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The Causal Attainment Theory of Temporal Passage

THE CAUSAL ATTAINMENT THEORY OF TEMPORAL PASSAGE

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I. Introduction

The thesis of temporal becoming, wherein events are held to «pass,» «flow,» or «shift» from the future to the present, and then recede into the past, has been systematically dismantled and renounced by many philosophers. Bertrand Russell (1915) and his followers have argued that the notion of temporal becoming has no objective counterpart and, consequently, that it is psychological or illusory.

Despite the formidable problems involved in explicating the way in which time passes, proponents of the temporal becoming theory or «A-theory» resolutely maintain that there is temporal passage of some type and that it is ineradicable.[1] Furthermore, they contend that tensed language is not anomalous or egocentric, but a reflection of the reality of passage.[2]

In recent years, George Schlesinger (1980) and others have attempted to overcome some of the deficiencies of the temporal becoming theory by interpolating higher orders of time (meta-times or super-times). These attempts have not withstood rigorous scrutiny and thus appear unable to salvage the theory.[3]

The rival theory to temporal becoming, the so-called becomingless view or «B-theory,» has its merits. However, this theory fails to account for salient aspects of temporality. For these reasons, an alternative way of conceptualizing the experience of temporal passage shall be proposed in this paper.

II. A Critique of the Becoming and Becomingless Views

The becoming and becomingless views have frequently been depicted as being polarized. Thus, it is ironic that these theories have been encumbered and found

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1 See, for example, Lucas (1989) and Markosian (1993).

2 See, for example, Harris (1988), p. 20.

3 Schlesinger's proposal has been subjected to penetrating criticism by Oaklander (1984), pp. 70-77.

objectionable for some of the same reasons, namely that they hypostatize events and spatialize time. The passages set forth below epitomize these two views.

In interpreting J. M. E. McTaggart's conception of temporal becoming which is embodied in the A-series, Schlesinger writes:

> A typical event … to begin with is in the distant future; then it becomes situated in the less distant future; it keeps approaching us until it becomes an event occurring in the present. As soon as this happens the event loses its presentness and acquires the property of being in the near past. The degree of its pastness continually increases. (1980, p. 23)[4]

According to Adolf Grünbaum:

> Instead of allowing for the transient division of time into the past and future by the shifting Now of experienced time, the theory of relativity conceives of events as simply being and sustaining relations of earlier and later, but not as 'coming *into* being': we conscious organisms then 'come across' them by 'entering' into their absolute future, as it were. And upon experiencing their immediate effects, we regard them as 'taking place' or 'coming into being.' (1963, pp. 318-319)

Events do not approach «us» on the becomingless view. Rather, as indicated, it is consciousness which «comes across» (i.e., comes into awareness of) events. Grünbaum (1963) has argued that Hermann Weyl's well-known statement that consciousness «crawls» upward along an individual's world-line was metaphorical. Accordingly, to explain the ambiguous relationship between consciousness and the four-dimensional manifold, he formulated a theory in which there is a parallelism between physical and mental events.[5] This dualistic theory has been exhaustively criticized[6] and hence will not be reviewed here.

At one point in his career, C. D. Broad advanced a theory which affirmed the reality of the past and present but not the future. In an exposition of this theory, Broad asserted: «The sum total of existence is always increasing…» (1952, pp. 66-67) This conclusion is inconsistent with the law of conservation of matter and energy. Also, it has been disputed for various other reasons.[7] Broad's theory and assertion are noteworthy because they demonstrate how one can be led astray by reifying events.

Broad (1959) later recanted his theory, protesting that it presupposes that the past and present coexist, simultaneously. Not only was Broad's objection well-taken, but also it pertains (as Broad recognized) to the standard, triadic temporal becoming theory. Nonexistent events could not possibly encroach upon the present from the future, nor could they recede into the past from the present. Consequently, if there is temporal

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4 McTaggart does not explicitly state that events approach «us.» In all other respects, Schlesinger's interpretation closely parallels McTaggart's description (1908, esp. p. 460) of temporal becoming.

5 Grünbaum, «The Status of Temporal Becoming,» in Gale (1967), pp. 322-353.

6 See Gale (1968), pp. 231-239, Čapek (1976), p. L, and Harris (1988).

7 See, for example, Smart (1980), pp. 9-10.

becoming, then past and future events must coexist (simultaneously) with present events.

Grünbaum has vehemently denied the claim made by Milič Čapek (1976) and others that the becomingless view entails that all events coexist, *totum simul*.[8] Nonetheless, to the extent that all events in relativistic space-time are «written,» «laid out,» or thought of as «simply being,» Čapek's polemic is valid.

J. J. C. Smart (1980), L. Nathan Oaklander, and other B-theorists maintain that there are two senses in which events can be said to «coexist.» In the first sense, which B-theorists disclaim, all events exist at the same time. In the second sense, events coexist (tenselessly) at different times. In advocating this view, Oaklander states: «All events are part of a whole that is related by the temporal relations of *earlier* (*later*) *than* and *simultaneous with*.» (1984, p. 228)

If an event of long duration can be divided into micro-events, then one can take the converse approach and aggregate micro-events into a macro-event. For instance, the Civil War is divisible into the various battles of the war or can be conceived of as a single event. Ostensibly, the definition of an event does not hinge on duration. Therefore, *all* the events «earlier than,» «simultaneous with,» and «later than» the Civil War (or any other event) can legitimately be amassed into, and conceptualized as, a singular macro-event. There would be no events earlier or later than an all-inclusive event. *In effect, there would be no B-series.*

As indicated at the outset, some B-theorists have argued that the experience of temporal passage can be discounted. They contend that this pervasive and unrelenting illusion is attributable to the way in which tensed language is used, our increasing stock of memories, or the flow of information through our short-term memories.[9]

Oaklander (1984) is one B-theorist who believes that the different attitudes which people have towards the future and the past are justified. Oaklander also insists that a B-theorist is not bound to disavow the deep-seated impression that time is moving. He has used the following example to account for the experience of temporal movement. At t_1 a man remarks that he is looking forward to his wife's return from vacation (event *e*) at t_n (in three weeks). A similar type of utterance is made by the individual at t_2. Oaklander declares:

> At t_2 … the temporal span (duration) between t_2 and t_n is less than the temporal span between t_1 and t_n. Finally, at t_n, the experience of joy occurs (tenselessly) and so does the event *e* that [the man has] been anticipating at t_1 and t_2. On this account, the passage of time is reflected in the fact that different … utterances occur (tenselessly) at different times and at different temporal distances from the time at which event *e* occurs. (1984, pp. 141-142)

This interpretation of temporal passage is untenable. At t_2 event *e* has not happened and in fact may not happen. There are many circumstances in which an

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8 Grünbaum, «The Status of Temporal Becoming,» pp. 338-340.

9 For a discussion of these views, see Smart (1980), pp. 11-14.

individual would be unable to return from vacation. Thus, at t_2 it is unjustifiable to claim that there is anything more than a *potential* temporal relation between the utterances and the anticipated event. The duration between the utterances and event *e* cannot be calculated unless and until the event happens. Analogously, spatial distance cannot be measured without two points.

In a series of integers exhibited on a coordinate line, the distance from two to five is less than the distance from one to five. There is no apparent difference between these spatial distance calculations, which must be regarded as timeless, and the account of temporal passage under consideration.

III. The Meanings of Pass and Near

The words «pass» and «near» have myriad meanings and are used to express spatial and temporal concepts. Insuperable difficulties arise, such as the inability to elucidate the notion of temporal passage, when the spatially related meanings of these words are substituted for the temporal meanings. Accordingly, through a phenomenological and linguistic analysis, an attempt will be made to disentangle the various subtle and interrelated ways in which these two philosophically important words are used.

There is a linearization of time on the becoming and becomingless views. On one view, the events which constitute the line flow inexorably from the future to the present whereupon they «pass by» stationary observers (the river of time metaphor). On the variation of the becomingless view espoused by Weyl and the physicist James Jeans,[10] consciousness voyages along («passes by») and thereby illuminates different parts of a shadowy, nonflowing river (the «frozen river of time» metaphor).[11]

When a riverboat or other object «passes by» something, such as the embankment or stationary observers, this is purely incidental to its change of position. Comparably, time cannot «pass by» «us» unless it is in motion. As suggested above, some prominent versions of the becoming and becomingless views involve the movement of time or consciousness. Indeed, this is one of the primary reasons why these theories have been fraught with intolerable absurdities and contradictions. There is no temporal motion and consciousness most assuredly cannot move. How, then, are the following perceptions and inferences, and the utterances by which they are conveyed, to be explained?

As wind rustles through the trees and dark clouds appear on the horizon, an individual declares that a rainstorm is «near,» «coming,» or «on its way.» Shortly after this utterance, the person learns that a storm watch has been issued because the «conditions are favorable.» Upon sighting a robin after a harsh winter, a person joyfully proclaims that «spring is near.» An expectant mother remarks that the «time is drawing near» or that the anticipated event is «just around the corner» or «getting close.»

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[10] See P. Frank's, «Is the Future Already Here?» in Ĉapek (1976), pp. 387-395, for discussion and criticism of Jeans' philosophical interpretation of relativity theory.

[11] For an elaboration on these metaphors, see Smart (1949) and Gale (1968), p. 230, respectively.

The first example will be used at this point to clarify the relationship between «pass» and «near.» An individual anticipates that it will soon rain on his or her house. As the storm moves towards the house, it may deceive one into believing that the anticipated event is moving from the future and «becoming present.» Furthermore, when the storm clouds «pass over» the house and the rain begins, it buttresses the notion that the event «became present.» Finally, the event may seem to retreat into the past as the storm «passes by» and moves away from the house.

As implied, anticipation and the perception of motion are two factors which reinforce the spurious belief that events pass from the future and move towards «us.» To see that this notion is indeed misconceived, consider what it was that moved. It was the storm clouds that moved, not the anticipated event. More generally, as Smart pointed out, «*things* change, *events* happen.» (1949, p. 485)

When an event is temporally «near,» this does not mean that there is a short «temporal span» between two events, that a future event has moved closer to the present, or that consciousness has moved closer to an event. In short, the time-related form of «near» is not denotative of spatial distance. However, as represented by the equation for calculating average speed, there is a relationship between distance, time, and speed. For example, when the storm clouds were sixty miles away (position or P_1), they would have been considered spatially distant and the anticipated event would have been thought of as being temporally «distant.» In contrast, the event is considered temporally «near» when the storm is positioned adjacent to or over the house (P_9).

The anticipated event will not happen unless certain conditions are satisfied. One of these necessary conditions is that the storm clouds must be positioned over the house. The storm cannot move from P_1 to P_9 without traversing P_2 to P_8. As the storm clouds «pass through» these intermediate positions, it is recognized that one of the conditions necessary for the event is being met. With the attainment of a necessary condition, the event would be «nearer» to happening.

To expand upon these thoughts, a familiar example of qualitative change will be employed since it is not as complex as positional change and there is an understanding of the causal mechanics involved in the process. At t_1 a farmer asserts that a particular crop will emerge from the soil (henceforth event *A*) at t_6. The conditions which are necessary for event *A* include nutritive soil, seed, proper temperature, and the correct amount of water.[12] These conditions will be referred to as *p*, *q*, *r*, and *s*, respectively.

Some of the conditions, such as *p*, are in place at t_1. However, other conditions, for example *r* and *s*, are unmet at t_1. As things change (e.g., earth changes its position relative to the sun), there is a correlative attainment of the conditions necessary to cause event *A* (the effect). Suppose that at t_4 conditions *p*, *q*, and *r* are met. At t_5 all the necessary conditions are met such that they are jointly sufficient for event *A*. Finally, at t_6 the event happens as was anticipated.

The temporally related utterances, made by an individual in this type of context, reflect the degree of causal attainment. At t_1 the anticipated event is considered

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[12] Only four of the conditions which are necessary for event *A* will be represented.

«distant,» while at t_4, *after several conditions have been attained,* the event is said to be «near.»

There are instances when a person would not conclude that an event was temporally «near» even though there had been a substantial attainment of the conditions necessary to cause the event. To provide an example, suppose that a large amount of toxic chemical had been inadvertently spilled onto the soil at t_4. The individual is aware that the seeds were planted in nutritive soil and that the temperature had been conducive to the anticipated event. However, it is also recognized that the chemical may prevent event *A* from happening.

The preceding thoughts can be formalized in the following definition and postulate:

> The temporally related locution of «near» means that the conditions which are causally necessary for an event have substantially been met and that there has not been an attainment of condition(s) which would obviate the occurrence of the event.[13]

This postulate raises an epistemological question. In the example cited above, the individual would have had at least a cursory awareness of the degree of causal attainment. However, in the case of an inconspicuous or complicated process, how could one possibly have knowledge that an event is imminent?

By establishing a timekeeping system, thereby allowing comparative change[14] to be measured, inferences can be and are made regarding the degree to which the necessary conditions for an event have been met. For example, in the eighth gestational month, an expectant mother discerns that the event is temporally proximate. This realization is possible even though the individual does not have a direct awareness of the physiological conditions which cause the event. Thus, the conclusion that an event is «near» can be reached without a presupposed and detailed knowledge of causal mechanics.

Recall, in the first example, the person asserted that a rainstorm was «near» based on various evidence such as the position and darkness of clouds. Obviously, opaque clouds are not a necessary condition for rain. However, this condition, since it occurs immediately antecedent to the anticipated event, functions equivalently to a timekeeping device by allowing an estimation to be made of the degree of causal attainment.

An example will help demonstrate the preceding point. Assume that conditions *a*, *b*, and *c* cause event *D* (the anticipated effect). Further, assume that condition *b* is unnoticeable, but that a non-causally related condition *s* invariably or generally occurs

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[13] In regards to those philosophers who maintain that event statements are uninformative, it appears that the postulate could also be expressed in terms of «fact-causation.»

[14] The theory outlined herein is neutral with respect to the question of whether time is absolute or relational. However, because of its simplicity, I support a relational theory of time.

contemporaneously with *b*. Although *b* is imperceptible, the degree of causal attainment regarding event *D* can be ascertained by observing condition *s* in conjunction with the appreciable necessary conditions.

In denouncing the becomingless view, G. J. Whitrow queries: «If the future history of the universe pre-exists logically in the present, why is it not already present?»[15] Relatedly, Smart (1963) has argued that if pastness, presentness, and futurity are intrinsic properties of events, then it is necessary to explain why events become present at one date and not at some other.

Why does an event happen at one time and not at another? For instance, if event *A* had occurred at t_{10} instead of at t_6 (the anticipated time), what factors would explain this discrepancy? A-theorists, who also countenance an absolute theory of time, could respond to this question by asserting that time decelerated whereupon there was a concomitant deceleration in the approach of event *A* from the future. Alternatively, they might conjecture that time, for some impenetrable reason, swept other events into being before event *A* which resulted in the delay. The first response is patently absurd and the second one is not very illuminating.

Typically, when an event fails to happen, or happens earlier or later than expected, people do not invoke the notion of temporal movement as an explanation. Rather, they appeal (properly) to the idea of physical necessity: a person would likely say that event *A* happened later than expected because it was «colder than normal» or there was insufficient rain during a particular month. In other words, the event did not happen at t_6 because the conditions at t_5 were causally insufficient for the event.

As argued, the experience of temporal passage can be and, to some extent, is understood in terms of causal principles. This is the first of two postulates which constitute «The Causal Attainment Theory of Temporal Passage» (CAT-TP).

IV. The Hybrid-Series

Since the enunciation of the theory of relativity and the publication of McTaggart's (1908) and Russell's (1915) thought-provoking articles, efforts in the philosophy of time have been primarily directed at resolving the antinomy between the dynamic (A-series) and static (B-series) aspects of time. The A and B-series are inherently flawed in the form in which they were presented and have been refined. However, there are also elements of truth in both of the series. This suggests that a unification of the two series will provide the most viable alternative for relating the notion of temporal passage with the changeless relations of time.

Before a synthesis can be reached, however, it will be necessary to specify and extirpate those components of the A and B-series which are contradictory or extraneous. It will also be necessary to identify the authentic components of the two

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[15] Whitrow, «Becoming and the Nature of Time,» in Čapek (1976), p. 530. Originally published in the *Natural Philosophy of Time* (London: Thomas Nelson and Sons, 1961), pp. 288-296. See Gale (1967), p. 353 for a retort from Grünbaum to Whitrow's question.

series. To identify one of the contradictions of the B-theory, we can turn to Broad. Regarding the statement «the Battle of Hastings precedes the Battle of Waterloo by 749 years,» he has written:

> Such phraseology would suggest that the two events are two particulars which (*a*) somehow *coexist* either timelessly or simultaneously, and yet (*b*) stand timelessly or sempiternally in a certain *temporal* relation of precedence. This must be nonsense…[16]

A tenseless statement, such as «the Civil War is earlier than World War I,» gives the misleading impression that the two events have a reality apart from the people who fought the wars. Vestiges (e.g., weapons) of these wars may exist, but there is no Civil War or World War lurking «out there.» The events happened, but they did not exist. It was the continuants, namely the people and armaments, which existed.

There are no events «in the future.» Furthermore, it is erroneous to make the following type of claim: «1970 … is earlier than 2850.» (Grünbaum 1963, p. 315.) Granted, many of the events of 2850 can be predicted and will likely happen. However, this is radically different from alleging that there is a relation between the events which happened in 1970 and anticipated events. The events of 2850 will happen if, and only if, the conditions necessary for the events are causally sufficient.

There is no event which «is later than» a present event. However, once an event happens, it is then valid to use the following types of modified (tensed) B-series statements: (1) event *X* is happening simultaneous with another event; (2) event *X* is happening later than event *W* happened. Moreover, once event *X* is no longer occurring, one could say: (3) event *X* happened earlier than, simultaneous with, or later than some other event. For instance, it is permanently true that the Civil War «happened earlier than» World War I and that World War I «happened later than» the Civil War. These types of tensed B-series statements are preferable to the tenseless statements since they reflect, not only the unchanging relation between those events which are happening or have happened, but also the nonspatial nature of time.

On the temporal becoming theory, events recede into the «past.» Recent events do seem more immediate than those events which did not happen recently. There is no need, however, to posit metaphysical properties to convey this notion. By using an ordinal scaling method, a «near» and «distant» past can be represented with tensed B-series statements as follows: (1) e_1 occurred earlier than e_2; (2) e_1 occurred much earlier than e_5. In fact, by dating events and thereby establishing an interval scale, this notion is implicitly represented.[17] For example, if events *C* and *D* happened in 1200 and

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[16] Broad, «Ostensible Temporality,» in Gale (1967), p. 131. Originally published in *An Examination of McTaggart's Philosophy* (Cambridge: Cambridge University Press, 1938), Vol. II, Pt. I. C. W. K. Mundle has modified Broad's statement in the following way to better reflect the Russellian position: «The Battle of Hastings precedes the Battle of Waterloo *and both precede this*.» For this statement, see «Broad's Views About Time,» in Schilpp (1959), p. 370.

[17] For a comprehensive discussion of scaling methods, see Torgerson (1958).

1992, respectively, it is, obviously, unnecessary to state that event *C* happened «much earlier than» event *D*.

According to some A-theorists, events acquire and then discard the property of «presentness.» Events do not «come into being» unless they have acquired this strange property. But how can something acquire a property unless it exists? Thus, the argument that «presentness» is a property of events is circular; an event would have to exist «in the future» in order to «come into being.»

There have been numerous unsuccessful attempts to discover a physical basis for temporal becoming. Since events on the temporal becoming theory shift relative to the present, these attempts have typically focused on defining or identifying «the present.» For example, Hans Reichenbach, inspired by quantum mechanics, once defined the present as «the moment at which that which was undetermined becomes determined …»[18] Grünbaum (1963) and Richard Gale (1968), following in the steps of Hugo Bergmann, have assailed Reichenbach's criterion since it does not single out any one event, in the history of the world, as being «the present.»

There is no property of «presentness» which is intrinsic to events. Hence, no attempt will be made to find a physical basis for «the present.» There is, however, a relationship between when an event happens and a physical criterion. On the necessary and sufficient version of causation, an event happens if, and only if, certain requisite conditions are met.[19] This is a natural limitation which can be utilized to distinguish between potentialities, present events, and the set of events which happened earlier than present events. Before this task is pursued, some clarifying information regarding the necessary and sufficient version of causation will be presented.

Inasmuch as the relation between causes and their effects is symmetrical on the necessary and sufficient version of causation, the theory is incomplete. Consequently, for this analysis, the theory will be and has been coupled with the notion (as is often done) that the difference between a cause and its effect is one of temporal priority. Hereinafter, this theory will be referred to as the «complete necessary and sufficient theory of causation.»

Recall, the reason that event *A* was considered near at t_4 was because a large proportion of the conditions necessary for the event had been met at that time. For this reason, there is a temptation to conclude that event *A* was present (i.e., happening) once the following criterion was satisfied: there was an attainment of the necessary conditions. Conditions *p* through *s* were sufficient for event *A* at t_5, yet the event did not happen until t_6. Since the criterion was met before the event had occurred, it is unworkable in association with the complete necessary and sufficient theory of

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[18] From Grünbaum (1963), p. 320. Originally published as H. Reichenbach, «Les Fondements Logiques de la Mécanique des Quanta,» *Annales de l'Institut Henri Poincaré*, Vol. XIII (1953), pp. 148-154.

[19] I am indebted to Richard Taylor for his work in the articles entitled «Causation.» See Taylor (1963) and (1967).

causation, where, by definition, cause *X* is sufficient for effect *Y* before *Y* is sufficient for *X*. Incidentally, this criterion would be feasible if causes occur simultaneously with their effects.

There is a way to define present events based on a physical criterion. Event *A* happened or was present at t_6, *a time at which the event was sufficient for its cause*. Based on this criterion, potentialities can be defined as the set of events which have the capacity to occur, and, relative to present events, are insufficient for their causes.

To reconcile the becoming and becomingless views, the residual components of the A and B-series have been reconstructed into a hybrid-series. As alluded to, this trichotomous series includes potentialities, present events, and the set of events which happened earlier than present events. Stated differently, the hybrid-series is an amalgam of the tensed B-series and potentialities.

At this point, it may be advantageous to recapitulate the CAT-TP in terms of the example which has been used throughout this paper. At t_1 event *A* was a potentiality. At t_4 there was a substantial attainment of the conditions necessary for event *A* such that it was proclaimed that the event was «near.» Event *A* happened at a time (t_6) at which it was sufficient for its cause. Once this criterion was met, it could be stated that the effect (event *A*) «occurred later than» its cause or that the cause «happened earlier than» its effect.

There are significant differences between the hybrid-series and the A and B-series. The hybrid-series is eliminative of the properties «pastness» and «futurity.» Furthermore, the phrase «present events» differs from the «now» in that it has been divested of its ontological status. The idea of the shifting present, which is the cornerstone of the temporal becoming theory, has been eschewed. It is true that what was perceived yesterday is different from what is being perceived today. This notion, however, reflects nothing more than that there are events which happen (tensely) and are perceptible at different times.

Oaklander embraces the idea that temporal relations are simple entities which belong to the «ontological furniture of the world.» Regarding this premise, he writes: «Such a recognition in turn implies viewing temporal relations as *descriptive* relations; in order for them to obtain between and among events, the events themselves (the relata of the relations) must exist.» (1984, p. 19)[20] One reason that B-theorists, such as Oaklander, consider the A-theory impoverished is because the theory must somehow relate nonexistent or possible future events to existent present events. The B-theory is able to avert this problem, but only by spatializing time.

On the hybrid-series, there are temporal relations between present events and the set of events which happened earlier than present events. There is only a potential relation between potentialities and those events which are happening or have happened. However, once an effect is sufficient for its cause, it is assimilated into the network of

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[20] See Broad, «Ostensible Temporality,» pp. 131-132, for criticism of this way of thinking.

fixed temporal relations. In this way, physical necessity acts as a gatekeeper or mediator between potentialities and the tensed B-series.

As argued previously, the A-theory entails a *totum simul* to the extent that events are thought of as moving towards or away from the present. Also, as suggested above, the types of relations envisaged by B-theorists would not be possible without a *totum simul*. With physical necessity as a gatekeeper to the network of temporal relations, this would explain why every event does not happen at once.

V. A Defense of the Proposed Theory

Causal theories of time integrate ideas from two broad, interconnected, and recondite areas of philosophic thought. As a result, they can be challenged from several angles. The CAT-TP is no exception. Therefore, at this juncture, only a limited defense of the theory shall be undertaken. Some of the potential objections have been addressed in the course of outlining the theory.

Broad argued that motion and qualitative change presuppose becoming.[21] Similarly, despite Russell's insistence to the contrary, McTaggart (1908) steadfastly maintained that there could be no change without the A-series. These types of arguments have been used against the B-theory and could also be employed against the proposed theory.

In *Scientific Thought*, Broad characterized becoming as a «change of time» as opposed to a «change in time.» A «change of time» means that an event changes with respect to its «A-characteristics.» As intimated in the preceding section, this notion of temporal change is discredited by its circularity. Also, it presupposes that events exist «in the future» and that they are thing-like (i.e., capable of changing qualitatively).

Since there are no A-characteristics, the claim that there are «changes of time» is meaningless. More generally, since the dynamic account of temporal passage has proven to be unintelligible, the argument that the CAT-TP presupposes temporal or absolute becoming is not credible.

Having appreciated the relationship between time and causality in the special theory of relativity, a number of contemporary philosophers, including Reichenbach (1956) and Grünbaum (1963), advanced causal theories of time. Multiple criticisms have been leveled against the causal theory of time.[22] The most pernicious objection to the theory is that it is circular. In the Humean regularity theory of causation, as well as in the complete necessary and sufficient theory of causation, causal asymmetry is derived from an underlying, primitive temporal relation. The causal theory of time and its variations are based on the antithetical position. Hence, they are, or at least appear to be, incompatible with the prevailing belief that the sole difference between a cause and its effect is one of temporal precedence.

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[21] See Broad's, «Ostensible Temporality,» p. 124 and «A Reply to My Critics,» in Schilpp (1959), pp. 766-767.

[22] See, for example, Smart (1969).

The CAT-TP diverges from the causal theory of time insofar as it is not based on the supposition that temporal order is reducible to causal order. Therefore, the charge of circularity is inapplicable to the proposed theory.

6. Concluding Remarks

The CAT-TP has been propounded as an alternative to the becoming and becomingless views. In this essay, among other things, an attempt has been made to elucidate the meanings of the words «pass» and «near.» The words «approach» and «advance» have also played a central role in the temporal becoming theory; events are held to «approach» the present or «us» from the future. Because of their significance and relationship to «pass» and «near,» these words have also been indirectly scrutinized.

As was discovered with «pass» and «near,» «approach» and «advance» have numerous, interrelated spatial and temporal meanings. The words «approach,» «pass» (passing through), and «advance» can all denote a movement of an object between two spatial positions. This is the meaning which has been illicitly associated with, and thereby tainted, the notion of temporal passage.

The words «approach» and «advance» can also denote accomplishment, achievement, and attainment. This meaning captures the essence of the experience of temporal passage. Accordingly, it has been embodied within the first postulate which can be restated as follows: the temporally related form of the words «near» and «distant» reflect the degree to which the requisite steps have been completed, or the necessary conditions have been met, for an event to happen.

Thus, the impression that events approach the present is explicable without positing nomadic, substantialized events. Moreover, other aspects of the experience of temporal passage, such as the shifting present, can also be explained without the A-series.

The tenseless B-series provides a foundation for temporal relations. However, it is artificial and discordant with the experience of temporal passage. Furthermore, the amassment of all micro-events into a singular macro-event obliterates the tenseless B-series. When the B-series is used conditionally (i.e., it is not used to refer to events later than present events), and is modified to express the nonspatial nature of time, it is veritable.

The first postulate of the CAT-TP symbolizes the experience of becoming, whereby events «approach» from the «future.» The second postulate or hybrid-series concerns the type of temporal structure that is needed to account for this experience in a coherent fashion. More work will be required to test the plausibility of these postulates, although when taken together they appear to provide a reasonable framework for harmonizing the immutable, relational aspects of time with the experience of temporal passage.

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