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On Time

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Abstract

Contemporary philosophy discussions on the nature of time begin with McTaggart, who introduces two ways of describing temporal relation between events: the A-series, focusing on the past, present and future, is about positions of time; and the B-series, which an event's position in the series is described only in relation to other events: "earlier than," "later than," or "simultaneous with." Along with McTaggart's objection to the reality of time, I provide a detailed exposition of why change can be expressed within the A-series and why the A-series contains a contradiction. In addition, I demonstrate step by step that time does not flow from one moment to the next in the "B-series" of time. I expound upon the concept to sketch the objective and subjective time perceptions from Kant's logical perspectives. Then, by identifying objective and subjective temporal concept types, based on Smart's and Sartre's arguments regarding the incapability of applying physical reductionism on time and the absence of passage in human definitions of time, I argue for a new approach in contemporary discussions on the predominantly subjective nature of time.

Human understanding of nature always begins with personal experience. People observed the cyclical changes in the sunrise and sunset, the moon's waxing and waning phases, and have long noted that the cycles of naturally changing processes can be used as different time measurement units. Accordingly, because nature is always in motion, "change" becomes one of the basic features of all natural phenomena and human activities. Human perception of time has evolved and developed based on our existing recognition of nature. The concept of time is thus gradually abstracted from the process of change. When we now think about time, it is easy to feel a bit like Augustine: "What then is time? If no one asks me, I know: if I wish to explain it to one who asks, I know not."¹ In essence, what we are really concerned about is the ontology of time: on the one hand there are subjective, dynamic temporal notions, which are built upon our

¹ Saint Augustine, *The Confessions of St. Augustine* (New York: P. F. Collier & Son, The Harvard Classics. Vol. VII, Part 1. 1909–14; Bartleby.com, 2001) 51.

understanding and interpretation of the world that always involves the process of change; yet on the other hand, there also exist objective, static temporal notions that are indispensable in our science and technology. In this paper, through discussing McTaggart's two ways (A-series and B-series) of describing the temporal relation between events along with his objection to the reality of time, I will provide a detailed exposition of why change can be expressed within the A-series and why the A-series contains a contradiction. In addition, I will also demonstrate step by step that McTaggart's argument about time does not flow from one moment to the next in the "B-series" of time. I will expound upon the concept to sketch the objective and subjective time perceptions from Kant's logical perspectives. Then, by identifying objective and subjective temporal concept types, based on Smart's and Sartre's arguments regarding the incapability of applying physical reductionism on time and the absence of passage in the human definition of time, I shall argue that the notion of time is subjective and can only be considered as relatively objective.

In J. M. E. McTaggart's *The Unreality of Time*, he defines time by describing two types of temporal ordering relations among events. That is, in his words, there exist different series representing various ordering relations among events in time. As a series that is essential for time, the A-series is about "positions of time," in which the positions of time are divided into the past, the present, and the future. Whereas, in the B-series, an event's position in the series is described only in relation to other events: "earlier than," "later than," or "simultaneous with." Although these two series apply different notions, McTaggart uncovers that they obtain some level of deficiencies, which in turn question the reality of time.

In the A-series, all three positions can be seen as variations over time: there is a present point in time that turned into the past, first a near past point in time, then a far past point in time, and that once it was a future point. "It is present, will be past, and has been future."² McTaggart argues that time essentially involves change, and that change can be accommodated within an A-series. For example, imagine a banana in a fruit bowl that never ripened; it is hard to make sense of the suggestion that there might be a temporal universe, that is, a universe containing time, in which nothing ever changed, or even could change. After all, the only reason we can imagine the banana in the fruit bowl not ripening is that we can imagine other bananas around it ripening while it stays the same. We can find a similar kind of connection in Augustine: "But the present, should it always be present, and never pass into time past, verily it should not be time, but eternity."³ What Augustine means is that if the present moment never changed and yet still became the past, it would not be a moment in time at all. Otherwise, why

² John M. E. McTaggart, *Selection from The Nature of Existence* (London: Routledge, *Metaphysics: contemporary readings*, 2001) 454.

³ Augustine, *The Confessions of St. Augustine* 53.

should we say that time is passing, as opposed to describing the event as a fixed moment in time?

The A-series can describe the flow of time, but must time involve change? It still appears difficult to assert that everything in time necessarily changes. To show this, McTaggart uses the example of the death of Queen Anne. There are many things we can say about this event: it is a death; it is protracted ... etc. However, these fixed facts themselves do not change—they make no reference to the present. The only way we can incorporate change into the picture, McTaggart argues, is by introducing the A-series. We need to say that Queen Anne's death was in the future, became present, and is now past. Only if we imagine an event integrated within the flow of time (rather than simply a point on a timeline) can we understand the idea of an event unfolding, and changing as it unfolds.

However, McTaggart rejects the A-series because he believes it requires a fixed atemporal point. According to his argument, if time flows, it must flow with respect to something that is outside of time, just like when we attempt to describe how red an apple is we must use some kind of redness other than apples to describe it. However, we cannot imagine something outside of time with respect to describing how time flows. Thus, in McTaggart's view, we must either abandon the claim that time flows or find some alternative explanation.

A premise of the A-series is that we need to know what time is *now*. Unless we know what position of time we occupy in the series, we do not know when the events we mentioned take place. According to the A-series, that an event is changing means that an event which now is considered to be in the past must have once been considered to be in the present and before that it was considered to be in the future. A. N. Prior's tense logic model introduces four "first-grade"⁴ temporal notions that involve the ideas of "before" and "after," and their properties of "temporariness" and "permanency."⁵ Suppose we say that proposition P is true just in case "substance x_1 has property p_1 at time t_1 . [x_1, p_1, t_1],"⁶ then in Prior's first-grade temporal notion, the variables in the description of proposition P in terms of x_1 and p_1 are "at time t or after," "at time t or before," "sometimes true," and "always true."⁷ The "second-grade" temporal notion is the same notion with the addition of the concept of the present. For example, suppose that in the A-series notion, t_1 represents the present time. In a first-order time, the

⁴ Arthur N. Prior, *Papers on Time and Tense* (Oxford: Clarendon Press; new edition, P. Hasle et al. (eds.), Oxford: Oxford University Press, 2003.) 79.

⁵ Prior, *Papers on Time and Tense*, 81

⁶ Jaegwon M. Kim, *Events as Property Exemplifications* (M. Brand and D. Walton (eds.), Action Theory, Reidel, Dordrecht, Netherlands, 1976) 159–177.

⁷ Prior, *Papers on Time and Tense*, 83

description of t_1 has the characteristic of “future–pastness” (when in the future, t_1 will be past) and “present–presentness” (when in the present, t_1 is present) at the same time. Then, in Prior’s second-order tense logic, by adding the concept of “now” we can continue to argue t_1 can have characteristics of “present–future–pastness” (when in the present, t_1 will be past in the future) and “present–present–presentness” (when in the present, t_1 is present in the present) simultaneously.

McTaggart argues that this will be problematic because in this way we are always using the new time to explain the old time. This will eventually culminate in two contradictory claims:

- a. No event can be past, present, and future.
- b. In a complete description of the A-series, every event is past, present, and future.

Claim (a) is obviously true. Never can an event be future, present, and past at the same time, surely it can only be one of the three. But claim (b) is also true; McTaggart assumes that to produce a complete description of the A-series, it would be insufficient merely to categorize every event as past, present, or future. Doing that would only describe one point in the series. For example, if I say that my research reading for this essay is in the past, my writing of this essay is in the present, and my completion of the written essay is in the future, I will only have given a description of one point in the series—that is, the point in the series where my writing of this essay is the present. But that is not the only point in the series. There is also a point in the series where conducting research is in the present, writing this essay is in the future, and completing the final essay is in the far future.

Every change on the point of time must be included if the description of the series is to be complete. By complete, I mean the A-series describes how every event fits into every position it occupies in the series. Therefore, a problem arises when we put these different points in the series together to construct a complete description of it. When we try to merge the points together, we find that they will not combine logically—that is, they are inconsistent with one another. To give an example, the point in the series where conducting research is the present cannot be combined with the point in the series where writing this essay is the present. If we try to combine them, the conducting research reading is described to be both present and past. But we already agreed that no event could be past, present, and future. That is, an event is exclusively past, present, or future. Thus, the A-series is essential for describing the flow of time experienced by humans. However, the failure to give a complete description for an event indicates that the A-series alone is insufficient for explaining time.

On the other hand, there is another way of talking about time even if we do not know what time it is now. The B-series represents a God's-eye view of time, which indicates that events or positions in time have three types of "relations": "earlier than," "later than," or "simultaneous with." The B-series makes no essential reference to the present. It is purely a permanent relationship between positions in time, so it does not reflect a notion of present time. Therefore, in McTaggart's notion, the B-series alone is sufficient for a static, objective time description of real phenomena.

The thrust of McTaggart's B-series was that once we give up the idea of flow, our idea of time basically works like our idea of space. For example, explaining the cooling of boiling water in terms of points in the B-series looks like difference, not change. To say that the boiling water is hot at one time and cool at a later time does not seem essentially different from saying an object is hot at one end of the time-space continuum and cool at the other end of the time-space continuum. This means, according to the B-series, time is real, but time does not flow from one moment to the next. Therefore, there is no change in the B-series. An event that happened yesterday and an event that occurred today (an event that is *later than* yesterday) "will always have a position in a time-series."⁸ In this permanent relation of "earlier" and "later" positions in the B-series, there is no change taking place in the reality of time. In other words, time does not "flow." If we examine the example of the death of Queen Anne with the view of a B-theorist, we acknowledge the facts that it occurs on 1 August 1714, it occurs before breakfast, and it occurs after Anne's coronation. However, they are fixed facts about the death of Queen Anne that will be eternally true, and the B-series can only demonstrate the relations between events without making connections to the present. In this case, the B-theorist needs to explain *why* it appears to us as if time flows along with the facts about the death of Queen Anne.

Because neither the A-series nor the B-series alone is sufficient for explaining time, we may wonder if they complement each other. We've seen that they hold compatible criteria in explaining time, a present event is later than a past event, and earlier than a future event, it seems possible that a hybrid explanation of time exists.

To find such an explanation, first, we need to determine what kind of knowledge we acquire from time. Start from the two kinds of knowledge that Kant proposes: a priori knowledge, whose truth is determined before experience, or without reference to experience; and a posteriori knowledge, whose truth follows experience. Immanuel Kant believes that "no cognition in us precedes experience, and all our cognition begins with experience."⁹ In Kant's view, it seems our realization of time must have some

⁸ McTaggart, *Selection from The Nature of Existence*, 458.

⁹ Immanuel Kant, *Critique of pure reason* (Cambridge: Cambridge University Press, Guyer, P., & Wood, A. W., 1998) 51.

necessary elements to initiate our cognition about time, although these necessary elements may not be the decisive factor for producing such cognition. Therefore, the concept of time could, in principle, be interpreted as both a priori knowledge and a posteriori knowledge. Indeed, we are born with the perception that time is flowing as a priori, and we acknowledge the measurement of time: years, hours, seconds, etc. as a posteriori knowledge. It is evident that these two claims of time are neither identical nor interchangeable. While it is possible for a rational person to experience the flow of time without knowing the measured time, it is also true that minutes and seconds are an empirical creation and no one could have worked it out as a priori knowledge. Therefore, time is a comprehensive concept that consists of both a priori knowledge and a posteriori knowledge.

These, in turn, are part of what Kant labeled the transcendental apperception: human ways of perceiving reality that give those perceptions order and meaning. Kant argues that the truth-value of an object (in this case, time) largely depends on the agreement of perception with the object. The foundation for the agreement of all judgments with each other resting upon the object will indicate the knowledge that we acquire from the object. The process of consciously synthesizing this knowledge will eventually build a coherent, unified system of thinking and judging in which the subjective part fulfills the demands of individuals, while the objective part fulfills the demand of the public in general. In Kant's notion, the thinking and judging of a thing to be true has three degrees: the first is opining, that is to hold a conscious judgment which is insufficient to be true, subjectively equally as objectively; the second is termed believing, that is to hold a judgment sufficient to be true in a subjective way but insufficient in an objective way; the third is termed knowing, that is to hold a judgment which is sufficient subjectively equally as well as objectively.

To constitute a hybrid, plausible description of time, based on Kant's notion of what is true and real, to explain how time works in both objective and subjective terms, first it is necessary to clarify the borderline descriptions between subjectivity and objectivity. To propose my own analysis of time, I will use an analogy borrowed from Gottlob Frege. Imagine a telescope positioned so that it is pointed at the moon. In this analogy, the moon is the objective time; the image on the viewer's retina represents the subjective time. The in-between stage would be the image on the eyepiece of the telescope that connects and interacts between the objective time and subjective time, such as clocks and calendars.

Like the objective time, the moon is an external existence, and it is publicly accessible. It can be seen from many different points of view (many telescopes), which also acquire impartial measurement with accuracy and precision. On the other hand, the image on the retina represents subjective values that determine or guide what we think of as valuable and worthwhile, such as personal, social, and cultural norms regarding

instinct, morality, etc. The image on the retina corresponds to the subjective time—that is, a particular person’s private set of associations with the time. It is the time we experience in biological and psychological perception. Moreover, the image on the eyepiece of the telescope represents the moon only from a single point of view; just like the clock and the calendar are different ways we use to calculate the time. Nonetheless, it is publicly accessible, at least in principle. For example, the telescope could be set up so that many people can look through the eyepiece and end up with similar images of the moon. Clocks and calendars are like this in that they are particular “modes of access” to the objective time.

Based on this analogy, suppose the concept of time, like the concept of any concrete object, is comprehensive, and that what we perceive as subjective experience should be consistent with, or at least interact with, objective truth. An example can be found in Smart’s physical reductionist argument: in *Sensations and Brain Processes*, J. J. C. Smart claims that our understanding of lightning can progress from initially grasping it only in terms of its subjective features (e.g., its ability to inspire fear and to threaten human life) to understanding it eventually as a completely objective phenomenon (electrical discharge). The same can be applied to other examples, such as water, where we subjectively consider it as a life source, to objectively acknowledging that in molecular structure it is H₂O. Democritus claims, “By convention sweet and by convention bitter, by convention hot, by convention cold, by convention color; but in reality atoms and void.”¹⁰ Thinking in this way, the knowledge we acquire from objective time should be the “atoms and void” of time in reality. For example, the concept of “present” in the A-series should then be an objective understanding of the present time in its own right, which is not dependent on the subject of experience. Because, when we use the word “now” in a sentence, we all agreed on the fact that the “atoms and void” in “now” represent the present moment, a particular point in time.

However, the present moment that I previously mentioned, theoretically as a self-evident objective truth in our belief, is, in fact, an ideal and unreachable concept. There exists such “specious present” that makes it impossible for us to capture the exact moment of time. In other words, in the A-series, when we think of the “present” moment, it is not an exact point in time, but rather, it is an extended time period. It covers a time period of about a few seconds. E. R. Clay writes:

The relation of experience to time has not been profoundly studied. Its objects are given as being of the present, ... which is really a part of the past—a recent past—delusively given as being a time that intervenes between the past and the

¹⁰ Walter Englert, *Democritus* (In *The Encyclopedia of Ancient History*, Roger S. Bagnall et al. Hoboken: Wiley. 2012)
<https://search.credoreference.com/content/entry/wileyenanh/democritus/0>

future. Let it be named the specious present, and let the past, that is given as being the past, be known as the obvious past. Time, then, considered relatively to human apprehension, consists of four parts, viz., the obvious past, the specious present, the real present, and the future.¹¹

Clay argues that in our original intuition of the present moment, it theoretically should be a specific point of time, it is practically a certain duration that includes a part of the very near past and a part of the very real present.

Previously, we have seen the thrust of Smart's lightning analogy is that scientific progress dictates that all things get reduced to physical terms in the end: lightning, water, etc. In the case of lightning and water, we can make a useful distinction between the way they appear to us (subjectively) and the way they really are (objectively). However, when we apply those rationales to the present moment of time, a problem arises. Because of the specious moment, the reduction is no longer worthwhile. By objectifying the physical duration of time, it makes no difference in our essentially subjective perception of time. Clay's argument explains in what respect time differs from lightning and water: time cannot be directly perceived but must be reconstructed and analyzed by the brain. Thus, unlike the physical description of water, which can influence our subjective recognition of water, the impotence of objective time makes it unable to make such change in our recognition of time's subjective character.

Thinking in this way, along with Kant's transcendental apperception, our objective perception of time is an illusionary one. It is not the original time that we directly perceived through conscious awareness of elapsed time, but an imitation of time. We subjectively perceive time before we think about time and use language to present time. In the process of organizing our thoughts and language about time, we inevitably filter out something that actually exists in our original perception. In the case of the present moment, according to Clay's specious present argument, we filtered out the part of very near past moment, which in fact can traumatize any argument regarding the present moment. In regard of this, using Smart's physical reductionism to explain time is deceptive.

Because the only way we can perceive objective time is through measured time, we break down the continuous flow of time based on our perceptions of nature and create an abstract, static concept of time made up of "artificial, purely imaginable entities"¹²—

¹¹ Anonymous [E. Robert Kelly, 'E. R. Clay'], *The Alternative: A Study in Psychology* (London: Macmillan and Co. 1882) 5.

¹² David D. Franks, *Subjective and Objective Time* (In *The Encyclopedia of Anthropology*. 2016) <http://www.people.vcu.edu/~dfranks/subjectiveandobjectivetime.htm>

seconds, minutes, days, months, years, and centuries. Because nature does not divide the week into seven days, the unit of weeks is just a man-created distinction.

Moreover, human attribution of time does not indicate the lapses of time that we practically felt or (maybe) hallucinated, which means our units of seconds, minutes, and days do not necessarily involve change. Because according to what McTaggart argues for the B-series, seconds, minutes and days can also be seen as fixed slices of time and space. To find what is essential in time, Sartre writes in *Nausea*:

It's rather the way in which the moments are linked together ... you suddenly feel that time is passing, that each instant leads to another, this one to another one, and so on ... then you attribute this property to events which appear to you in the instants; what belongs to the form you carry over to the content. You talk a lot about this amazing flow of time but you hardly see it.¹³

This means that our concrete actual experience of the passage of time is subjective and private rather than shared and public. It has the structure of the A-series. The present is what we perceive right now, the past is what we remember, and the future is what we anticipate. As a cognitive achievement of our consciousness, the A-series is generated by the human mind, irrespective of whether time is real or unreal. Although time may be real, in Sartre's words, as a being-in-itself that is able to exist without consciousness, we do not yet understand the meaning of this proposition.

Thus, we can say our perception of time is predominantly subjective. Human beings' measurement of time and time itself is like the relationship between the ruler and the concept of length, and that we must clearly understand, because our clocks and calendars are only measurements of time, we cannot interpret these human attributions of time simply as time itself.

The real concern that underlies McTaggart's argument is, whether we can trace back to the most original perception of time through our thoughts and our language. According to McTaggart, the human sense of time, the same as the human narrative, to a great extent, is linear, thus time is unreal. However, linear narrative and linear ways of thinking are only applicable with physical material, rather than abstract material, e.g., time. Linear thoughts and language cannot grasp the complexity of the nature of time. Thus, human ways of thinking and communicating constrain our perception of time. Our attempt at using thoughts and language to track back to our original perception of time is perilous. We may need new concepts and new methods that can investigate the complete description of time, including whether it is real. Furthermore, we must be able to do so in a way that could be understood by those beings, who are not even capable of

¹³Jean-Paul Sartre, *Nausea* (Norfolk, Conn: New Directions. 1949) 65.

such experience, just like we may try to determine how to explain to someone who is blind from birth what it is like to see.

In this paper, I have argued the implausibility of McTaggart's argument through Kant's logic perspective. By referring to Smart's physical reductionism and the "specious moment," it is evident that the objective aspect of time is not the most essential part; rather, what is prevailing in our perception of time is its subjectivity. If we can discover a complete description of time in the future, (although honestly speaking, we would eventually reach "a blank wall"¹⁴: because an answer to this question would seem to require an objective account that necessarily leaves out the subjectivity of what is trying to be explained and we do not even know what would count as such an explanation), I think we will be in a better situation than we are at present, perhaps by starting on nonlinear descriptions of structural features of perception.

¹⁴ Thomas Nagel, *What Is It Like to Be a Bat?* 450.