

How Consciousness Introduces Presentism into an Eternalist Spacetime

Ego Dissolution as Presentism-Dissolution

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Abstract

This paper proposes a formal identification between ego dissolution, as reported under psychedelics, deep meditation, and near-death experiences, and reference-frame dissolution as understood within Einstein's special theory of relativity. If the default ontological structure of the universe is eternalist, a four-dimensional block in which past, present, and future coexist, then the experience of sequential time requires explanation, not the other way around. I argue that it is consciousness, operating through a stable reference frame anchored by the Default Mode Network (DMN), that introduces presentism into an otherwise eternalist spacetime. Ego dissolution, the disintegration of this neural reference frame, reverses the process: sequential time collapses, and the subject reports experiences structurally isomorphic to the eternalist block universe, including timelessness, non-locality, and the coexistence of all events. The central thesis is therefore twofold: (1) ego dissolution is the phenomenological correlate of reference-frame dissolution, and (2) the ordinary experience of presentism is not a feature of the universe but a product of conscious observation from within a local reference frame.

Keywords: ego dissolution, reference frame, eternalism, presentism, block universe, special relativity, Default Mode Network, consciousness, psychedelics, meditation

1. Introduction

The philosophy of time is divided by a fundamental question: does only the present moment exist (presentism), or do past, present, and future coexist as equally real regions of a four-dimensional block (eternalism)? Since Minkowski's (1909) geometric reformulation of Einstein's special relativity, the eternalist position has drawn strong support from physics. The relativity of simultaneity, time dilation, and the invariance of the spacetime interval all suggest that the division of events into "past," "present," and "future" is observer-dependent rather than intrinsic to the fabric of reality.

Yet our lived experience is overwhelmingly presentist. We experience time as a flow, with a privileged "now" that moves from past to future. This paper argues that this discrepancy is not a problem for eternalism but rather its strongest indirect confirmation. If the universe is fundamentally eternalist, then the experience of presentism must be produced by something. I propose that this something is the conscious observer's reference frame, neurally instantiated by the Default Mode Network, which carves a local, sequential timeline out of an otherwise timeless whole.

The corollary is testable in principle: when the reference frame dissolves, presentism should dissolve with it, and the subject should report an experience structurally consistent with eternalism.

This is precisely what happens during ego dissolution.

2. The Eternalist Default

The special theory of relativity establishes that time is not absolute. A moving clock runs slower than a stationary one (time dilation), and observers in relative motion disagree about the simultaneity of spatially separated events (relativity of simultaneity). These are not interpretive options but experimentally confirmed consequences of the Lorentz transformations. The Hafele–Keating experiment (1972), GPS satellite corrections, and muon decay measurements all confirm that temporal measurements are reference-frame-dependent.

What is not reference-frame-dependent is the spacetime interval: the four-dimensional distance between events. This invariant quantity is the same for all observers, regardless of their state of motion. It is this invariance that motivates the block universe interpretation: if no observer's slicing of spacetime into "now" is privileged, then the most parsimonious ontology treats all events as equally real. As Petkov and Silberstein (2010) have argued, the relativity of simultaneity provides a strong argument that presentism and other theories bestowing special ontological status to the present are untenable.

The growing block theory, which holds that the past and present exist but the future does not, attempts a compromise. However, it inherits a critical difficulty: it requires a universal, objective "now," a global present hyperplane that determines the boundary of existence. The relativity of simultaneity undermines precisely this requirement. If simultaneity is observer-dependent, there is no fact of the matter about which events constitute "the present," and therefore no objective boundary for the growing block to grow along.

I therefore take eternalism as the default ontological position consistent with special relativity. The question then becomes: if the universe is a four-dimensional block in which all events coexist, why do we experience time as a sequential flow?

3. Consciousness as the Source of Presentism

My proposal is that presentism is not a feature of the universe but a product of observation. A conscious observer, embedded in spacetime with a stable reference frame, necessarily experiences events sequentially. The reference frame acts as a coordinate system that partitions the block universe into "here" and "there," "before" and "after," "past" and "future." Without this partitioning, these categories have no intrinsic meaning in the block.

Neurologically, the structure that anchors this reference frame is the Default Mode Network (DMN). The DMN is a network of brain regions, including the medial prefrontal cortex, the posterior cingulate cortex, and the angular gyri, that is active during self-referential processing, mental time travel, and the construction of a continuous autobiographical narrative (Raichle et al., 2001; Buckner et al., 2008). The DMN maintains the sense of being a self located in space and extended through time. In the language of this paper, the DMN is the neural substrate of the observer's reference frame.

This framing reverses the traditional explanatory burden. It is not timelessness that requires explanation; timelessness is the default of the block universe. It is the experience of sequential time that requires explanation, and that explanation is the reference frame imposed by a conscious observer through the neural machinery of the DMN.

4. Ego Dissolution as Reference-Frame Dissolution

Ego dissolution is a well-documented phenomenological state occurring under psychedelics (Carhart-Harris et al., 2012; Griffiths et al., 2006), in deep meditation (Berkovich-Ohana et al., 2013), and during near-death experiences (van Lommel et al., 2001). Its core features include: the dissolution of the boundary between self and world, the cessation of the experience of sequential time, the experience of all events as coexisting in an “eternal now,” and the experience of non-locality, that is, the absence of spatial separation.

These features correspond precisely to what one would predict if the observer’s reference frame were removed from an eternalist spacetime. Without a reference frame, there is no partitioning of events into “before” and “after.” Without a coordinate center, there is no “here” versus “there.” What remains is the invariant geometry of spacetime itself: a structure in which all events coexist, without sequence, without locality.

The neurological evidence supports this mapping. Psilocybin, the most extensively studied psychedelic in this context, produces its effects precisely by disrupting the DMN (Carhart-Harris et al., 2012). The degree of DMN disruption correlates with the intensity of reported ego dissolution (Muthukumaraswamy et al., 2013). Deep meditation traditions that report ego dissolution, such as Buddhist jhana practice, likewise show reduced DMN activity (Brewer et al., 2011). In each case, the disintegration of the neural reference frame is accompanied by phenomenological reports that are structurally isomorphic to the eternalist block universe.

5. The Identity Claim

I am not merely claiming an analogy between ego dissolution and reference-frame dissolution. I am claiming an identity. The argument proceeds as follows:

Premise 1: The default ontological structure of spacetime is eternalist: all events coexist in a four-dimensional block (from special relativity).

Premise 2: The experience of sequential time (presentism) requires a reference frame: a coordinate system that partitions the block into “before,” “now,” and “after.”

Premise 3: In conscious observers, this reference frame is neurally instantiated by the Default Mode Network.

Premise 4: When the DMN disintegrates (under psychedelics, deep meditation, or near-death states), subjects report the cessation of sequential time, non-locality, and the coexistence of all events.

Conclusion: Ego dissolution (the disintegration of the neural reference frame) is the experiential correlate of reference-frame dissolution in relativity. What subjects experience in this state is the eternalist block universe apprehended without the presentist partitioning imposed by the observer’s reference frame.

6. The Distinction Between Consciousness and a Measuring Device

This framework provides a novel criterion for distinguishing a conscious observer from a scientific measuring device. A detector always functions within a fixed reference frame. It records events as located in space and time, and it cannot dissolve its own frame of reference. It registers data but remains permanently confined to a local perspective.

A conscious observer, by contrast, can undergo reference-frame dissolution. This capacity, the ability to dissolve the very structure from which spatiotemporal observations arise, marks the essential distinction between consciousness and any form of detector. A telescope cannot see the block universe; it can only register observations within its local reference frame. Only consciousness, freed from the constraints of ego, can apprehend the invariant geometry that physics deduces but cannot observe.

This suggests a test for consciousness: if a system can undergo a transition from a localized, sequential mode of experience to a non-local, timeless mode, that is, if it can dissolve its own reference frame, then it possesses the essential hallmark of conscious observation.

7. Two Modes of Consciousness

The model thus identifies two fundamental modes of conscious experience:

Mode 1: Filtered consciousness (presentist mode). The DMN is intact. The observer operates within a stable reference frame. Experience is local, sequential, and structured by subject-object differentiation. Time appears to flow. This is the mode of ordinary waking consciousness, and it corresponds to a presentist phenomenology imposed upon an eternalist ontology.

Mode 2: Unfiltered consciousness (eternalist mode). The DMN has disintegrated. The reference frame has dissolved. Experience is non-local, timeless, and undifferentiated. Subject and object merge. This is the mode reported in ego dissolution, and it corresponds to the direct apprehension of the eternalist block universe without the partitioning imposed by a reference frame.

The transition between these modes is not a transition between reality and illusion, nor between clarity and confusion. It is a transition between two ways of relating to the same underlying reality. Mode 1 introduces presentism into an eternalist universe. Mode 2 dissolves that introduction and returns to the eternalist default.

8. Implications and Predictions

If this framework is correct, several consequences follow. First, the degree of DMN disruption should correlate with the degree to which subjects report eternalist phenomenology: timelessness, non-locality, and the coexistence of events. Existing data from psilocybin studies (Carhart-Harris et al., 2012) are consistent with this prediction, but targeted studies designed to measure this specific correlation would strengthen the case.

Second, the framework predicts that any intervention that disrupts the DMN, whether pharmacological, contemplative, or pathological, should produce phenomenological reports converging on the same structural features. The cross-cultural and cross-method consistency of ego dissolution reports (psychedelics, meditation, near-death experiences, certain forms of epilepsy) supports this prediction.

Third, the framework offers a resolution to the longstanding puzzle of why the block universe, though mathematically well-motivated, feels so counterintuitive. It feels counterintuitive precisely because our cognitive architecture is designed to generate presentism. The DMN does not passively register the structure of spacetime; it actively constructs a sequential, localized narrative out of an underlying reality that has no such structure. Eternalism feels wrong because our brains are presentism-generating machines.

9. Conclusion

The central claim of this paper is that the ordinary experience of sequential time is not a feature of the universe but a product of conscious observation from within a local reference frame. The universe, as described by the special theory of relativity, is fundamentally eternalist. Consciousness, through the neural machinery of the Default Mode Network, introduces presentism by imposing a reference frame that partitions the block universe into past, present, and future.

Ego dissolution, the disintegration of this neural reference frame under psychedelics, deep meditation, or near-death states, reverses this process. The presentist partitioning collapses, and the subject reports an experience structurally isomorphic to the eternalist block universe: timelessness, non-locality, and the coexistence of all events.

What physics deduces mathematically, consciousness can apprehend experientially, but only when the reference frame that normally filters that apprehension is dissolved. Ego dissolution is not a loss of contact with reality. It is the removal of the very structure that prevents direct contact with the fundamental nature of spacetime.

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