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Futurity and Time

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Abstract J.M.E. McTaggart argued that if time is to exist, it must exist in one of two ways. Either the A or the B-series. The A-series is crucial to the B-series. It consists of the relations of past, present, and future. Contemporary physical models of the universe suggest that every bit of carbon in this universe is a product of the big bang. *Being* itself is composed of tiny supersymmetric strings. Pragmatically speaking, what this suggests is a living *now*. If the big bang thesis is correct, there is no future *out there,* time is isomorphic our expanding universe. The current moment is as close as we can get. McTaggart forces us to choose which series: a tensed, static view of time, or a non-tensed dynamic one. The future does not exist, then his tripartite relation does not hold. After examining at the twin paradox, it looks as if the most viable option given a scientific perspective would be a tensed, dynamic account of time.

Keywords Philosophy of time, McTaggart, Time, Metaphysics

1. Introduction

One out of the three scientifically viable arguments for time travel from the point of view of modern physics shows us that there is no real future. There can only be time compression and expansion in respect to what we normally consider future events. This is also true if we accept the big bang thesis. If we conceive of time as being composed of past, present, and future, as J.M.E. McTaggart once claimed, [1] where does this leave us? With only past and present, the tenseless view may seem attractive. The B-series consisted of the relation of before and after, which was reliant on the previous tripartite relation, the A-series. McTaggart seems to engage in some tense-manoeuvring that allows him to maintain an event *M* must be past, present, and future, and therefore that time does not exist. Argumentation in the literature suggests that McTaggart must rely on a perspective which does not exist. [2]

This short paper is not a *reductio ad absurdum* of the thesis that backwards time travel is possible. The discussion will draw directly from the state of our current knowledge at the time of this writing, in the way I will couch it. Hopefully, it will arouse the interest of even the most casual enthusiast. The method we will use is the classic one of philosophy, the armchair method of logic, citing intellectuals who have traversed this terrain before. Time and space as topics of philosophical speculation date back at least to the time of Aristotle's *Physics* (384-322 B.C.).

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2. Our Scientific View

To begin with, the view I will endorse is called "substantivalist". Space and time are not empty, and they are comprised *of* something. It is empirically sound to endorse this view. For a few decades now, physicists exploring the deepest questions of our cosmos have postulated that matter and energy are comprised of supersymmetric strings. This is backed by observations, mathematical formulae, and experiments. According to *Scientific American* ". . .physicists contend that strings do not exist in space or time, but instead that space and time themselves may be made of strings. [3] If this view is right, we might say the spacetime continuum described in Einstein's 1905 theory of special relativity is comprised of some*thing*.

Since the time of the big bang, $10^{-32}{}_{secs}$, matter and energy have been shooting out from what was once a centralized singularity. This phenomenon is known as "cosmic inflation". General relativity alone tells us that we are continually projecting outward, at one time a hot plasma, and then expanding and cooling to a factor of at least 10^{26} [4]. The time of the singularity is descriptively known as t=0. [5] This theory of the evolution of our universe explains such phenomena as primordial nucleosynthesis and baryonic acoustic oscillations. The conditions can be re-created in particle accelerators and verified as the primordial stages of our universe. [6]

3. What is Time?

Geoffrey Landis, NASA physicist, asserts that 'there is just this one thing "spacetime" that we all live in' [7] As we

experience inflation and move throughout the cosmos, we are experiencing spacetime. We exist within this continuum. Not only that, but we are constituted of it insofar as strings compose it. The future is not predetermined, and yet time is dynamic (rather than static), according to this scientific view. J.J.C Smart writes ". . .when we say that future events will occur, we do not mean that they exist now (present tense). The view of the world as a four-dimensional manifold does not therefore imply that, as some people seem to have thought, the future is already 'laid up'." [8] The universe continually pushes forward, it is dynamic.

One of the ontological facets of time philosophers discuss is its directionality. Time flows in a certain direction, this is called "time's arrow" attributed to Huw Price. Lawerence Sklar in his *Space, Time and Spacetime* points out a few ideas in connection with temporal asymmetry, such as that we can remember the past, yet not the future. Also, probabilities appropriately apply to future events, not past events. [9] His considerations fall in line with our scientific view.

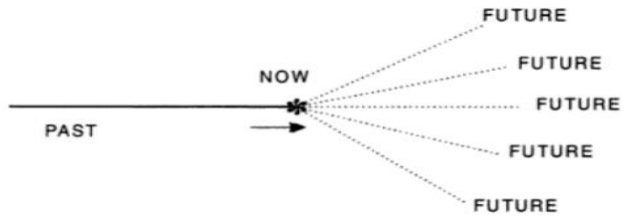

Figure 1. Diagram appears courtesy of Barry Dainton. Ironically enough, Dainton argues against the view illustrated above, saying it is the obviously received view. I simply side with J.J.C. Smart that it is scientific. Dainton, B., 2014. *Time and Space*, 2nd ed. New York: Routledge, 8.

4. Twin Paradox

A further description of the limitations of our ordinary thoughts in respect to time are best illustrated in terms of philosophical arguments for time travel. One form of time travel is putatively thought to be cogent, and the two others frequently cited are often considered to be merely thought experiments with little actual plausibility—yet. The latter two require the use of wormholes. One account requires tiny wormholes "postulated to exist", due to calculations resulting from string theory. The other resulting directly from thought experiments involving entanglement and black holes. The last and most plausible at the time of this writing capitalizes on the well-documented fact that spacetime changes the closer you approximate the speed of light.

The paradox asks you to imagine two twins. They are identical in every respect. At 20 years of age, they perform an experiment. Twin A is asked to board a spaceship wherein he will approach the speed of light and return to earth. Twin B is asked to stay on Earth. Twin A, after journeying about at this speed for 5 years, returns to earth to find that his twin has aged 75 years! The relative timespan he experienced was compressed. The experience of travelling near the speed of light causes time dilation.

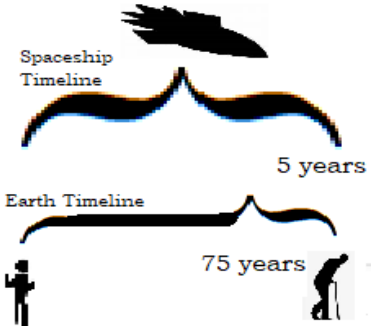

Figure 2. Illustrates the phenomena of time compression and expansion due to time dilation. The man on the spaceship (A) experiences only five years of aging. The counterpart on Earth (B) experiences a longer duration.

4.1. Doubts about the Future

As J.J.C. Smart argues in "The Space-Time World", it is metaphysically impossible to travel into the future because it is not predetermined. [10] What the twin time travel experiment shows is that the best we can do is compress the traveller's time into just five years of experienced time, in contrast to the time spent on Earth. The classical notion of futurity is no longer cogent, instead, we need to think in terms of spacetime. The figure taken from Barry Dainton's *Time and Space* is meant to illustrate the newer "received" view [11]. From the 1905 theory of special relativity onward, physics has converged upon the opinion that as individuals experience time, it is not predetermined. Rather, the future is isomorphic with the expansion of the universe due to the aftereffects of the big bang. E.g., the state of the universe at point (C) hot plasma, being past, and a later point (D), cooling and expanding.

What the twin experiment shows in particular is that there is a discrepancy of what Effington calls "personal times". [12] The man and the ship, and the man on the Earth, parted ways at 20 years old, and aged at different rates. Lewis writes: "Food digests. Hair grows. . . It isn't really time, but it plays the role in his life that time plays in the life of a common person." [13]

4.2. Other Experiments

The other two famous experiments involve wormholes. In one description of string theory, there are tiny wormholes that may be used for time travel. And due to the way entangled particles work, it has been conjectured that we could use the conditions existing near the event horizon of a black hole for purposes of travelling through time. Loosely speaking, these are known as Einstein-Rosen bridges, and have received considerable attention in the literature. Neither of these proposed methods of time travel can be used to verify that a predetermined future exists at this stage of our technological development.

To address the second problem first, scientists doubt that we will be able to test this hypothesis any time soon, and until then, its status as a bona fide theory remains unverifiable. Effingham conjectures that "perhaps traversable wormholes can't exist because exotic matter

is impossible to manufacture; perhaps wormholes are impossible to form in the first place." [14] According to Stephen Hsu, a noted professor of theoretical physics at the University of Oregon: "the whole thing is very hypothetical at this point, No one thinks we're going to find a wormhole anytime soon." [15] Although pragmatically speaking, these concerns may have to deal mostly with the logistics of experimental design, the consensus at this time is that wormholes are constructs of purely speculative physics.

5. McTaggart Revisited

McTaggart's crucial move in his argument is that the relations of past, present, and future must exist for there to be any account of time at all. Even the B-series of before and after, which is considered the "tenseless" account of time. Many consider this a "causal chain" view, although time exists only if there is genuine change according to McTaggart. The only way there is genuine change in the world is if events are located in the A-Series. An event cannot be in more than one relation at a time so there is a contradiction, here. Therefore, neither the A-series nor the B-series exist. [16]

It is important that the A-series is considered the "tensed" view of time, and also that a static view of time is one in which an event *M* is fixed in a series. Time does not *pass*. On the scientific account we endorsed, we will have to accept that the passage of time is an objectively existing, real phenomenon, is dynamic on our view of time.

6. Conclusions

My conclusion as to the metaphysics of time is due to the scientific substantivalist view we took at the beginning. I here assumed the rationality of choosing an empirical discipline (physics) with a proven track record for consistently improving their inductive methods. To have both a tensed and dynamic view seems to go against the grain. As McTaggart laid out his distinctions, this does not seem possible. It is true that our view is dynamic, and at the same time it does not seem as if a causal chain with present and past having the same ontological status isn't what we want either, as Lawrence Sklar pointed out.

Some of the philosophical discussions of the ontology of time one comes across even in the present day do not address the problems and possibilities as they exist in the current state, which would be how it exists in a quantum space-time continuum. Most philosophers attribute the most noteworthy distinctions to McTaggart. It looks as if I have pared the A-Series down to just past and present. The ramifications of not having a future could, if taken seriously, reverberate outward toward ordinary language use in a sort of Wittgensteinian wave, although I highly doubt it. Even so, I believe these considerations open more lines of discussion. I am interested in seeing what other philosophers come up with in light of the newer discoveries of science.

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REFERENCES

[1] McTaggart, J. 2004. "Selection from the Nature of Existence" in Metaphysics. Crane, T. and Katalin Farkas. Oxford: Oxford University Press, 454-463.

[2] Crane, T. and Katalin Farkas 2004. Metaphysics. New York: Oxford, 431-523.

[3] D. Castelvecchi. "Strings, Geometry, and the Ultimate Reality: The Debate," Scientific American. [Online]. Available: https://blogs.scientificamerican.com/degrees-of-rfreedom/strings-geometry-and-the-ultimate-reality-the-debate/.

[4] PBS Digital Studios. 2016. "What's wrong with the Big Bang Theory?" PBSS pacetime. [Online]. Available: https://binged.it/3xroxF4.

[5] PBS Digital Studios. 2016. "Why the Big Bang Definitely Happened," PBS Spacetime. [Online]. Available: https://binged.it/3tm1h9e.

[6] *Ibid.*

[7] Amazing Productions. 2016. "The Big Bang Theory: The Universe, Space-Time, Relativity," YouTube. [Online]. Available. https://www.youtube.com/watch?v+mcpchmem3clu&t=670s.

[8] Smart, J.J.C., 2004. "The Space-time World" in Metaphysics. Crane, T. and K. Farkas. New York: Oxford University Press, 502.

[9] Dainton, B., 2014. Time and Space, 2nd ed. New York: Routledge, 8.

[10] Smart, J.J.C., 2004. "The Space-time World" in Metaphysics. Crane, T. and K. Farkas. New York: Oxford University Press, 496-509.

[11] Dainton, B., 2014. Time and Space, 2nd ed. New York: Routledge, 8.

[12] Effingham, N. 2020. Time Travel: Probability and Impossibility. Oxford: Oxford University Press.

[13] Lewis, D. 2014. "The Paradoxes of Time Travel" in Metaphysics Crane, T. & Katalin Farkas, (eds.). Oxford: Oxford University Press, 513.

[14] Effingham, N. 2020. Time Travel: Probability and Impossibility. Oxford: Oxford University Press. 103.

[15] Hadhavy. A. 2012. "Fiction or Fact: Is Wormhole Time Travel Possible?" NBC News. [Online]. Available: https://www.nbcnews.com/id/wbna46514743.

[16] Horwich, P. 2014. “Asymmetries in Time” in Metaphysics, Crane T. & Katalin Farkas (eds.). Oxford: Oxford University Press, 476-477.