From the eternalist perspective, David Lewis claims that there is a sense in which Martha could not change the past, another in which she could. On the one hand, "the events of a past moment could no more change than numbers could." On the other hand, short of supernatural intervention, why would Martha, if she had researched and prepared for her opportunity, overlooking nothing, fail to kill her great-(x11)-grandfather? "...[I]t seems that [s]he would be as able as anyone to do things that would change the past if he did them" (Lewis 1986, 76).

To describe the conditions under which Martha could kill her ancestor, Deutsch and Lockwood introduce the idea of an "autonomy principle" for physics: "it is possible to create in our immediate environment any configuration of matter that the laws of physics permit locally, without reference to what the rest of the universe may be doing" (Deutsch & Lockwood 2009, 327). The laws of physics allow a person to shoot another with a musket, so Martha could kill her ancestor in this way; the same is true for using poison, a dagger, or dropping a safe on someone's head. She could even potentially hire Shakespeare to do the deed! The "autonomy principle" asserts that it does not matter *when* her great-grandfather's assassin comes from; a 21st century person can pull a trigger just as a 16th century person can.

Surprisingly, however, classical physics says that something like “historical inertia” *could* prevent Martha from changing history, because the autonomy principle cannot conflict with Deutsch and Lockwood’s “consistency principle,” which states that “the only configurations of matter that can occur locally are those that are self-consistent globally” (Deutsch & Lockwood, 327). Martha’s great-(x11)-grandfather represents one of the antecedent conditions for her birth years later, but that condition would be snuffed out by her act of killing him. Although the killing occurred before her birth, it presents a “global,” that is, trans-temporal obstacle to her own existence as a “configuration of matter.” Deutsch and Lockwood propose that in most cases when an individual attempts to change history in a way that would affect their own existence, a logical contradiction would result—unless the act put the time traveler into an alternate timeline in which they, all along, had been the murderer of their ancestor. (Perhaps surprisingly for a time travel program, televised *Doctor Who* has mostly avoided alternate reality stories, with a few exceptions.)

Gallifrey Falls No More

The fact is that, for a show that has few uniting threads except the Doctor, the TARDIS, and time travel, *Doctor Who* has never had a consistent philosophy of the nature of time. In the beginning, in episodes like “The Aztecs,” the Doctor’s view that history cannot be rewritten is confirmed by the thwarting of his companions’ efforts at every turn. In the late 1960s, the idea is introduced (in episodes like “The Massacre”) that the actions of the time travelers themselves are already part of the past, as their actions more often than not “save” the history we know (as when the Doctor prevents the creation of six additional “genuine” Mona Lisa paintings in “City of Death”). In fact, in the vast majority of *Doctor Who* stories, there are few if any worries about changing history. Time travel is a form of tourism in which the Doctor can catch up with famous people like Leonardo da Vinci, Winston Churchill and Marilyn Monroe. If it’s true that the effects of any travel from one era to another is already accounted for in that structure, then perhaps the Doctor realizes that his interference will have no long-term effect.

So far, new *Who* seems to want to change this complacency toward time’s *status quo*. The central premise of the reboot, the Last Great Time War in which both Gallifrey and the Daleks were utterly destroyed, makes this possible. Both the Tenth and Eleventh Doctors have explicitly engaged in rewriting history, whether at a relatively small scale of rescuing one family from the eruption of Mt. Vesuvius or the universal-scale rewrite of “The Big Bang” (2010). However, with the Thirteenth Doctor, stories have again taken the more conservative turn of protecting and preserving established history (“Rosa,” “Demons of the Punjab,” “The Witchfinders,” 2018) characteristic of the First Doctor’s era.

An unusual episode in this regard is “Father’s Day” (2005), written by long-time *Who* contributor Paul Cornell, which explores the “knock-on” effects of changing the past upon the future. Rose Tyler, the Doctor’s travelling companion, never knew her father, Pete; she wants to travel to November 7, 1987, the day Pete was tragically and fatally hit by

a car. At their destination, she surprises the Doctor by saving her father's life, changing the timeline. The result breaks the conventions just discussed about changing history in *Doctor Who*: flying creatures known as "Reapers" emerge from nowhere, attacking and annihilating passersby, seemingly at random. Later, the Doctor will explain that the creatures are like antibodies in a "wound in time," sterilizing the area by removing their prey from the timeline.

This exceptional episode is useful insofar as it suggests that in a universe without the Time Lords, changes to established history might be able to be made. Eternalism, as we have seen, does not permit this. Although this is just speculation on a fictional universe, is it possible that the structure imposed upon the space-time continuum by the Time Lords, as I suggested in an earlier section, has been weakened or disrupted. The relevant concept that has been introduced only in post-classic *Who* (and has been inserted into the discourse of the classic *Who* Doctors only through recent original novels and audio stories) is that of a "fixed point in time." "Fixed points in history" are *Doctor Who's* way of isolating events or situations that are causally significant because, as the Tenth Doctor explains, "There is no way of stopping [them]" ("The Fires of Pompeii," 2008). In 2011, Series 6 of the program was structured around the Doctor's own seemingly unavoidable death ("The Wedding of River Song," 2011). In a similar vein, the Doctor informs companion Donna Noble in "The Fires of Pompeii" (2008) that preserving fixed points in time is "the burden of the Time Lords" and even proposes to simply walk away from significant tragedies, such as the destruction of Bowie Base One on Mars in 2059 ("The Waters of Mars," 2009).

The idea of "fixed points" seems to originate in the history of science fiction as a "Jonbar point" or "Jonbar hinge," a reference from Jack Williamson's 1952 novel *The Legion of Time*. Here, Williamson conjectured that the alternative possibilities of one action performed by the main character, John Barr, lead to a major turning-point in history. One choice leads to the utopian future society of "Jonbar," the other to the rise of a tyrannical state (Langford 2018, n.p.). The Doctor's own death in "Turn Left" (2008) leads to Donna Noble experiencing the dystopic nightmare of multiple alien invasions, a nuclear blast that destroys London, and the de-evolution of English society into nativism and barbarism. At the other turn of this Jonbar hinge (as we know from the preceding episodes of the series), the Doctor had prevented all these terrible occurrences.

Jonbar hinges are linchpins of possible change in the sea of temporal necessity, points that are particularly crucial in the grand scheme of things. The Tenth Doctor presents a slightly different view in "The Waters of Mars" (2009): "I mean, it's only a theory, what do I know, but I think certain moments in time are fixed. Tiny, precious moments. Everything else is in flux, anything can happen, but those certain moments, they have to stand." If this is correct (and he admits it's only a theory), then there are apparently "Jonbar struts" as well as "hinges," with the vast majority of events in space-time "in flux, anything can happen," implying that they are causally or consequentially less significant than "Jonbar hinge" events.

To make sense of how “time would often find a way” to repair or avoid damage to reality, even the best *Doctor Who* fanboy or fangirl must, it seems, either posit a force of “historical inertia” (as posited by Stephen Hawking and as exists in Asimov’s *The End of Eternity*) or attribute a quality to time that is characteristic of organic creatures, but not space-time as we currently understand it—that is, the power of *self-correction*. But how to explain this? Perhaps, in their creation of a timeline for the universe, the Time Lords’ ordering of the laws of physics was not as precise as they had hoped? On this view, “Jonbar hinges” or non-fixed points in time could represent *historical* events of causal significance that are, at the same time, *flaws* in the 4DR manifold which, as we have seen, should admit of no qualitative change. There seems to be *dynamism* intruding into its otherwise static ordering of events. So perhaps we should decide to simply give up eternalism as the preferred ontology of time in *Doctor Who*?

We should not. First of all, eternalism and not presentism accounts for any time traveler having a destination in past or future that coexists with the present they depart from. Worries about affecting the future by changing the past also make sense only given eternalism, as long as it is coupled with the partial ignorance of cause-and-effect that time travelers must have for the sake of dramatic interest. In the specific case of *Doctor Who*, the universe as a static, timelessly unchanging space-time continuum also makes sense of in-continuity points such as the fact that the “personal time” within Gallifreyan time machines is synchronized with the “external time” of Gallifrey and detachable from the time continuum established by the Time Lords through travel in the space-time vortex. This means that whatever “time” is for the Time Lords may or may not have properties like time in our universe, but one restriction that it places on Gallifreyans is that they do not (perhaps *cannot*) travel into the past of their own planet. Furthermore, the eternalist perspective seems to fit with the Tenth Doctor’s infamous “timey-wimey” explanation of causal influence in “Blink” (2007): “People assume that time is a strict progression of cause to effect, but actually — from a non-linear, non-subjective viewpoint — it’s more like a big ball of wibbly-wobbly... timey-wimey... stuff.” As we have seen, our everyday perspective on events that relies on qualitative, natural (A-series) change is challenged by a view that only someone who has been “outside” the experiential conditions for this perspective could hold—namely, eternalism. But an ontology of time in *Doctor Who* that offers understanding of our own universe is, as we have said, one that must deal with the thorny issue of “fixed points in time.”

The most likely in-continuity explanation for the narrative reliance on “Jonbar hinges” or fixed points in the series is the fate of the Time Lords in the Last Great Time War. The audience was led to believe—up until the show’s 50th anniversary special, “Day of the Doctor”—that Gallifrey had been destroyed and that the man who destroyed it, the Doctor, was the last remaining Time Lord. Yet the events of “Day of the Doctor,” involving three incarnations of the eponymous character, resolve the Time War by removing Gallifrey to a pocket universe where it will be “frozen in an instant of time, safe and hidden away.” The Dalek fleet that surrounded Gallifrey destroys itself, and the last memory that the earliest

incarnation of the Doctor (Sir John Hurt) present during the adventure has is preparing to press the “big red button” that will annihilate both sides in the War.

The removal of Gallifrey from our universe provides a speculative, in-continuity reason for why history seems to be re-writable in the new *Doctor Who*: the continuing technological influence of the Time Lords on the time continuum they originally created will be missing until they are returned. Note, however, that “Day of the Doctor” itself does not necessarily entail changing history—everything that happens to the Doctor after his “big red button” memory and the events of the anniversary special can be explained by the displacement of Gallifrey and his amnesia about what actually happened due to the Blinovitch Limitation Effect, mentioned earlier.

So, can the Doctor change history? There does seem to be one clear instance of the Doctor doing so post-Time War. Although there isn't time to recount all the mind-warping connections between the episodes of Matt Smith's time as the Eleventh Doctor, what has been called the “Silence Will Fall” arc depicts a world of chaos that occurs after the Doctor is shot and killed in Utah and the steps taken in a world in which all history occurs at the same moment in time (“The Wedding of River Song,” 2011) in order for the Doctor to avert his murder by substituting a shape-changing, humanoid time machine called a “Teselecta” in his place. In this case, the rewriting of the Doctor's own personal history is quite real, as the causal connections between episodes (as researched in Fischel, 2014 and again, from an A-series perspective), require both the Doctor's death and his salvation to make any sense. Timey-wimey indeed!

Conclusion

In this paper, I have suggested that the ontology of time in *Doctor Who* admits of a structure of space-time similar to the one proposed here, an ontology of four-dimensional realism (4DR). Humans and most of the races in the Whoniverse, Time Lords excepted, will not be able to grasp temporal order *sub specie aeternitatis*—that is, as an *absolute* order of events in a block universe. In a static, eternalist universe, the 4DR realist accepts that regardless of our standpoint, past and future events have (from an absolute perspective) happened. Events simply *are* a certain way, and changelessly so; or, to put it in terms familiar from the last section, *every* event is a Jonbar strut and *every* moment of time is a “fixed point.”

If true, this would be bad news for the time traveler. The four-dimensional realism of *Doctor Who* may point to the Time Lords as architects of the order of space-time, but the sad fact is that, once it is established, there seems to be no changing anything about it. It seems that the first Doctor is correct to say that “You can't rewrite history, not one line!” From a perspective *sub specie aeternitatis*, the actions of the time traveler have always already been part of the “web of time.”

Of course, there are a few other episodes in which on-screen events reinterpreted in light of the theory of four-dimensional realism need to be re-thought. In particular, the series of events from the first appearance of a “crack in time” in “The Eleventh Hour”

(2010) through “The Big Bang” and the crack’s final appearance in “The Time of the Doctor” (2013) presents a particularly thorny set of questions for the ontology of time in *Doctor Who*: persons affected by the light from the crack are erased from existence (but some come back); in “The Big Bang” the reason for the crack is attributed to the fallout from the destruction of the TARDIS (an event that is “unwritten” in an unspecified way by Amy Pond); and in “The Time of the Doctor” the crack is re-interpreted as a bridge between our universe and the pocket universe that Gallifrey was sent to in “Day of the Doctor.”

And there are at least two open questions that remain—questions that will unfortunately have to remain open, given the scope of this paper—if we are willing to accept 4DR as descriptive of the *Doctor Who* universe. First, what, if not a dynamic ontology of time, explains our fundamental sense of the passage of time that is so basic to all explanations of natural change, to prediction and control? Bardon (2013, 101) writes: “This is the core challenge in the contemporary philosophy of time: how to reconcile the seeming ineliminability of the experience of the passage of time (manifest time) with the cold, hard conclusions of logic and physics (scientific time)?” Will *Doctor Who* give us more of a sense of the unique perception of time enjoyed by Time Lords that can perhaps shed light on this question? Is there a reason, besides the limits of the power of the Time Lords, for why time seems to have a self-correcting, perhaps *organic* character?

Second, what, if anything, do the idea of “fixed points in time” or “Jonbar hinges” pick out in the ontology of space-time? The problem here is that the essential nature of an eternalist universe seems to lead to us, as Heather Dyke suggests, to treating change in terms of an ontology of objects with some incompatible properties, not one of events. If the Doctor, like the rest of the Time Lords, understands the universe to have this structure, what could be his *ethical* motivation for involving himself in the affairs of other cultures and species (at least before the resolution of the Last Great Time War discussed in the previous section)? After all, “ought” implies “can,” and the structure of 4DR seems to deny that anyone “can” change anything at all. All these questions suggest much further work that can be done thinking about the ontology of time in *Doctor Who* and other time travel narratives with the best tools contemporary philosophy and science have to offer.



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