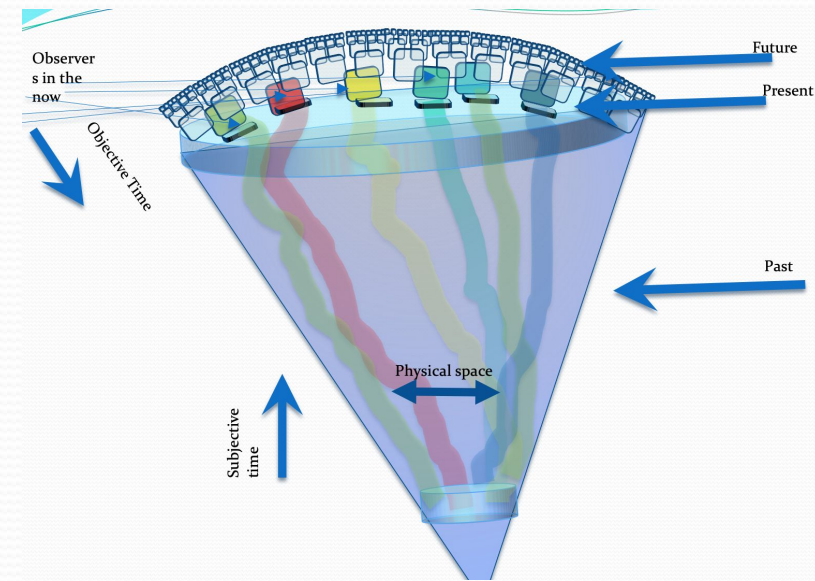


**Could postulating three dimensions of time
address assorted disparities between physics
and experience?**

Jonathan W. Schooler
University of California Santa Barbara

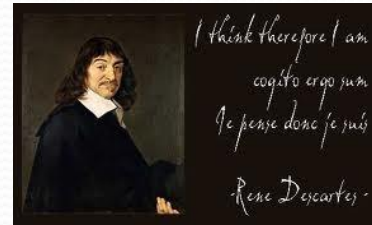
The Three Dimensions of Time

- Basic conjecture- postulating three dimensions of time may provide a metaphysical foundation for addressing several key limitations of reconciling subjective experience with physical reality.

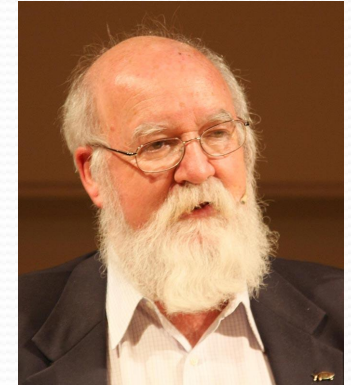
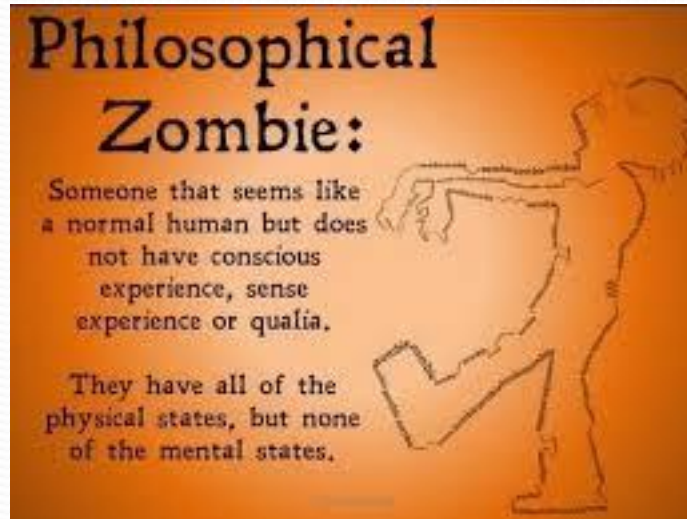


Four Self-Evident Truths

- Experience exists
 - I think therefore I am
- Experience is defined by change
 - Time flows
- Experience is always now
 - “Now” is special
- Experience is impacted by our decisions
 - We have free will



View from Science: Hard Problem of Consciousness, could be an illusion.



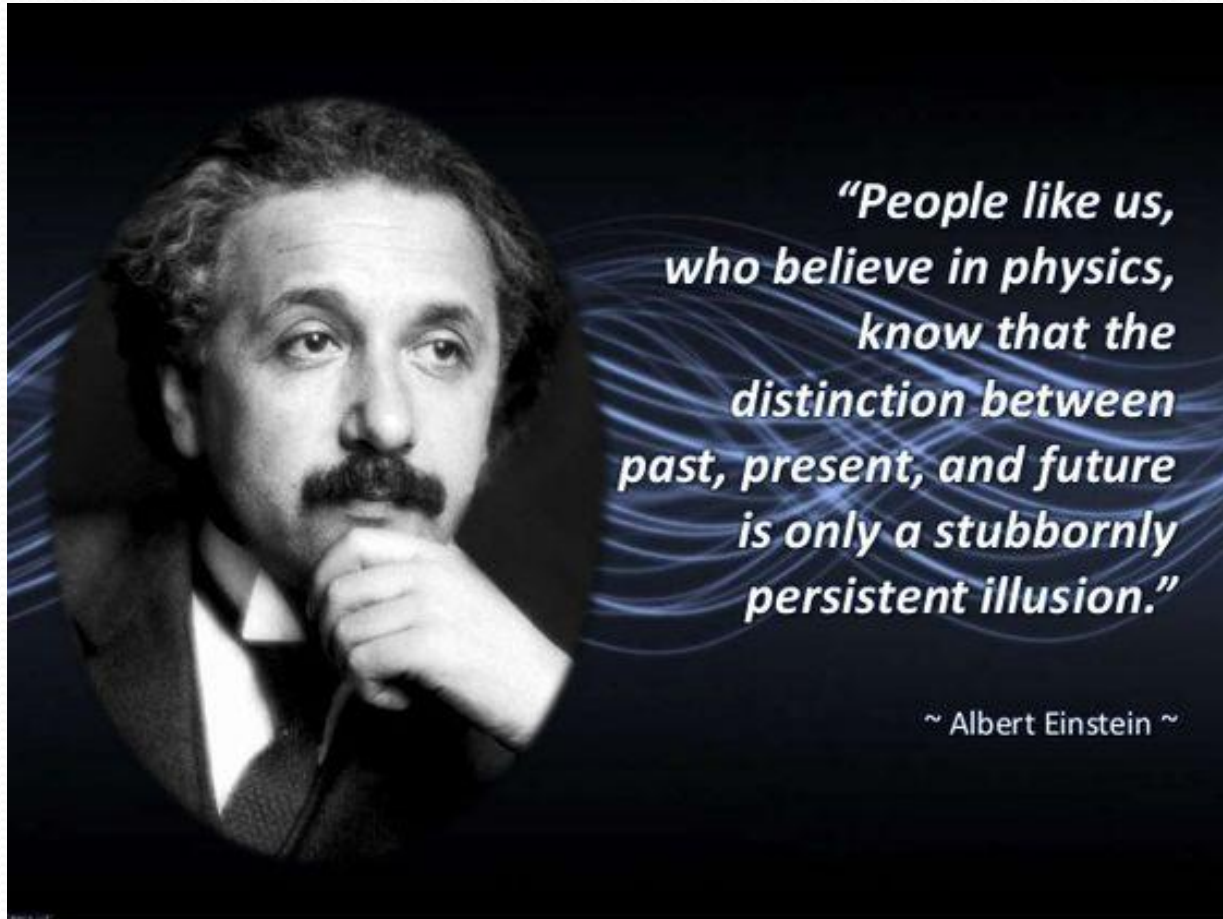
- Are zombies possible? They're not just possible, they're actual. We're all zombies. **Nobody is conscious.**
 - Dennett, 1991

View from Science: Flow of Time is an Illusion

- “Nothing in known physics corresponds to the passage of time. Indeed, physicists insist that time doesn’t flow at all; it merely *is*”
 - (Theoretical Physicist Paul Davies)



View from Science: The Privileged Present is an Illusion



View from Science: Free will is an Illusion



You have the illusion of free will, but, in fact, that illusion comes about because you don't know the future. Because you are a prisoner of the present, forever locked in transition, between the past and the future.

Neil deGrasse Tyson

quotefancy

Why do physicists reject the flow of time and the privileged present?

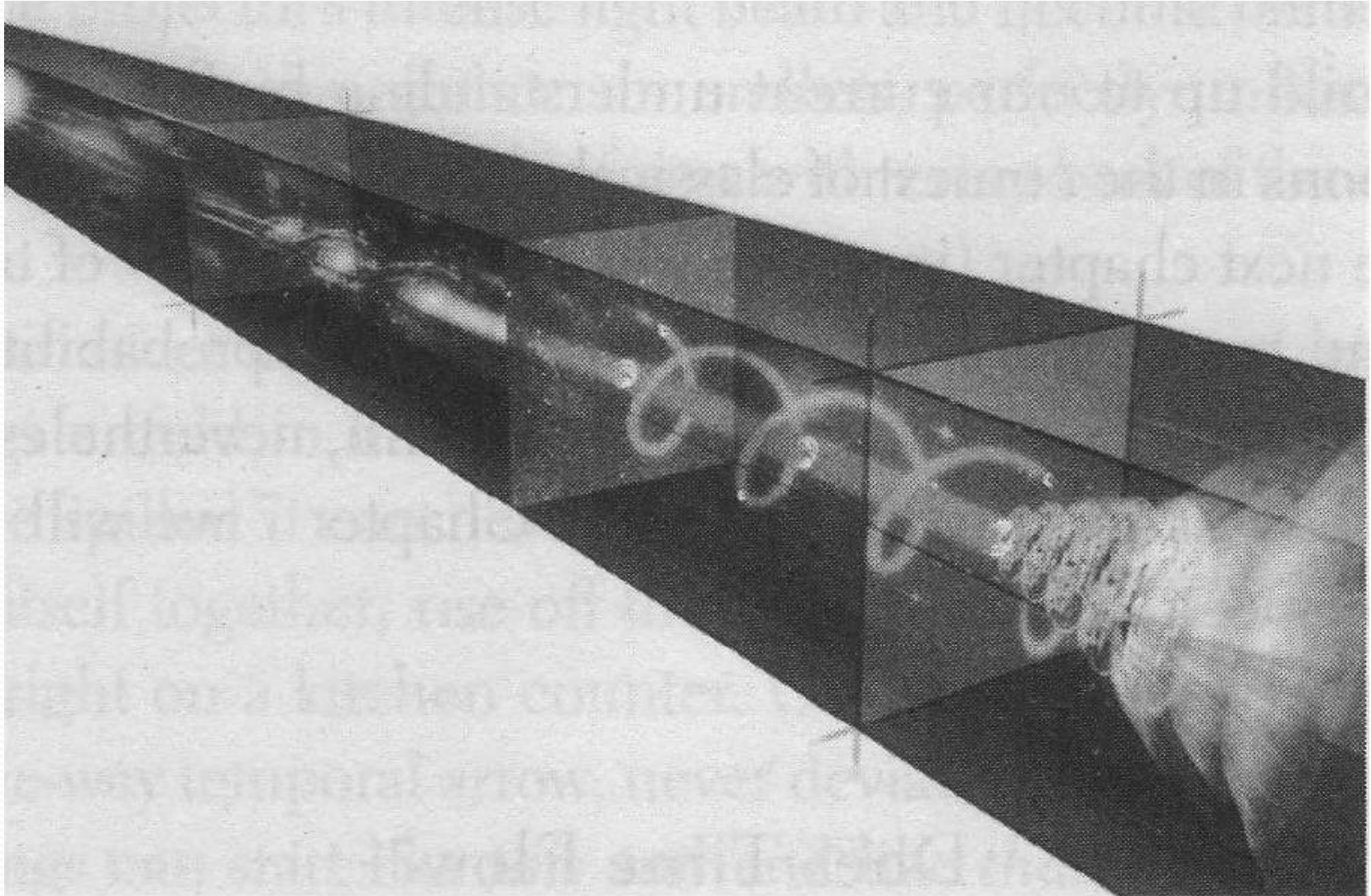
Now appears to move from one moment to the next in a steady flow



nownownownownownownownownownownow

... but this is an illusion.

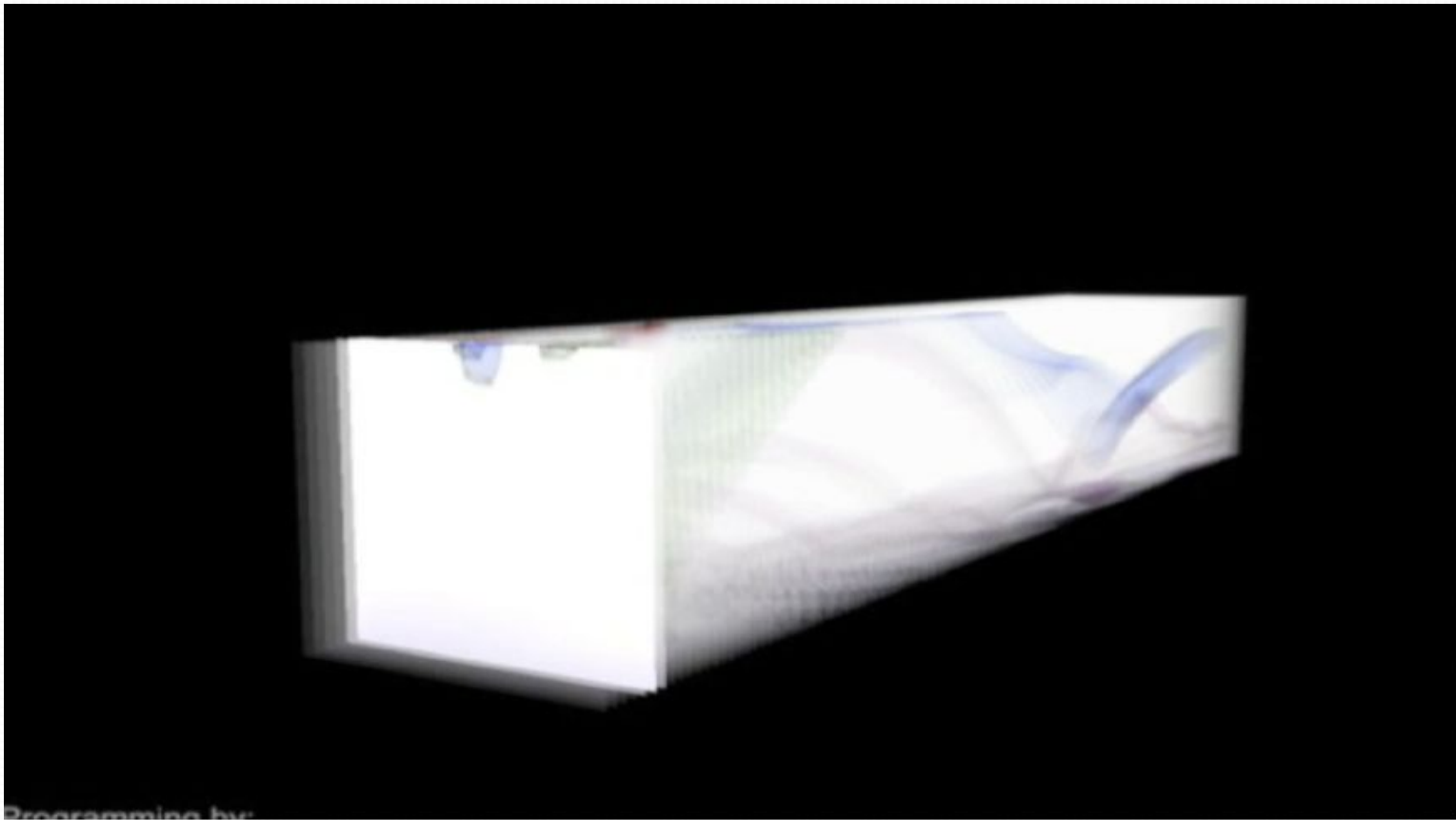
Block Universe



An event as experienced by an observer



Same Event in the Block Universe



Herein lies the rub

- Science provides absolutely no way of conceptualizing the four most self evident aspects of existence:
 - Experience
 - Flow of time
 - Uniqueness of now
- Suggests the need for scientific humility
- Raises the likelihood that science will need to find a place for subjectivity in its foundation

What is missing?

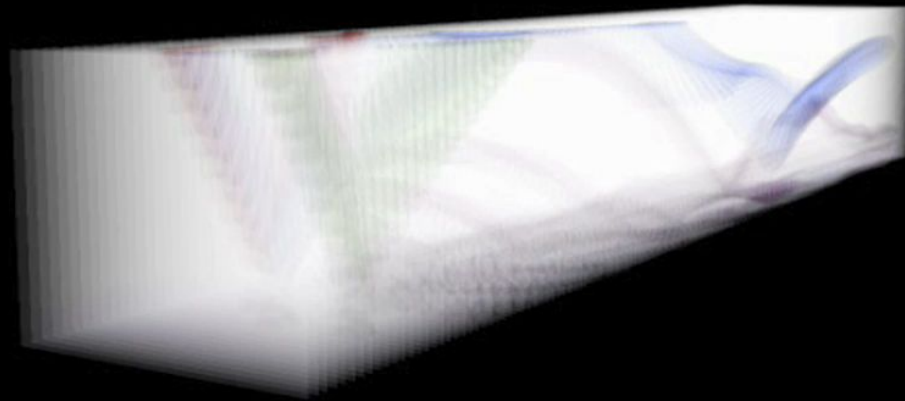


- The degrees of freedom necessary to enable an observer to move through objective time and to have genuine alternative options
- Provocative speculation
 - perhaps experience requires the postulation of additional dimensions of time that provides the degree of freedom necessary to enable consciousness to move in relation to physical time

A Subjective Dimension of Time

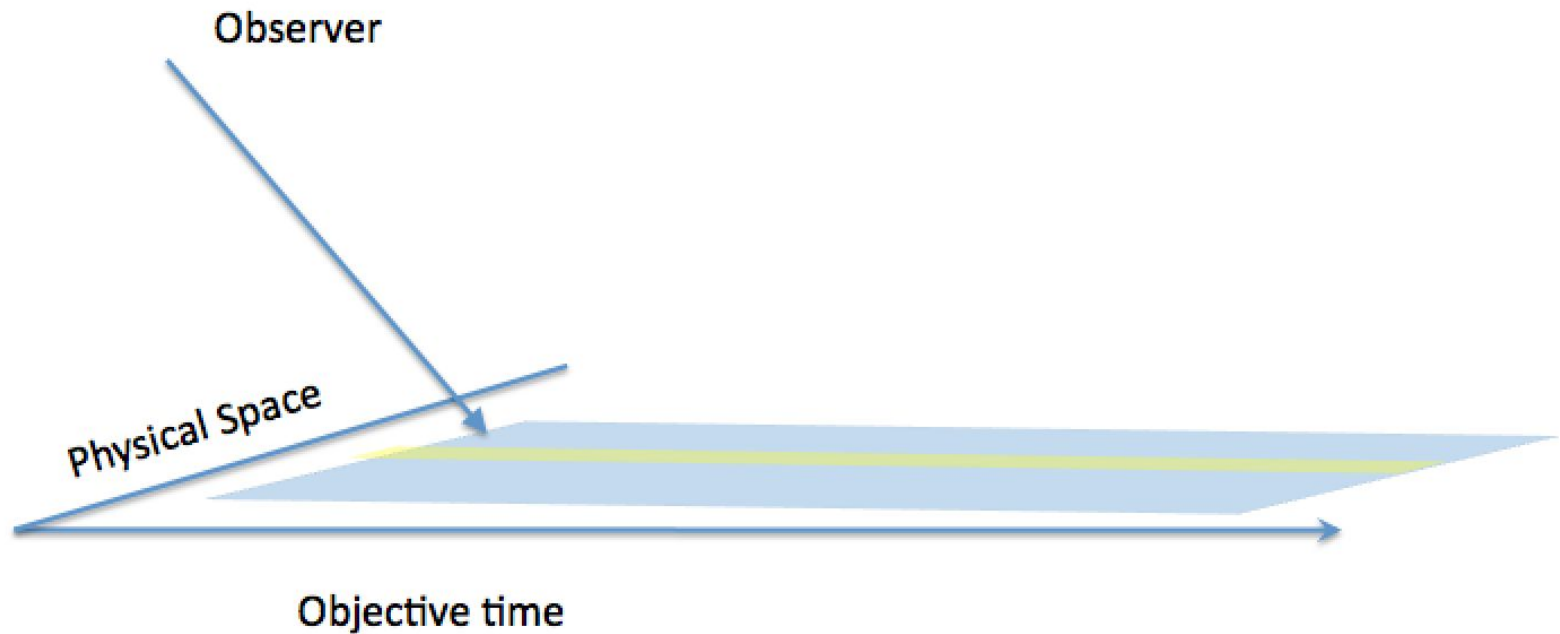
- Psychological importance
 - Experience of time varies dramatically based on situation
 - Accidents
 - Aging
 - Mania vs Depression (Northoff)

Depicting Consciousness as Moving Through a Dimension of Mental Time

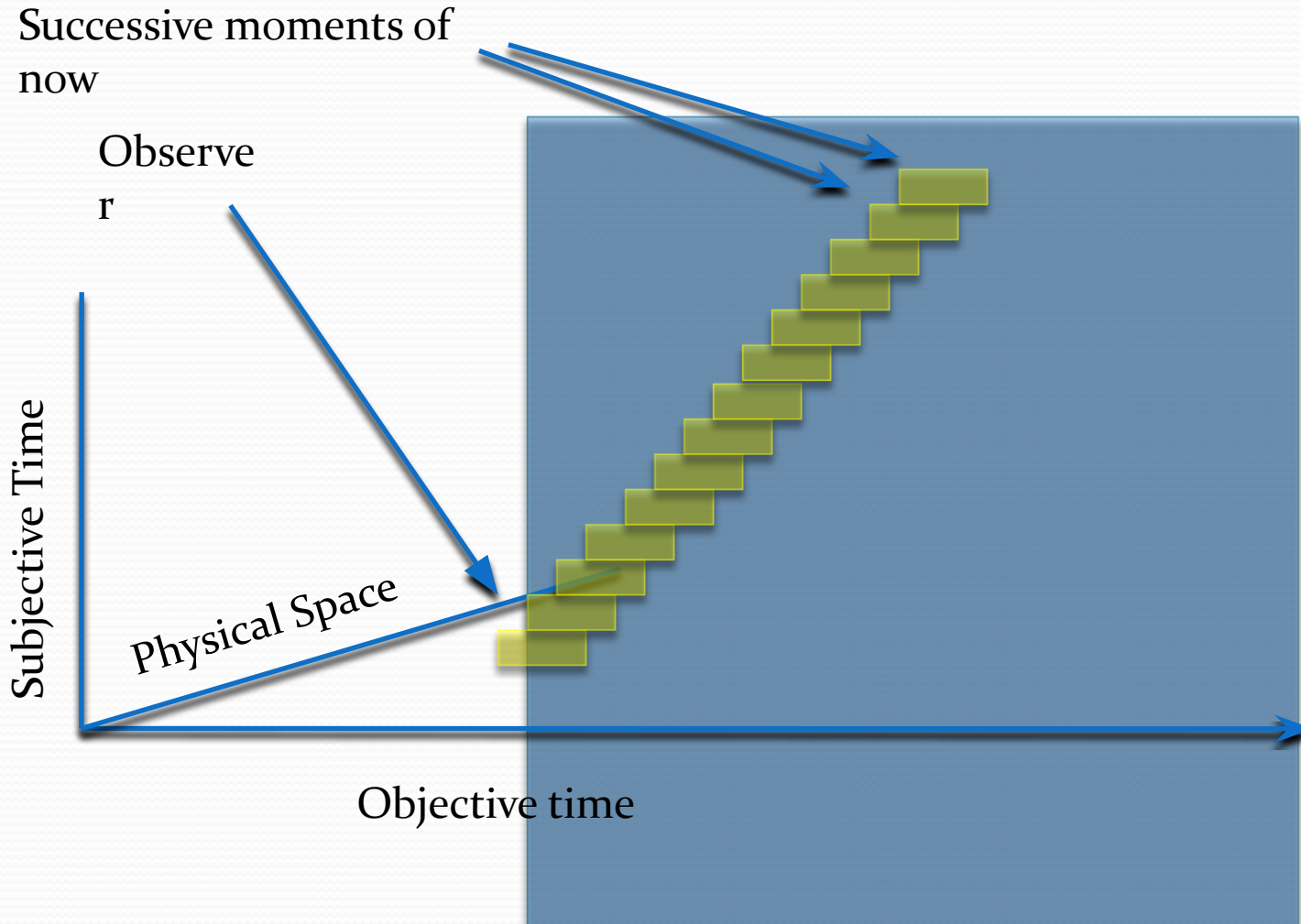


Programming by:
Cade McCall (mccall@psych.ucsb.edu)
Masaki Miyahara (miyahara@psych.ucsb.edu)

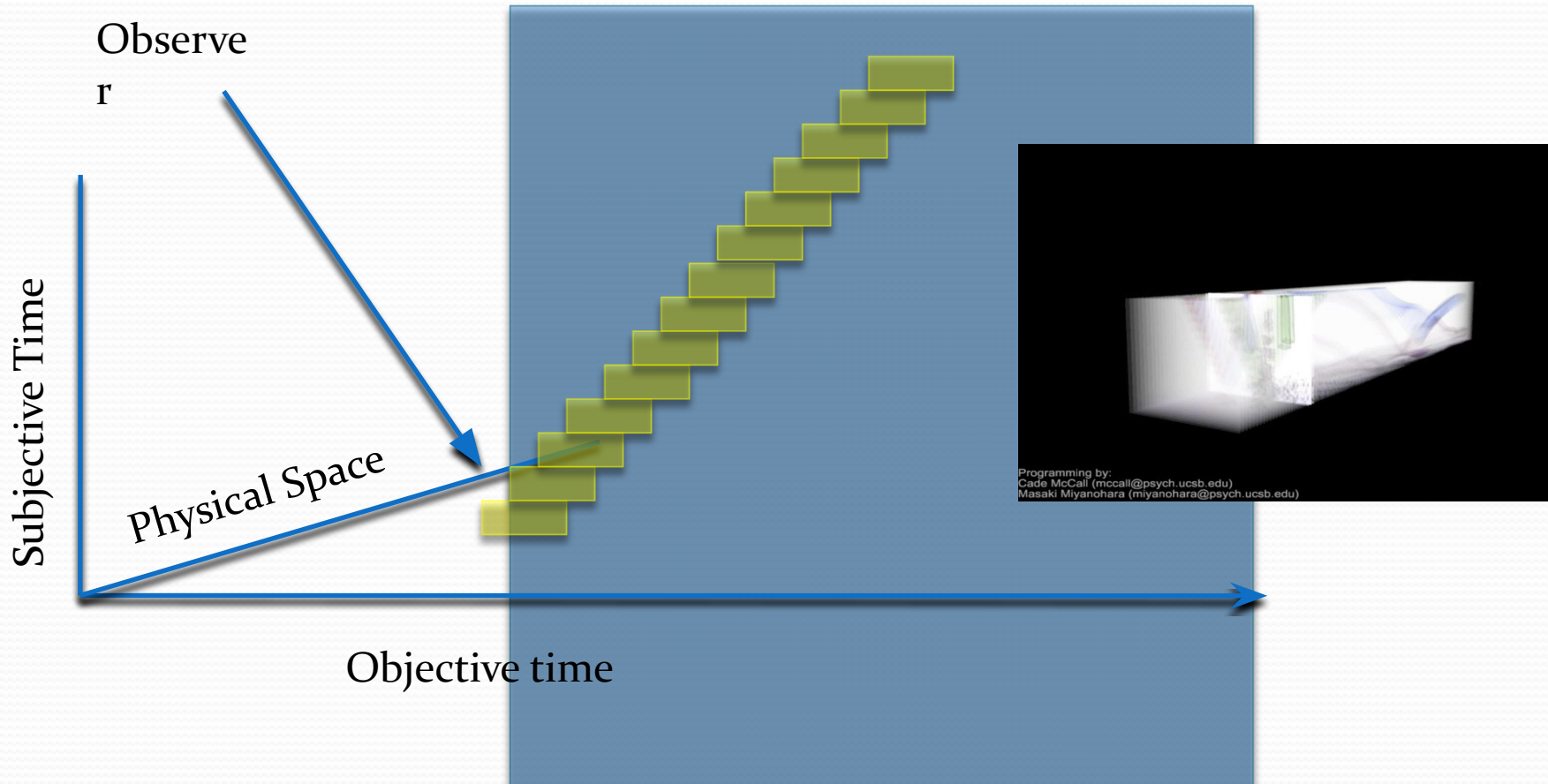
Standard Block Universe with One Dimension of Physical Space



Stepping into the Future: Addition of Subjective Time Dimension



Relationship between depictions



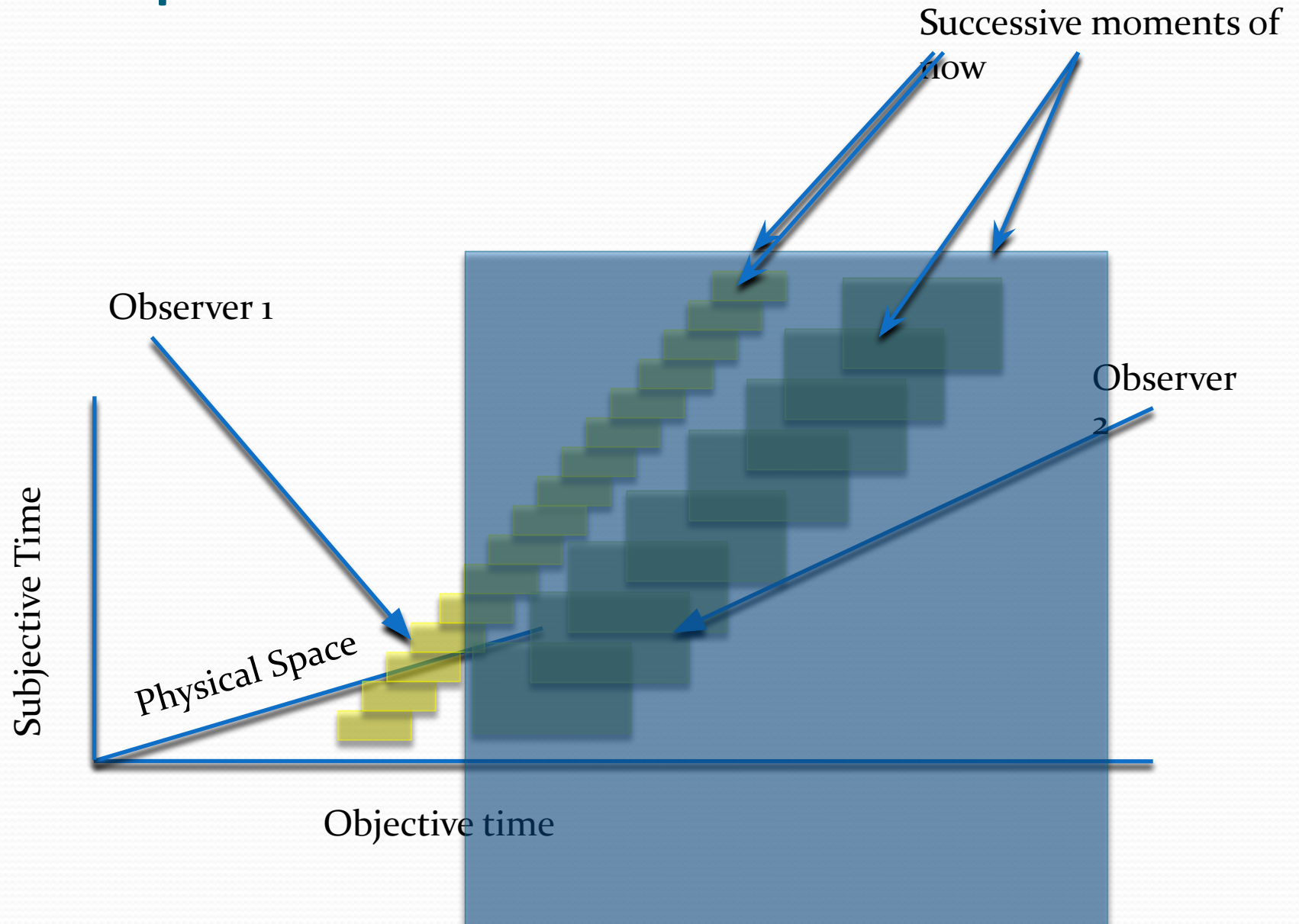
Alternative observer frame of reference



What defines an individual moment?

- Capacity for temporal discrimination
- Possibility that different conscious entities may move in objective time relative to subjective time in different size steps.
- negative correlation between vertebrate size and the flicker fusion rate. (Healy et al, 2013)
 - consciousness of smaller animals may move through subjective time relative to physical time at a faster rate than larger animals.

Multiple Observers

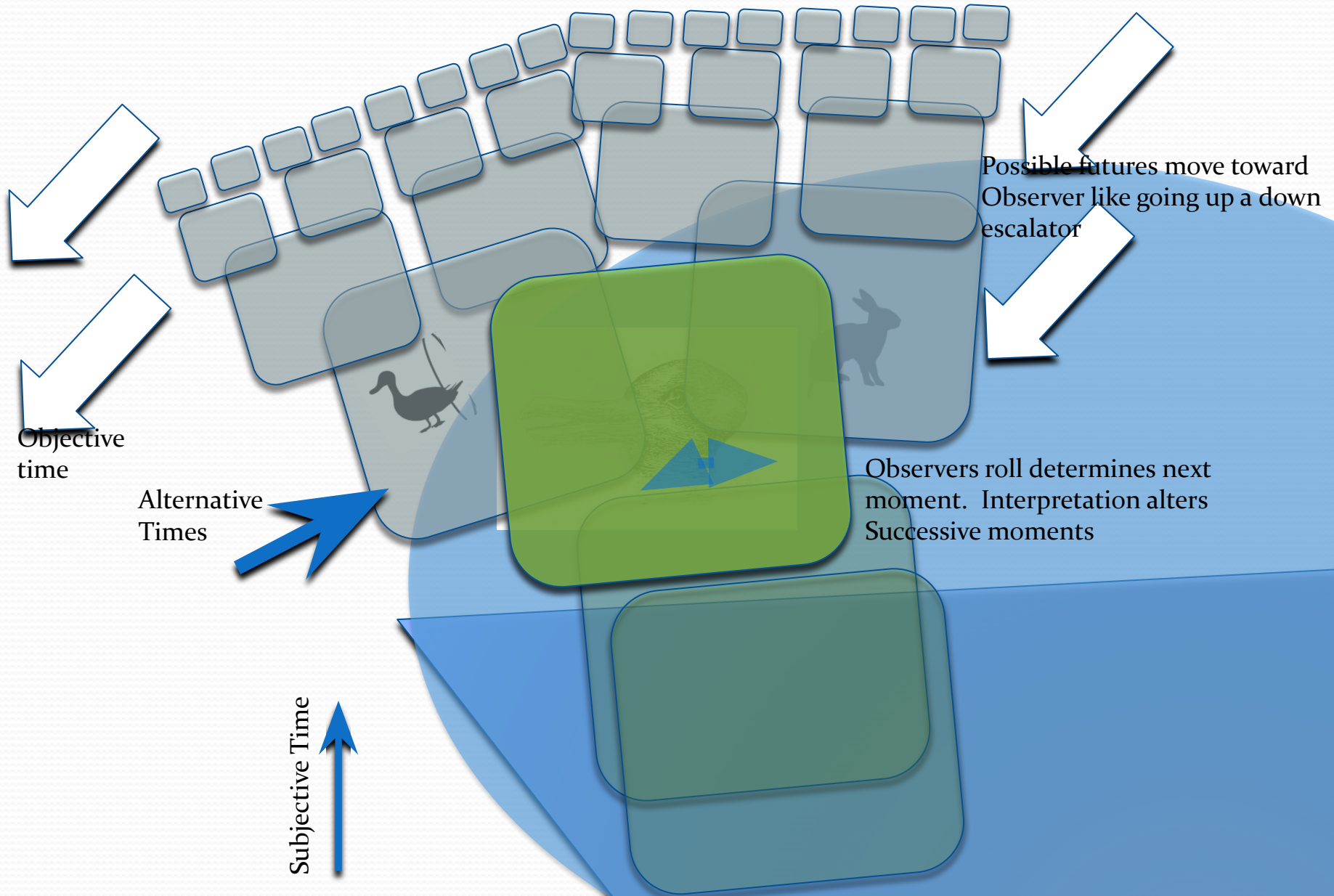


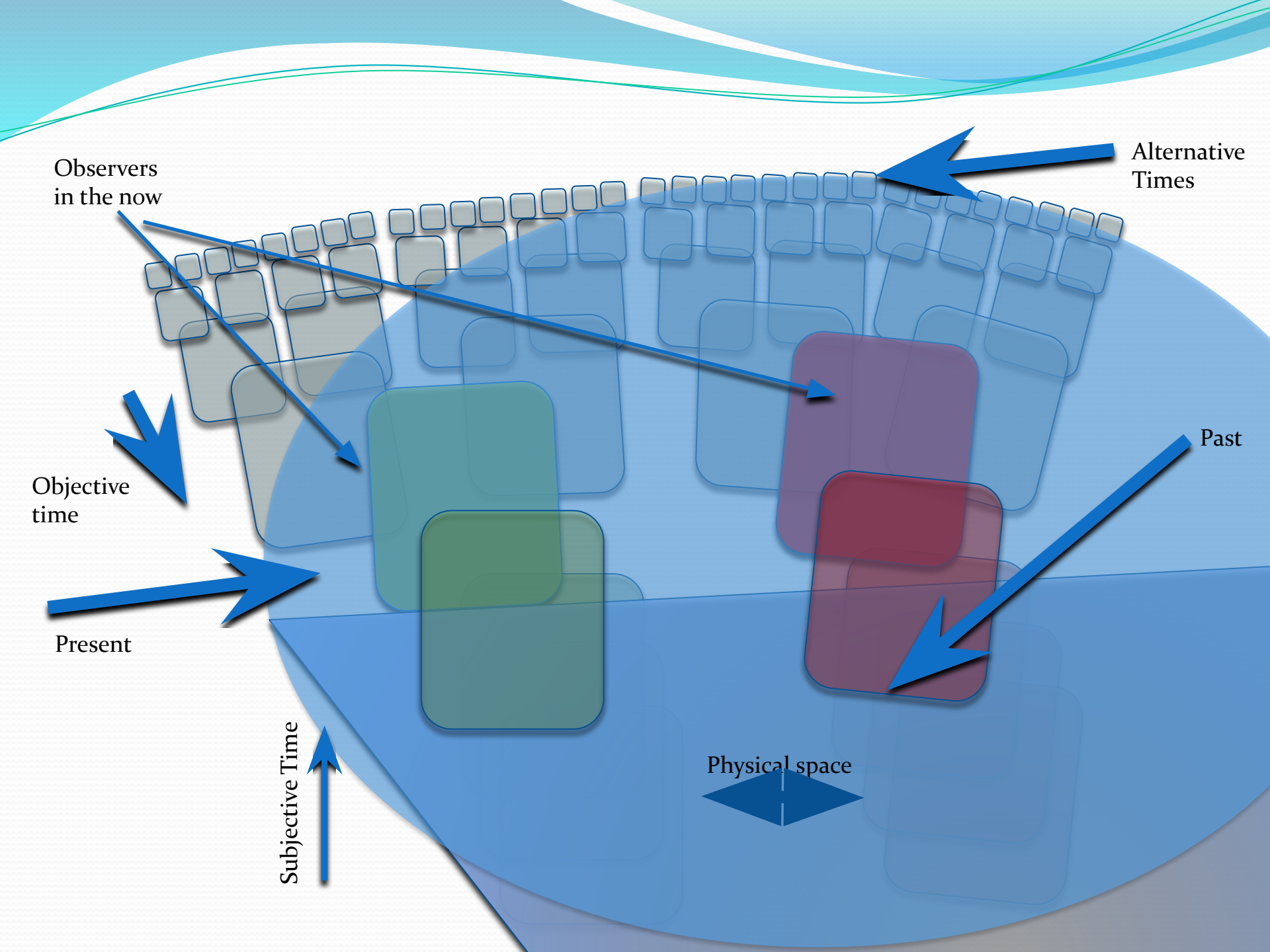
Could time branch into a second objective dimension of time?

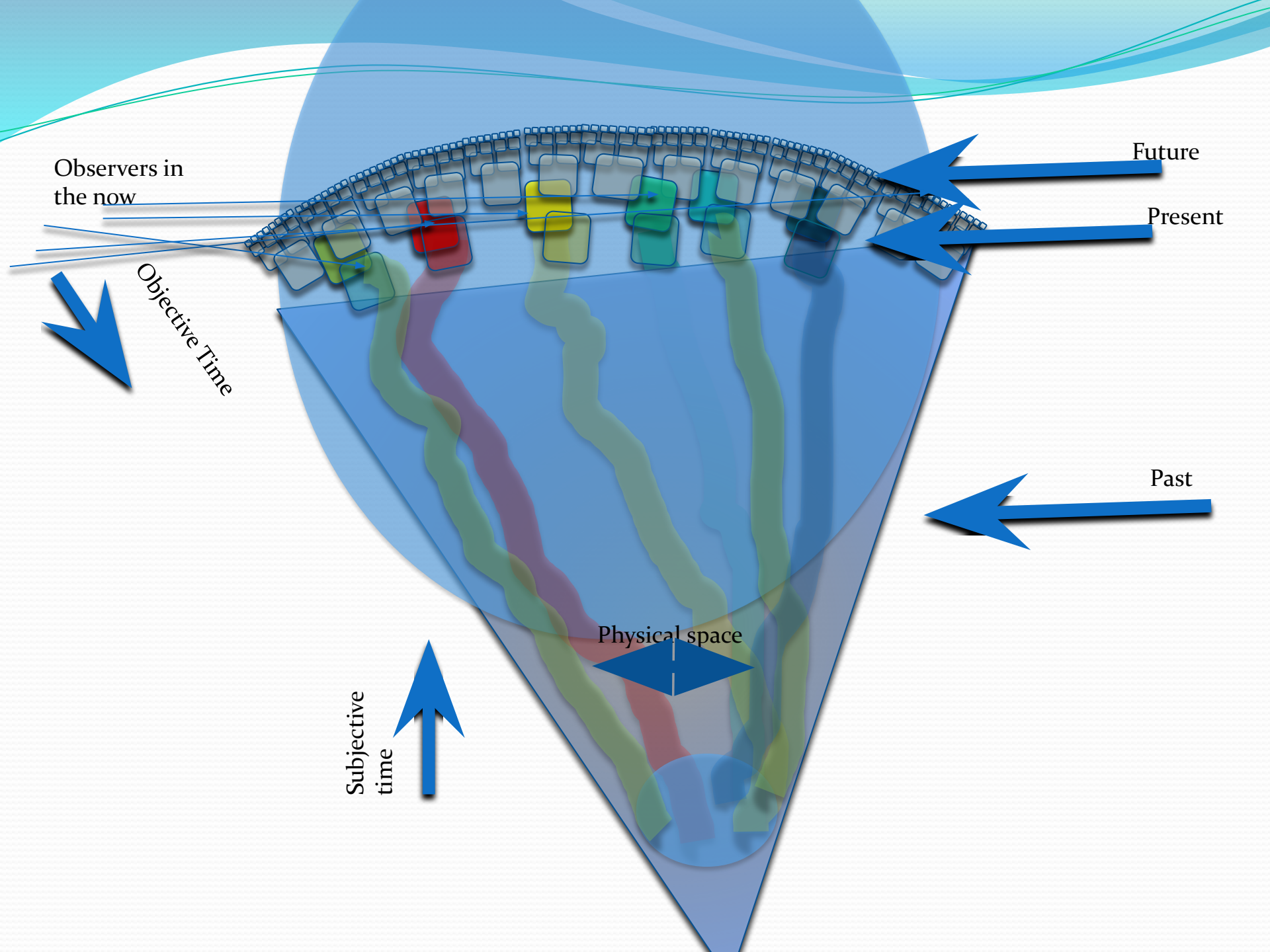


- Many worlds theory of physics (Everett)
 - observation of quantum events associated with splitting universe
- Alternative
 - Observer windows rotate in second dimension of objective time
 - Possibly enables consciousness to select alternative futures thereby providing room for free will

Alternative Time

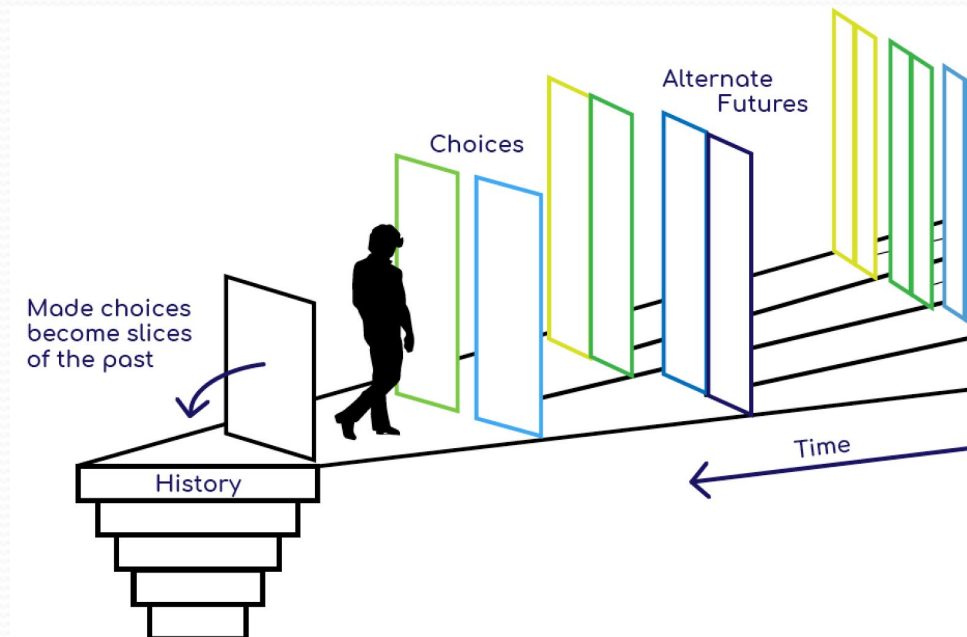






Video Game Version

- Could make a cool video game that helps us think about life

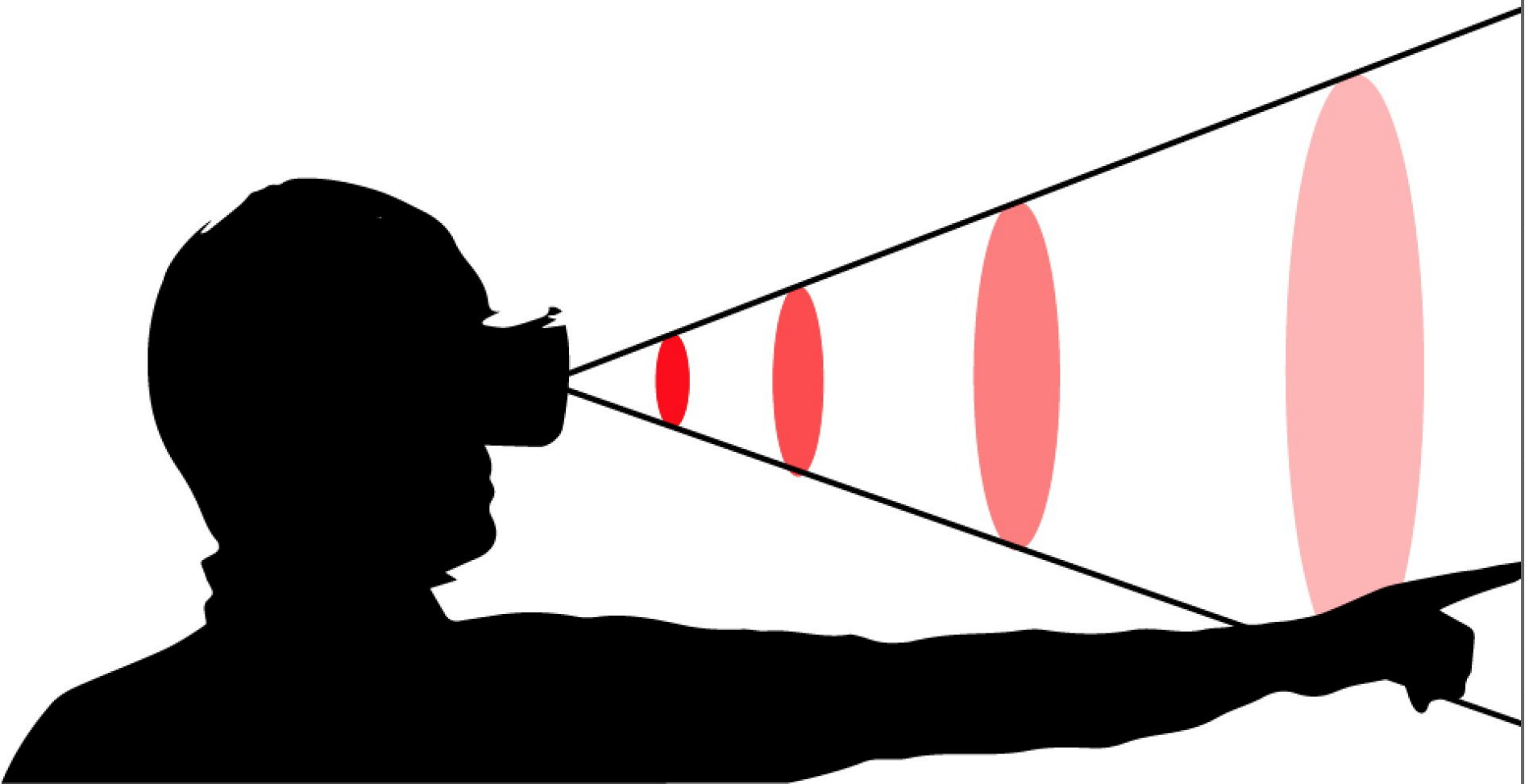


Experience a mind-bending, time-shifting VR adventure

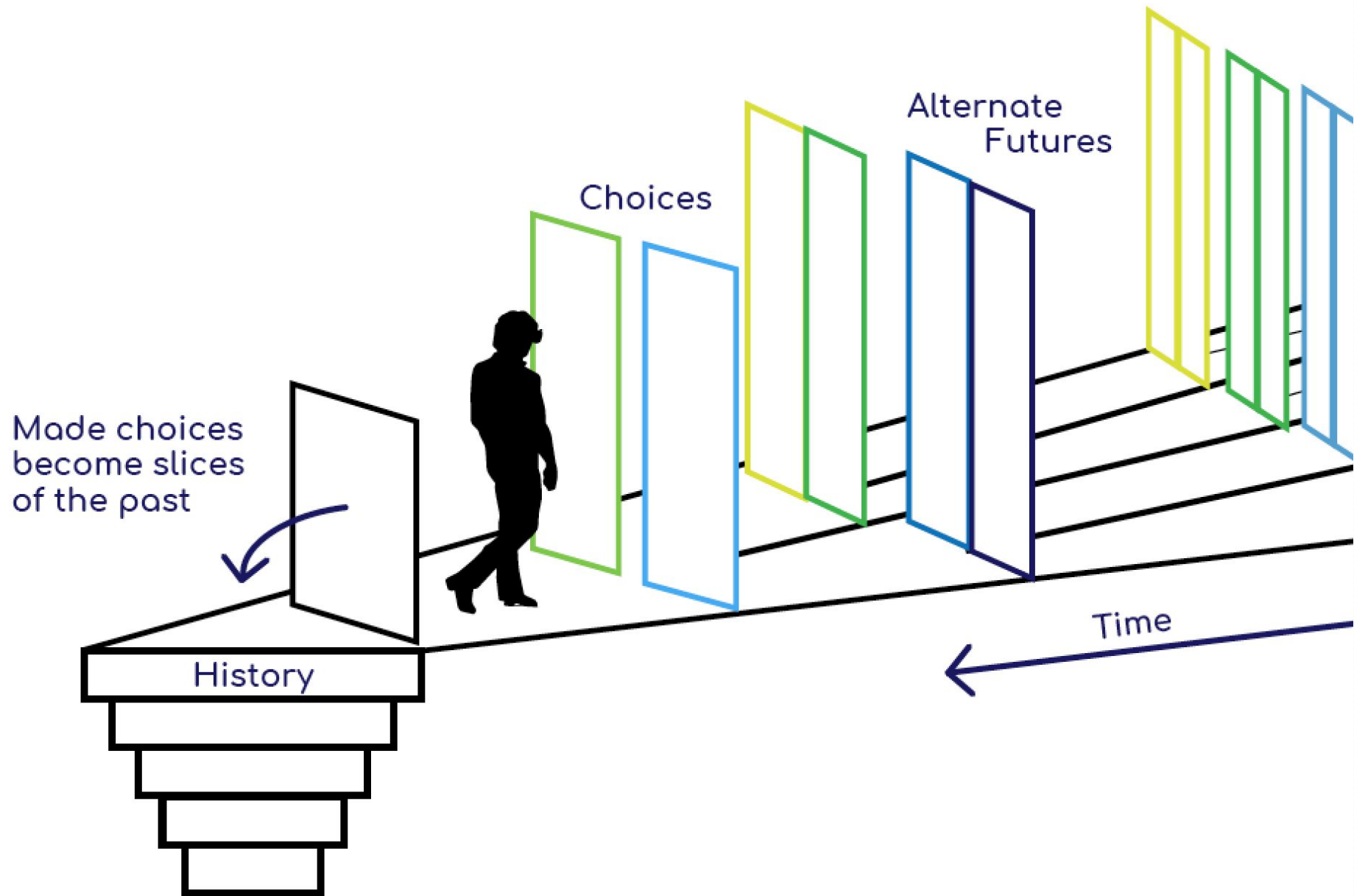
Control time with your body

Explore alternate realities

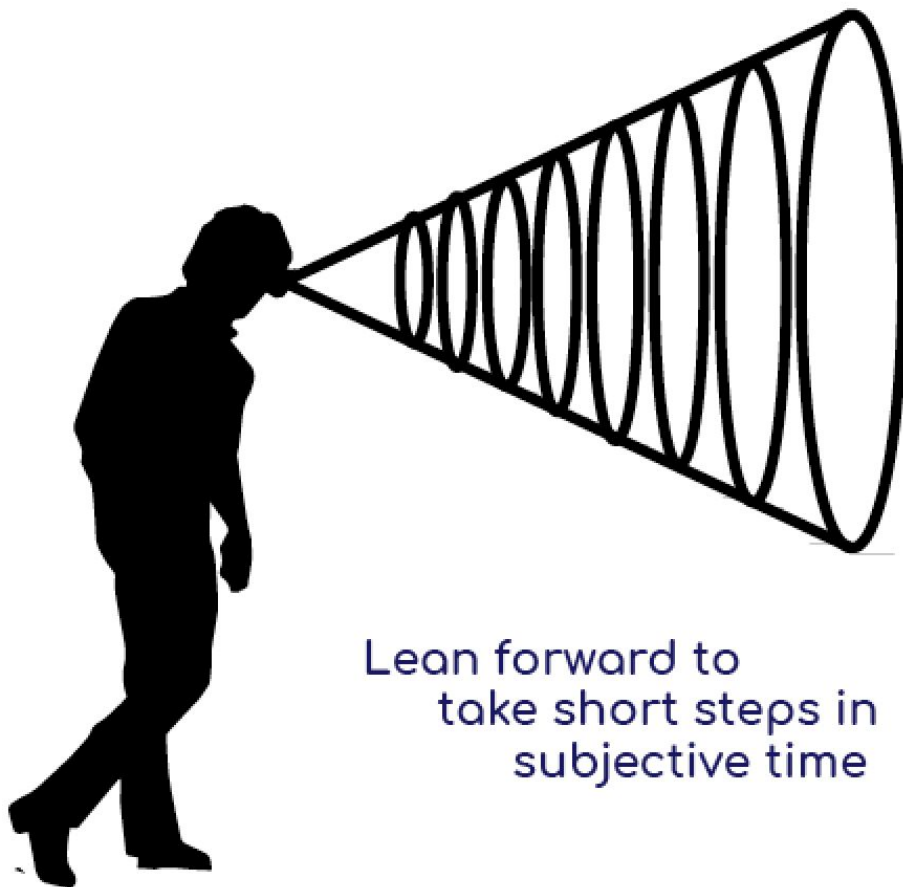
Surf the edge of existence



Time moves toward you like a conveyer belt
Choices you make become embedded in history



Lean forward to speed up subjective time



Lean forward to take short steps in subjective time



See all of the tiny details

Lean back to slow down subjective time

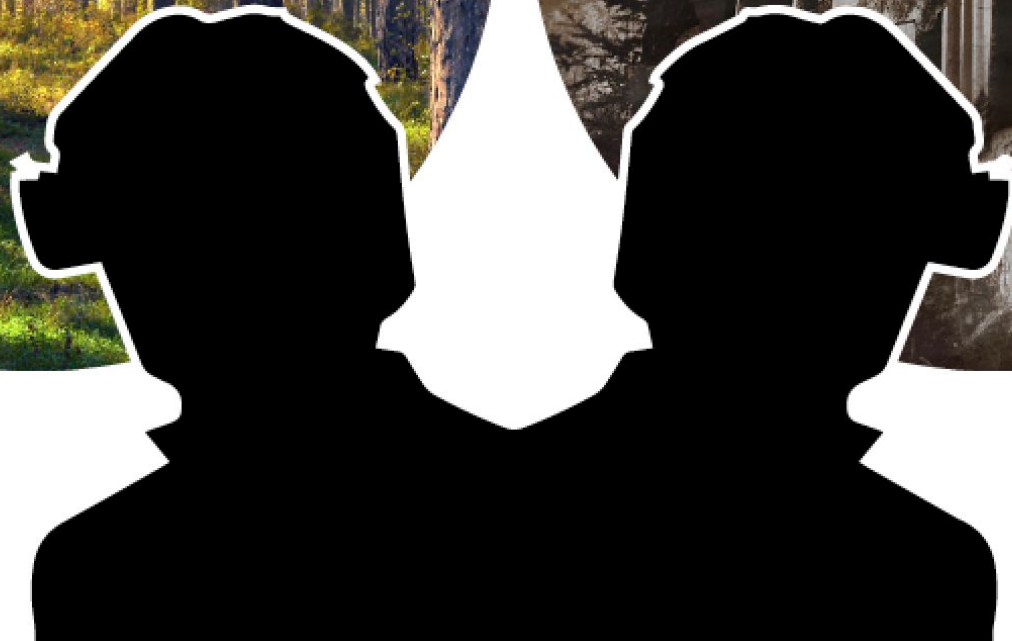


Lean back to
take long steps in
subjective time



See the bigger picture

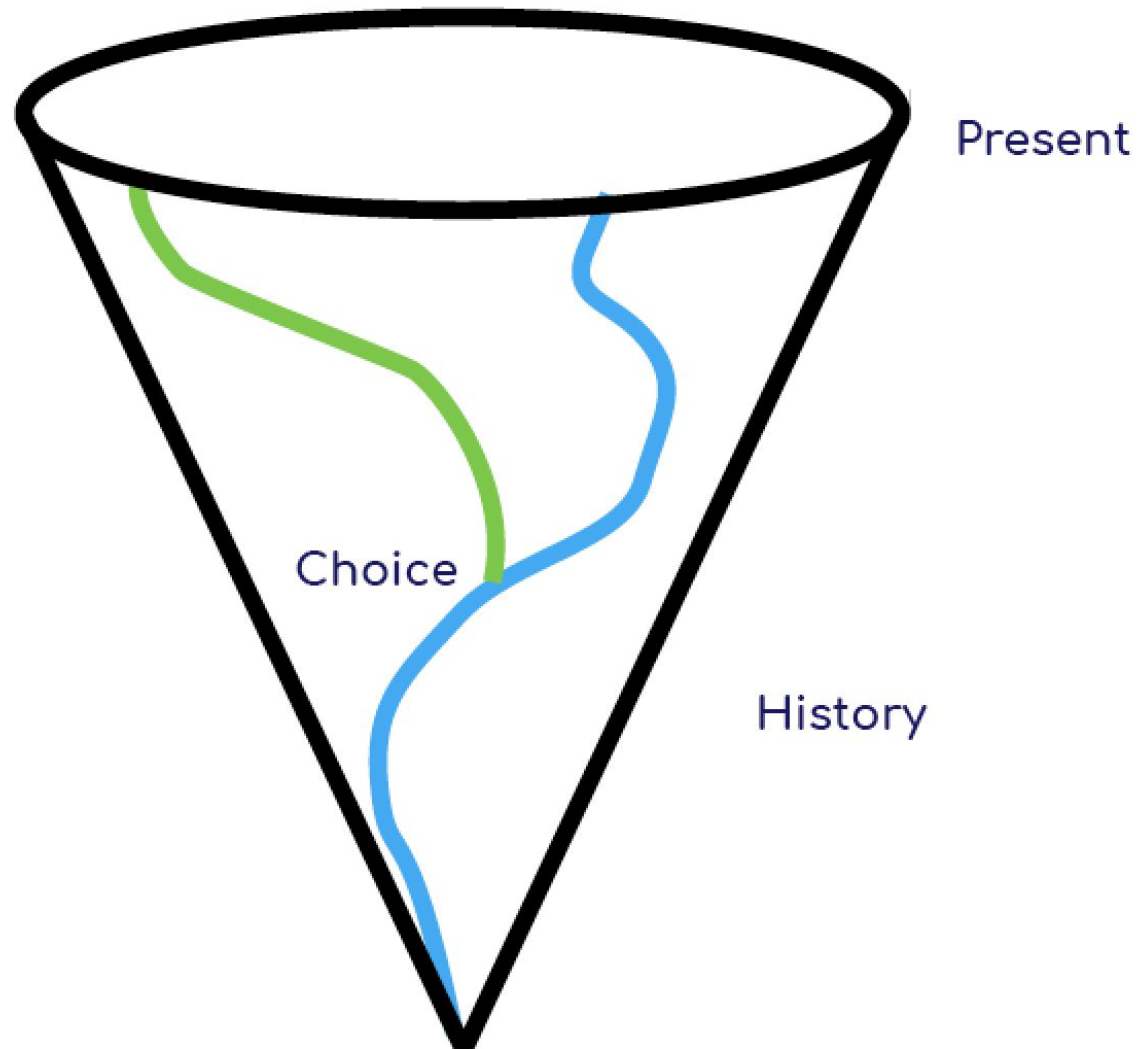
Turn your body to make choices and shift reality



Review your path on the Cone of Time

Go back and make different choices

Explore alternate futures

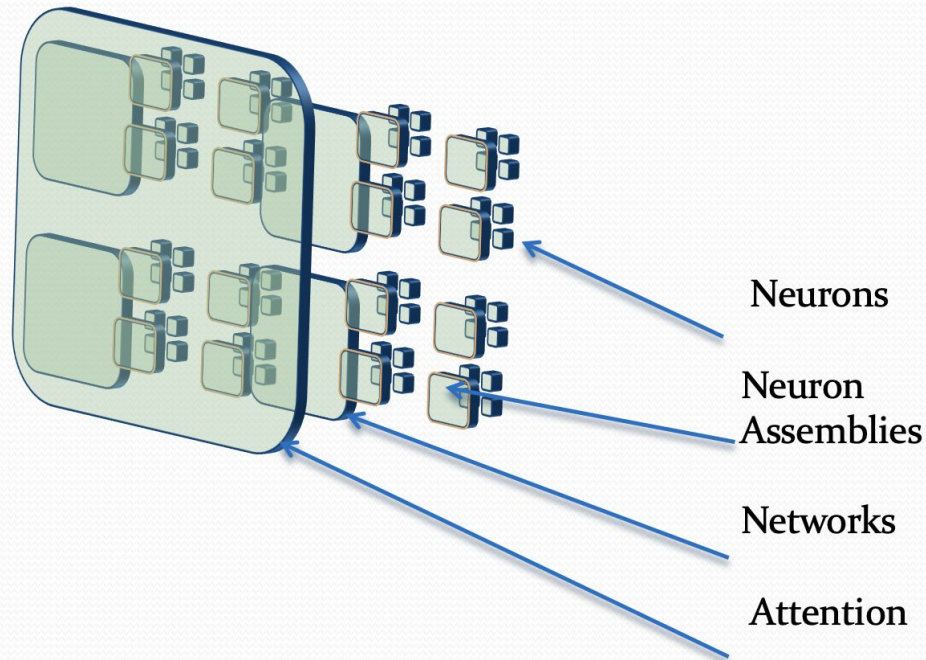


Speculative Toy Model of Time and Consciousness

- Time may involve three dimensions
 - Objective time
 - Clock time
 - Subjective time
 - Time as it is experienced
 - Alternative time
 - The many branches of possibilities
 - Provides opportunity for free will
- Observers move through time as Nested Observer Windows (NOWs)
 - Each window
 - looks out on pixels of lower level windows
 - Is a pixel in higher level windows
 - Integrates holons at every level

Part 2: Nested Observer Windows

- Consciousness corresponds to hierarchically organized information processing modules that are integrated through nested rhythms



Core collaborators

Nested Observer Windows



Tam Hunt
UCSB

General Resonance
Theory

Hunt & Schooler, 2019



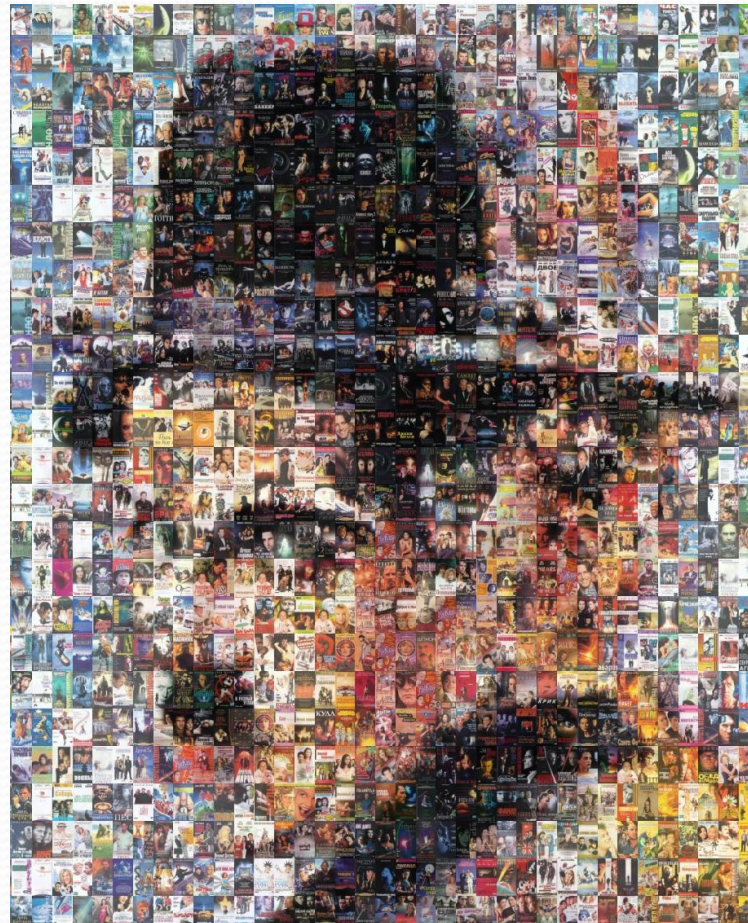
Justin Riddle
UNC Chapel Hill

Nested Observer Windows (NOW):
a Theory of Scale-free Cognition

Riddle & Schooler, in prep

Mosaic Print Metaphor

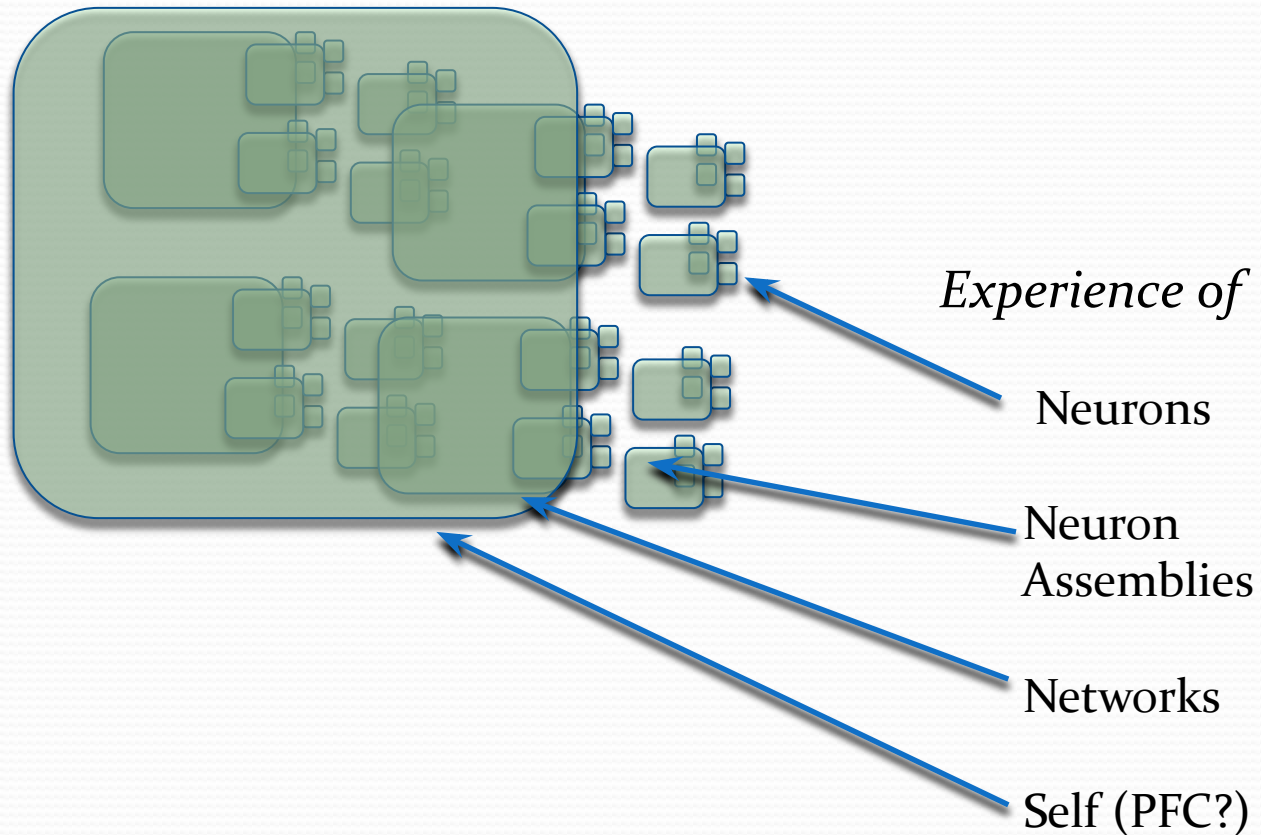
images that are themselves comprised of smaller images



Now imagine....

- Many levels
 - images constituted of images, constituted of images...
- Dynamic
 - Images change over time
- Rhythmic fluctuation
 - Multi-level pulsing pixels
 - lower levels fluctuating at faster rates than the higher ones.
- Each evolving image corresponds to an observer window
 - integrating information from lower levels,
 - serving as a pixel for the next level up.

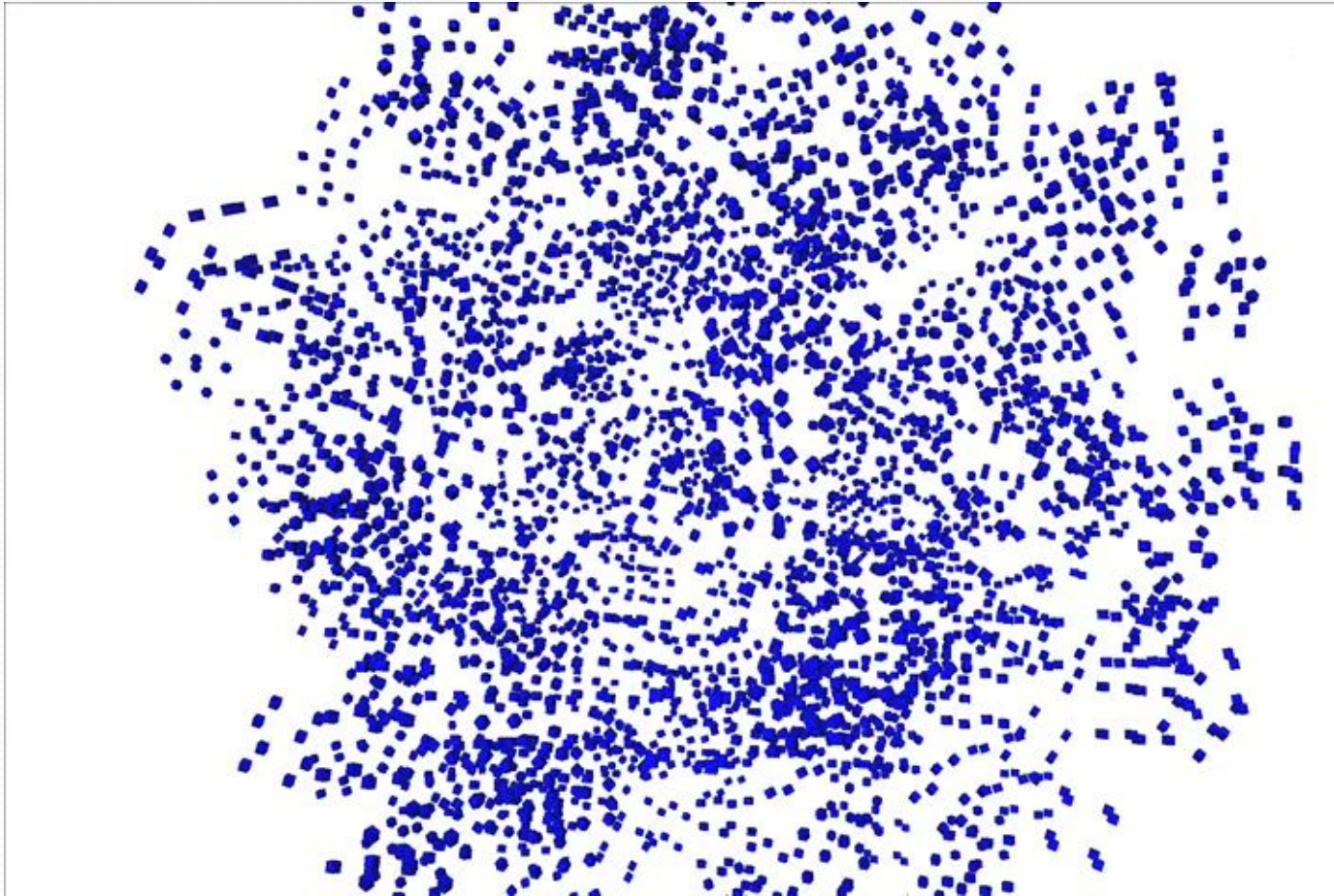
Integrating Nested Observer Windows (NOW's) in 3d Time



The hierarchical arrangement of information in universe

- Holons (Arthur Koestler, 1967)
 - A holon is something that is simultaneously a whole and a part
 - Hierarchically organized invariant structures
 - Examples atoms, molecules, cells, organs, people, planets galaxies,
 - shares common structure in multiple frames of objective time
- Basic hierarchical arrangement of information at all levels

Holons

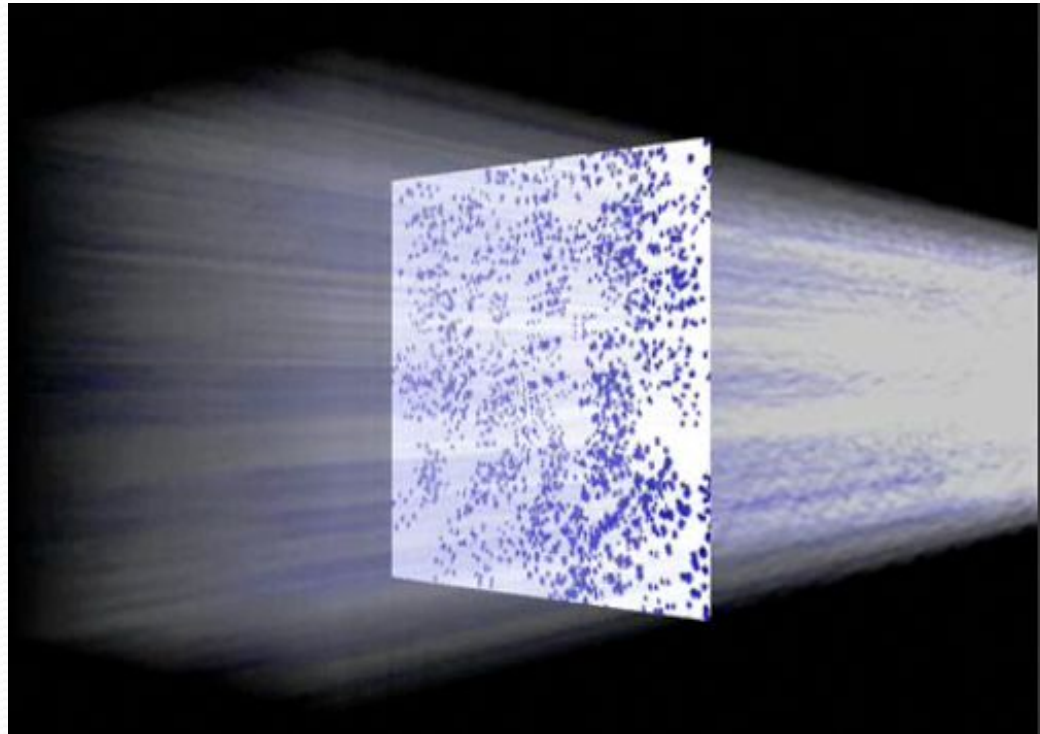


Consciousness serves as holon detectors

- Patterns at all levels
 - Edges
 - Shapes
 - Objects
 - Scenes
 - Situations repeating over time
 - Schemas

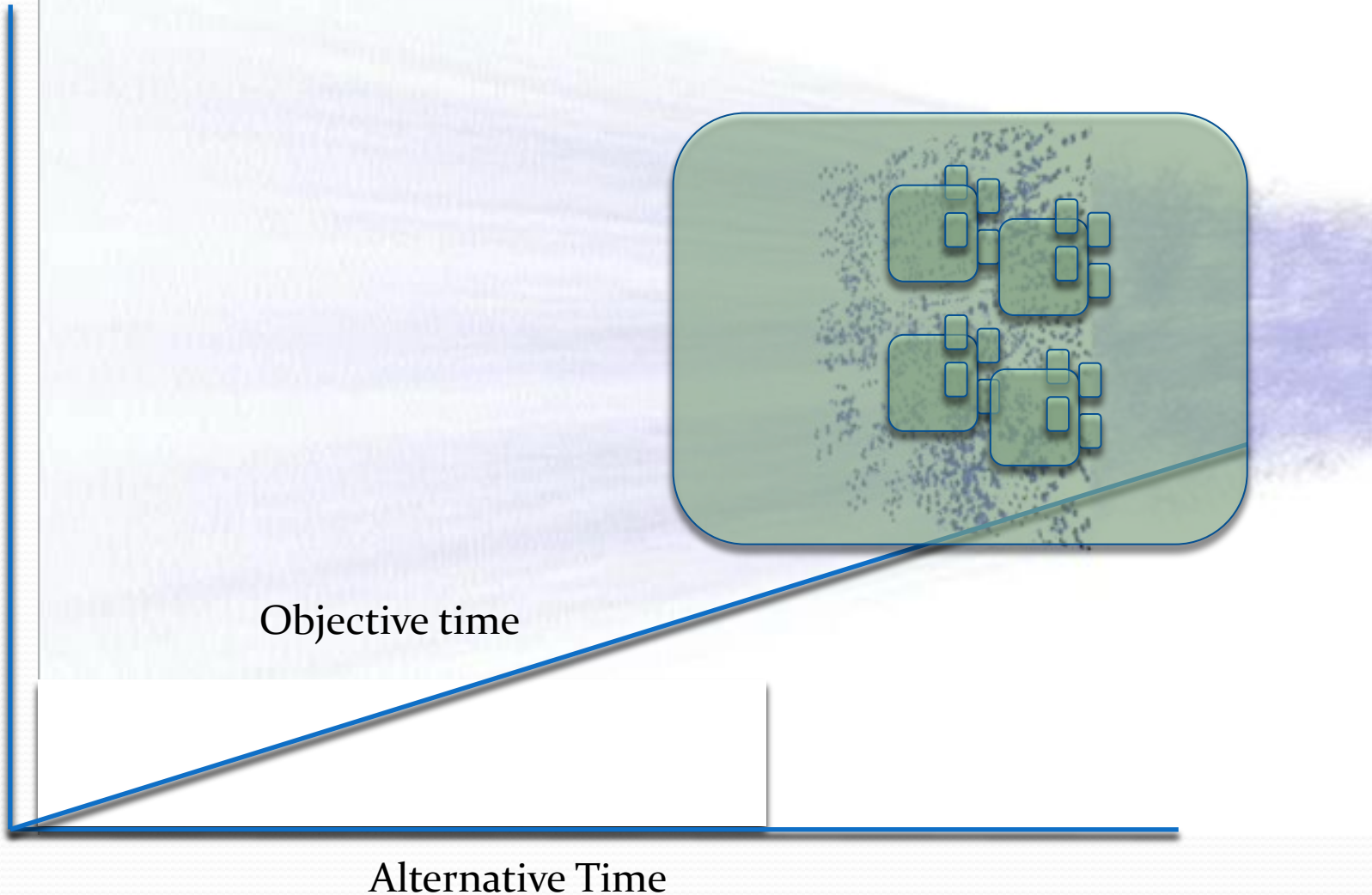
Core Conjecture

- Subjective movement through objective time reveals physical holons





NOWs Moving Through Three Dimensions of Time



Bridging the Objective/Subjective Divide

Towards a Meta-Perspective of Science and Experience

[Jonathan Schooler](#)

In this paper I use the thesis that perspective shifting can fundamentally alter how we evaluate evidence as the backdrop for exploring the perennial challenge of bridging the divide between the subjective first-person perspective of experience, and the objective third-person perspective of science. I begin by suggesting that reversible images provide a metaphor for conceptualizing how the very same situation can be understood from two very different perspectives that appear to produce seemingly irreconcilable accounts of their contents. However, when one recognizes that both views are different vantages on some deeper structure, a meta-perspective can emerge that potentially offers a vantage by which the opposing perspectives can be reconciled. Building on this notion of a meta-perspective, I outline a framework for conceptualizing how science can draw on individuals' first-person experience in order to explicate those experiences within the necessarily third-person perspective of science. I then show how this approach can illuminate one of the most private yet ubiquitous aspects of mental life: mind-wandering. Finally and most speculatively, I attempt to tackle the enduring ontological tensions that emerge from the disparities between the first- versus third-person perspectives. Specifically, I suggest that the present prevailing third-person perspective of material reductionism fails to adequately account for the first-person experience of subjectivity, the flow of time, and the present. While I argue that these differences are an intrinsic property of each perspective, and thus irreconcilable from the vantage of either, I raise the possibility of a meta-perspective in which these clashes might be better accommodated. Toward this end, I speculatively suggest that experience, the flow of time, and the unique quality of "now" might be accommodated by the postulation of a subjective dimension or dimensions of time.

Keywords

Consciousness | Heterophenomenology | Meta-awareness | Meta-perspective | Mind wandering | Mind/body problem | Neurophenomenology | Neutral monism | Panpsychism | Phenomenology | Time

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CMHP
Center for Mindfulness
and Human Potential



John
Templeton
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