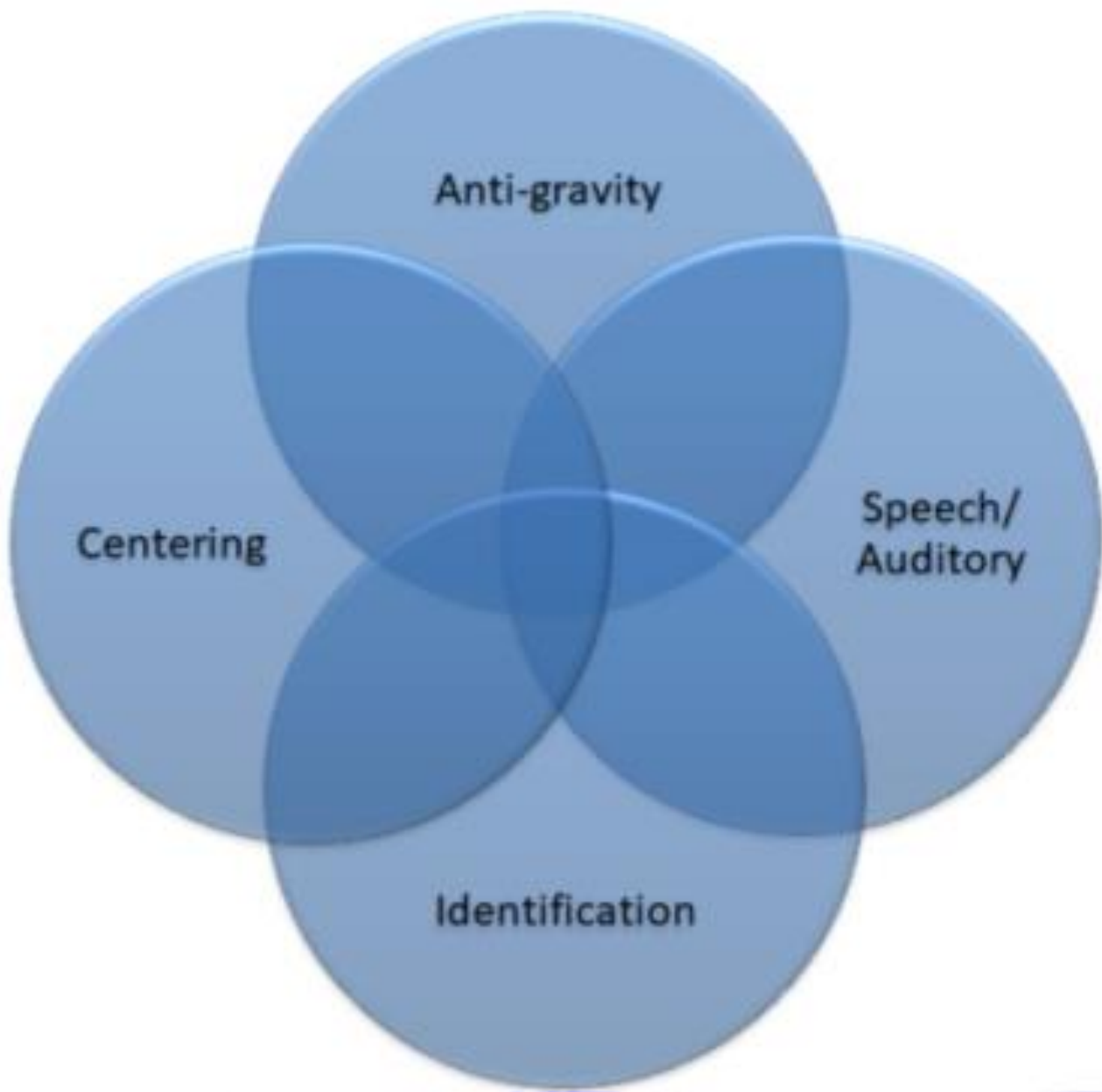
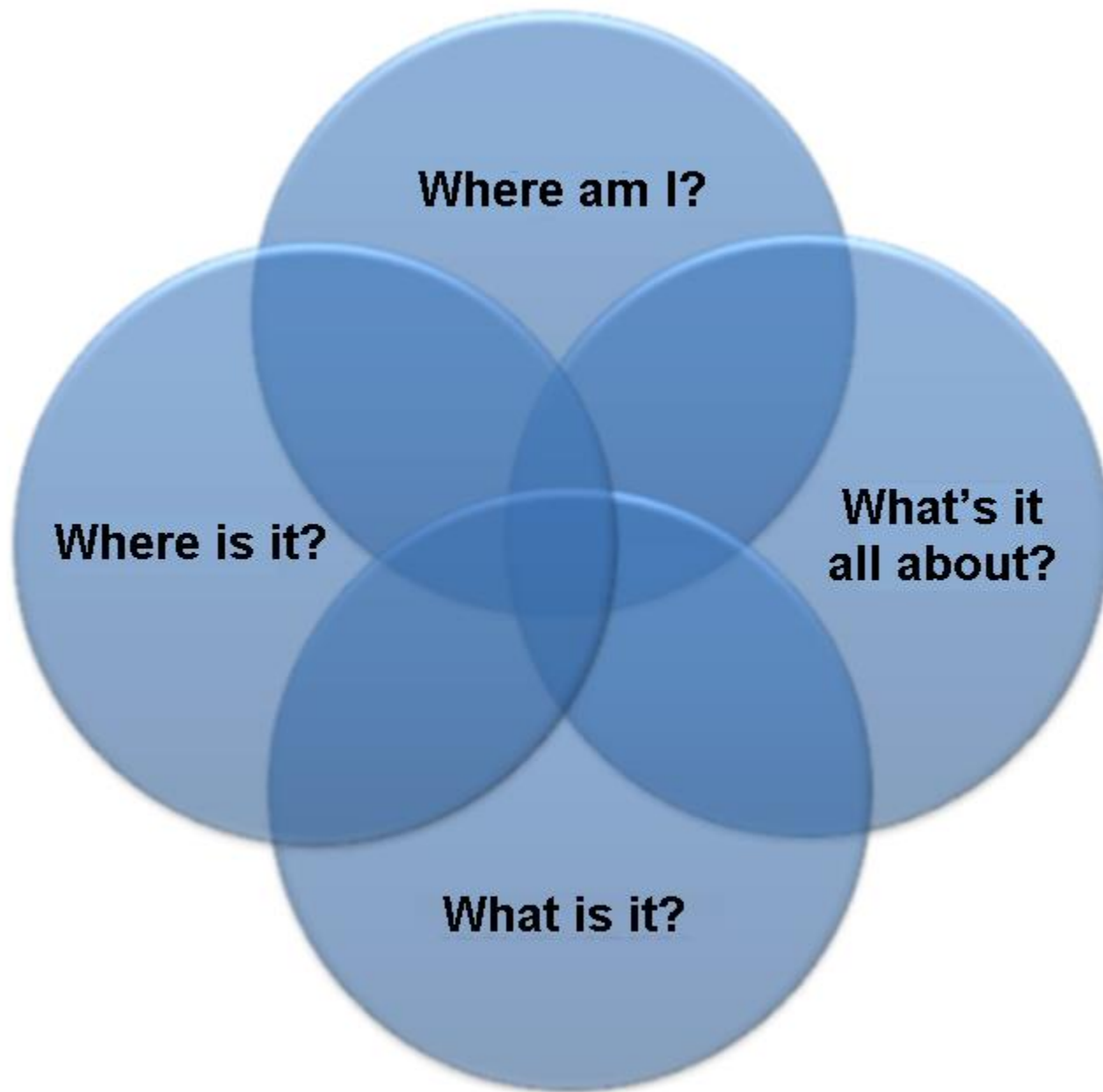


**Kraskin Invitational  
Skeffington Symposium  
on Vision  
January 15-17, 2022**

***Time is of The Essence***

Steve Gallop, OD



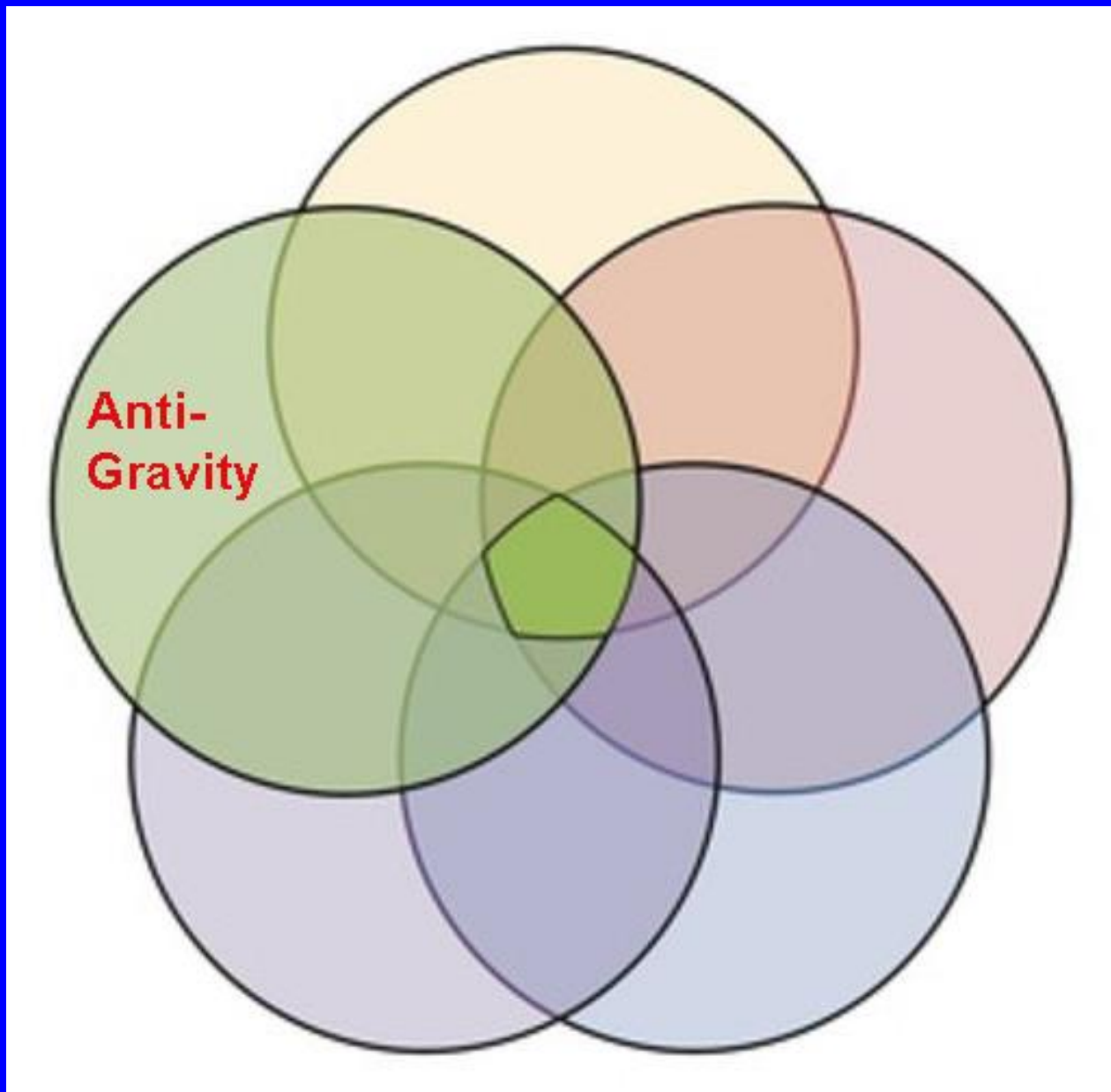


**Where am I?**

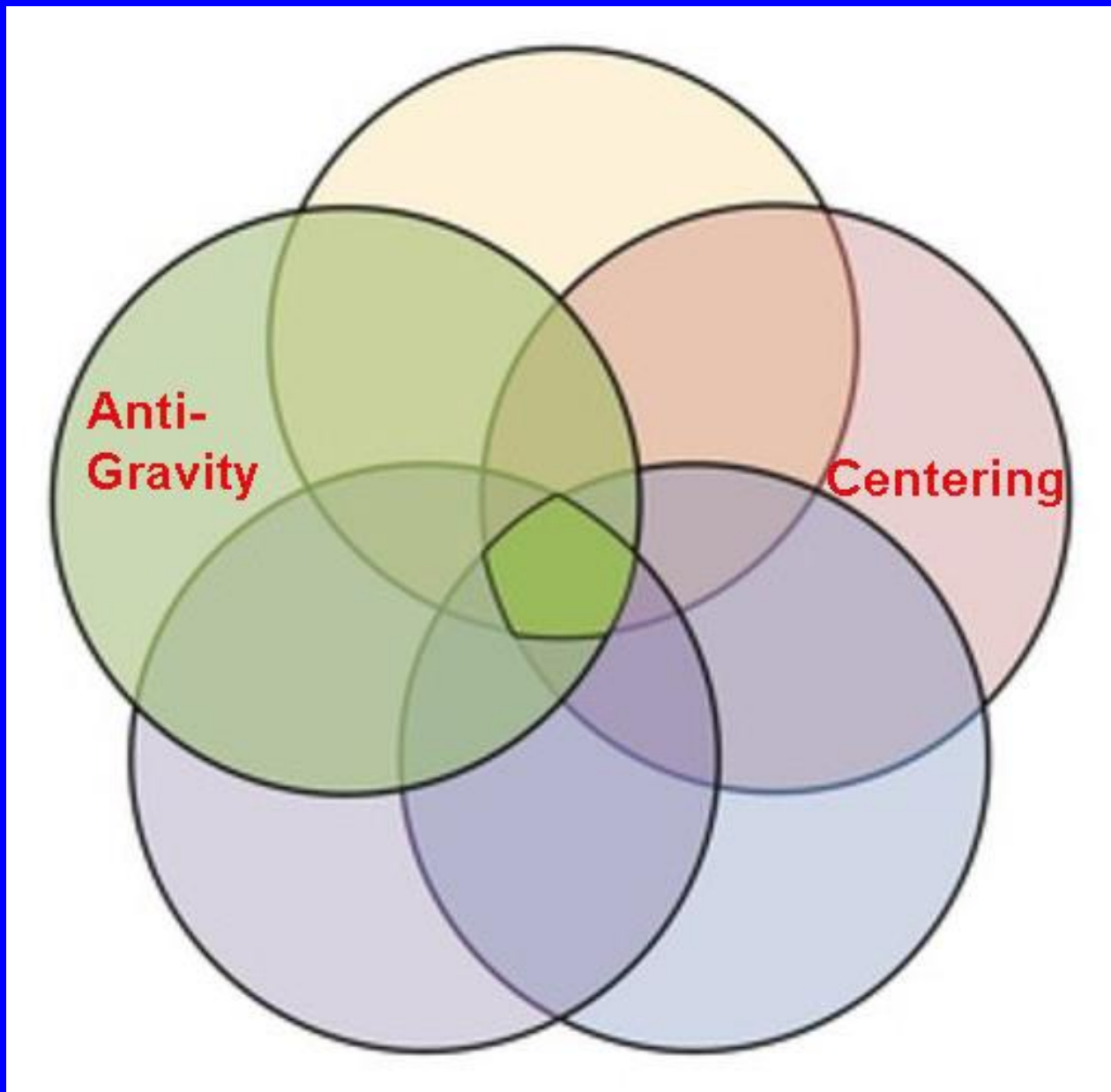
**Where is it?**

**What's it  
all about?**

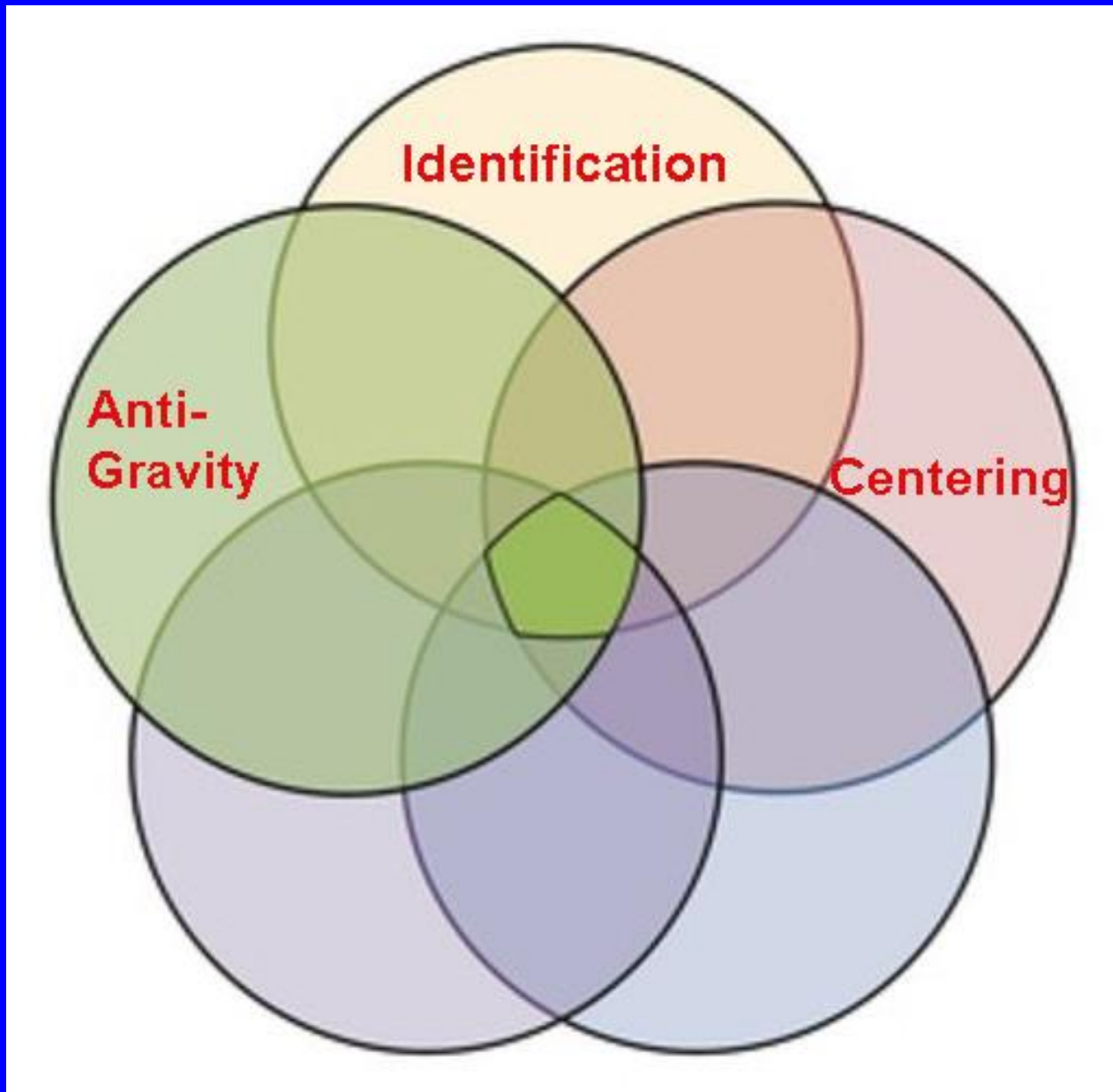
**What is it?**

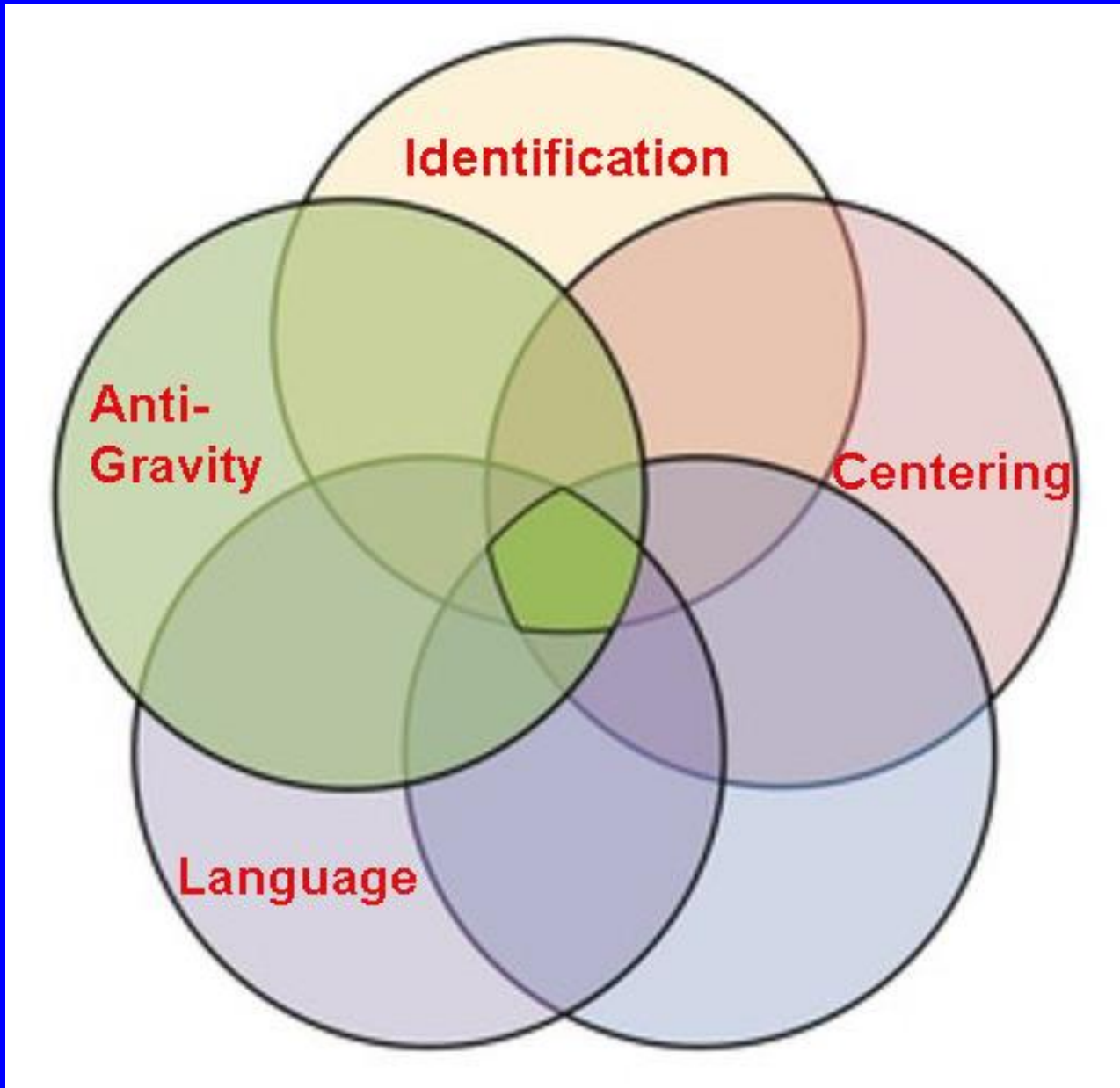


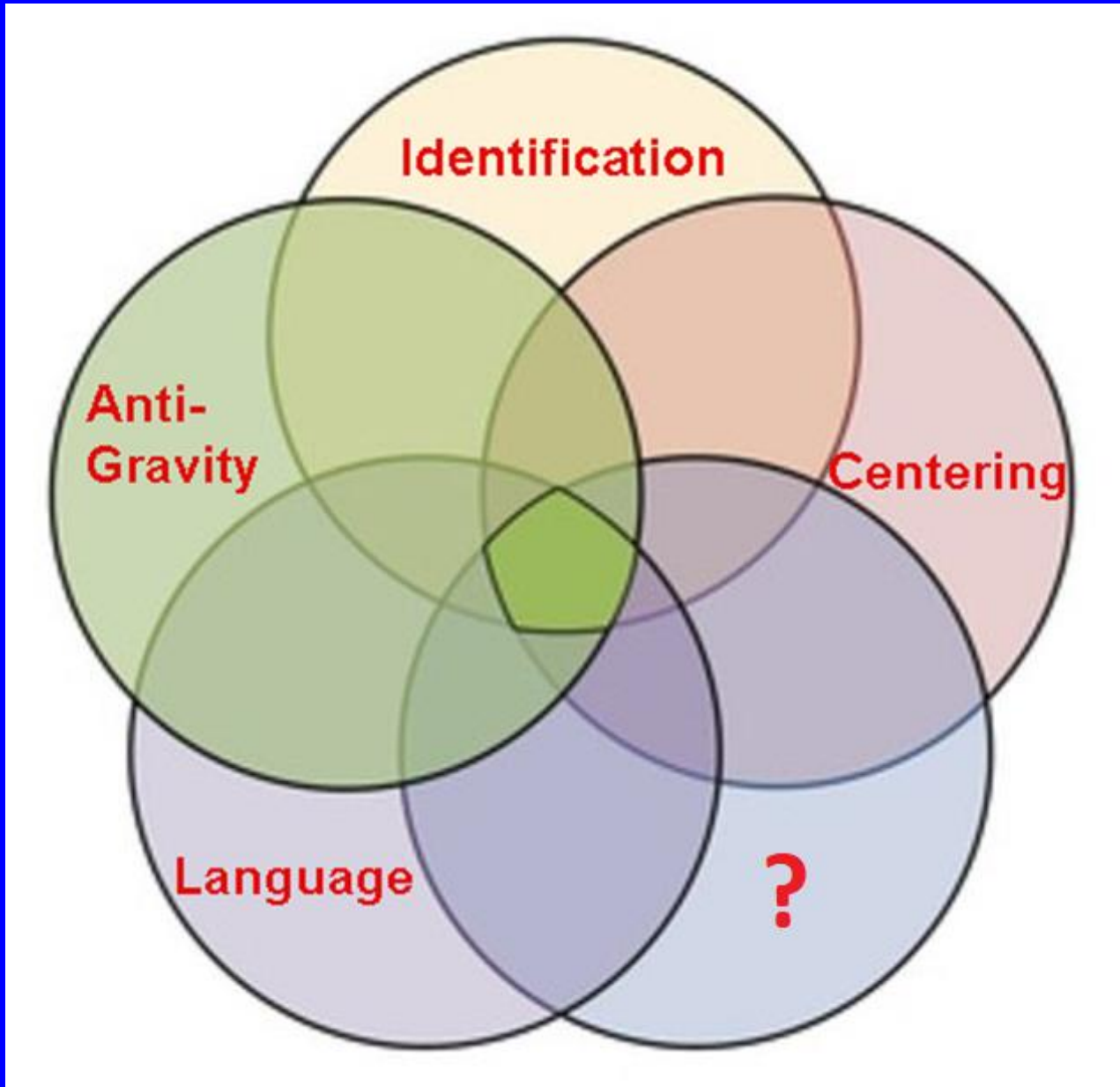
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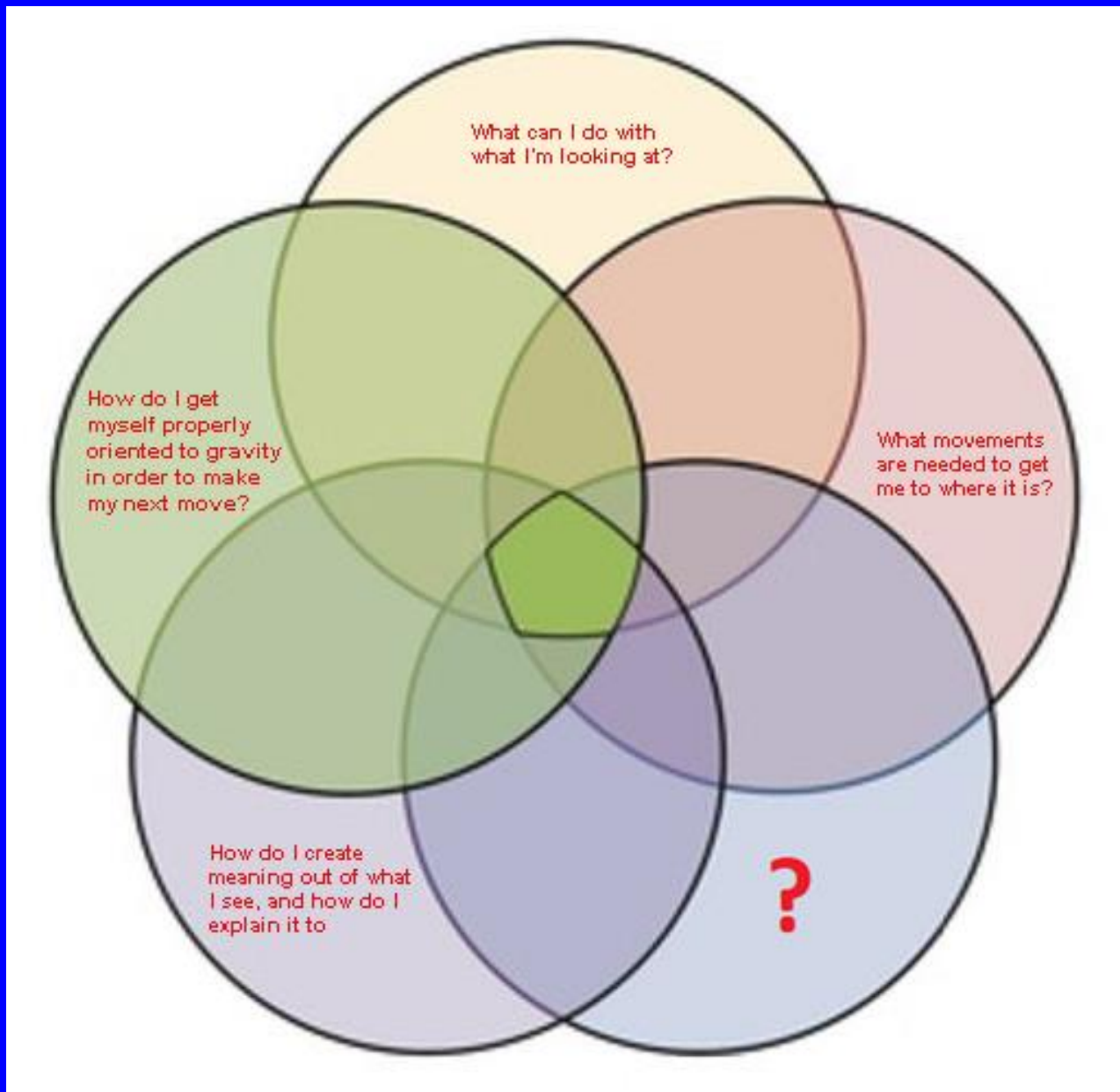
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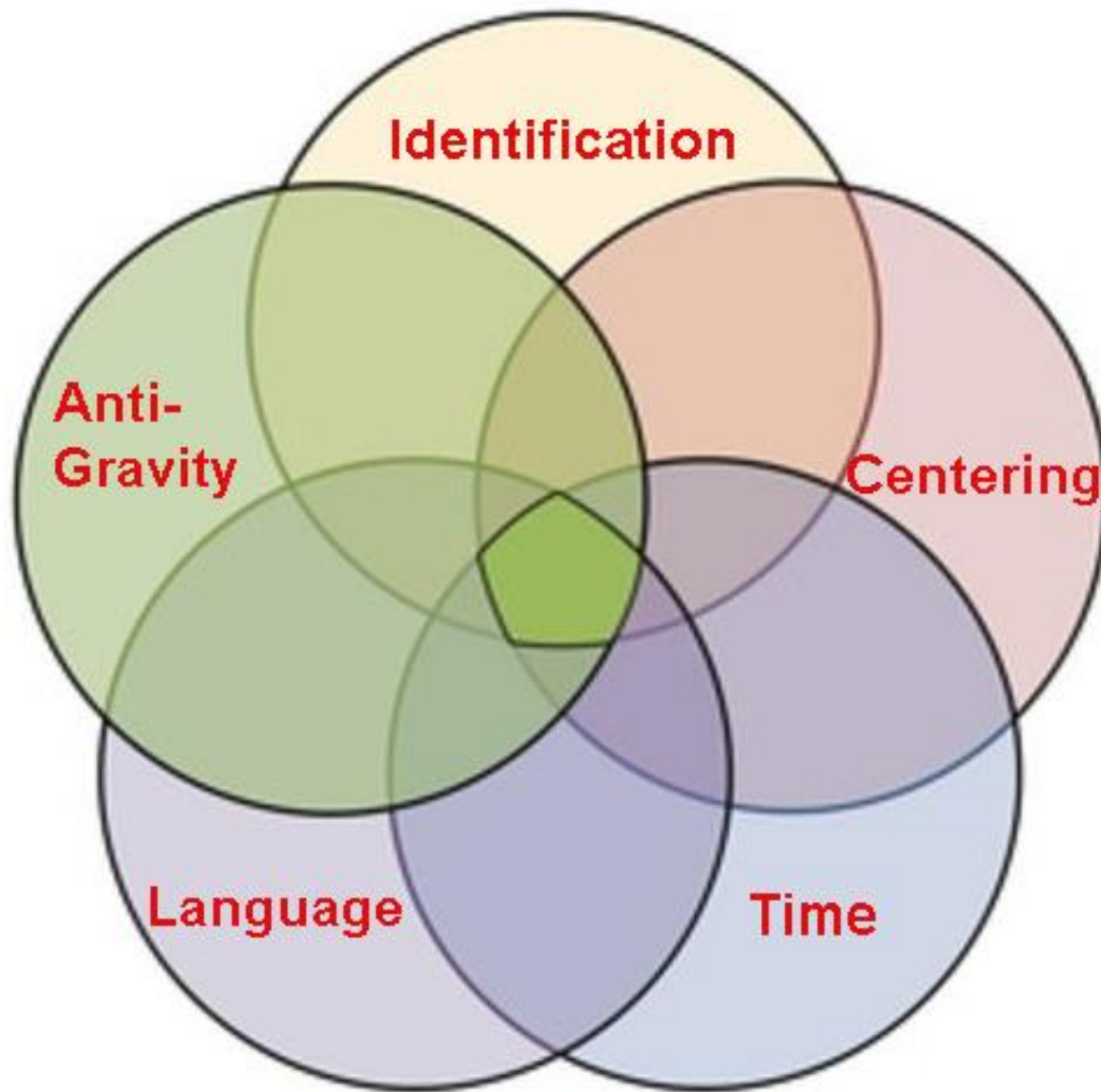












**Time:** 1) the indefinite continued progress of existence and events in the past, present, and future regarded as a whole

# Aspects of Time

## Related to the Visual Process

- Speed of light
- Neurological limits
  - Signal speed to cortex and elsewhere in the brain
- Processing speed
- Reaction time
- Time to adjust
  - Accommodation
  - Saccades
- Give me time to think

# Categories of Time:

- The Present
  - How long is now?
- Historic (past/memory) vs. Projected (future/imagined) time
  - visualization
- Developmental time
  - Biological (physical, neurological)
  - Psychological/Intellectual/Emotional
- Processing/task-related time
  - Neurologic time
- Consensual vs. Subjective time

**Time:** 1) the indefinite continued progress of existence and events in the past, present, and future regarded as a whole

**Rhythm:** 1) A strong, regular, repeated pattern of movement or sound; 2) a regularly recurring sequence of events or processes

**Time:** 1) the indefinite continued progress of existence and events in the past, present, and future regarded as a whole

**Rhythm:** 1) A strong, regular, repeated pattern of movement or sound; 2) a regularly recurring sequence of events or processes

**Speed:** 1) the rate at which someone or something is able to move or operate; 2) rapidity of movement or action

Oxford Dictionaries online



# Their Speed

Consciously or otherwise we are (or should be) appreciating the speed and the rhythm with which the person in the chair approaches each probe...

Ex: How fluid are they reading the chart?  
How is the response/reaction time?

and the speed and/or rhythm they use to perform training procedures.

# Our Speed

- During testing
- During therapy

How do patients weigh speed versus quality of performance?

How often do you observe people going faster than they can actually handle?

# **Words to the wild:**

If you really want to get  
something done quickly...  
take your time.

# Lenses and Time/Timing

**Skeffington:** “The value of the lens to the wearer is the change made in the output. True, there is a change in the input. However, this change brings about altered responses within the organism and so effects changes in the output. These output changes are the ones that lend significance to the use of lenses.”

**Gallop:** Lenses change our sense of not just space but also time.

# Fun Time Facts

David Eagleman, neuroscientist  
director Laboratory for Perception and Action and  
the Initiative on Neuroscience and Law  
Interview Aug 24, 2012

- “The visual world is not exactly what you think it is; instead it’s a construction of the brain.”
- “Although we think of time as a river flowing past, and that we’re passively tracking that, in fact time is an active construction of the brain.”
- “We can make you think in the laboratory that something lasted longer or shorter than it actually did or we can make you think something came before something else even though it was the other way around or that something is flickering at a different rate than it actually is.”

David Eagleman, neuroscientist  
director Laboratory for Perception and Action and  
the Initiative on Neuroscience and Law  
Interview Aug 24, 2012

- “People are not actually able to see in slow motion during the fall even though they feel like everything took much longer.”
- “Time is not one thing to the brain. It’s not like a piece of footage that you stretch or squish. Instead, you have different parts of the brain that care about duration, those that care about temporal order, those that care about flicker rate...normally these work in concert and we think that time is just one thing.”



David Eagleman, neuroscientist  
director Laboratory for Perception and Action and  
the Initiative on Neuroscience and Law

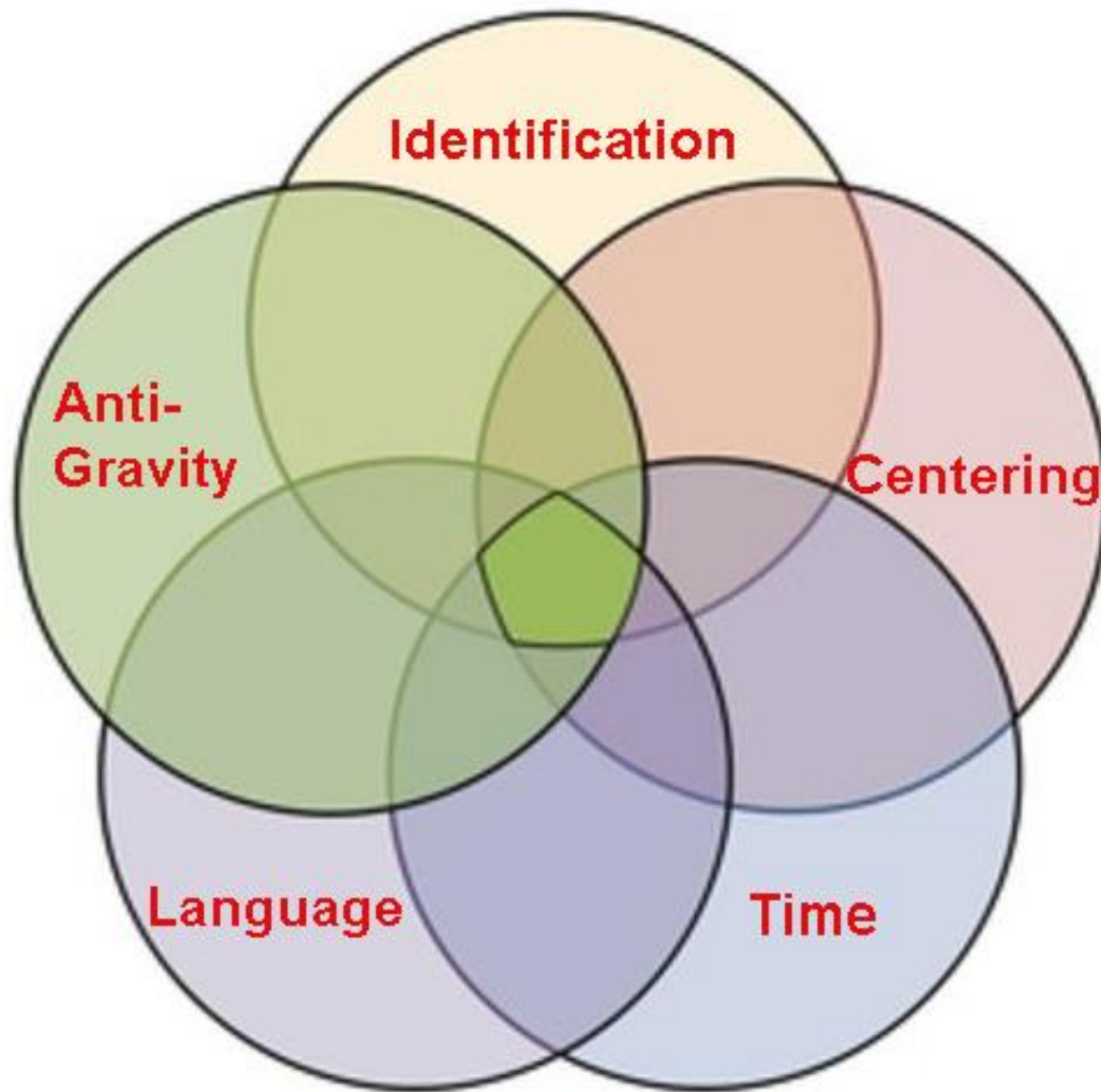
- “Time perception, just like vision, is a construction of the brain and is shockingly easy to manipulate experimentally. We all know about optical illusions, in which things appear different from how they really are; less well known is the world of temporal illusions. ”

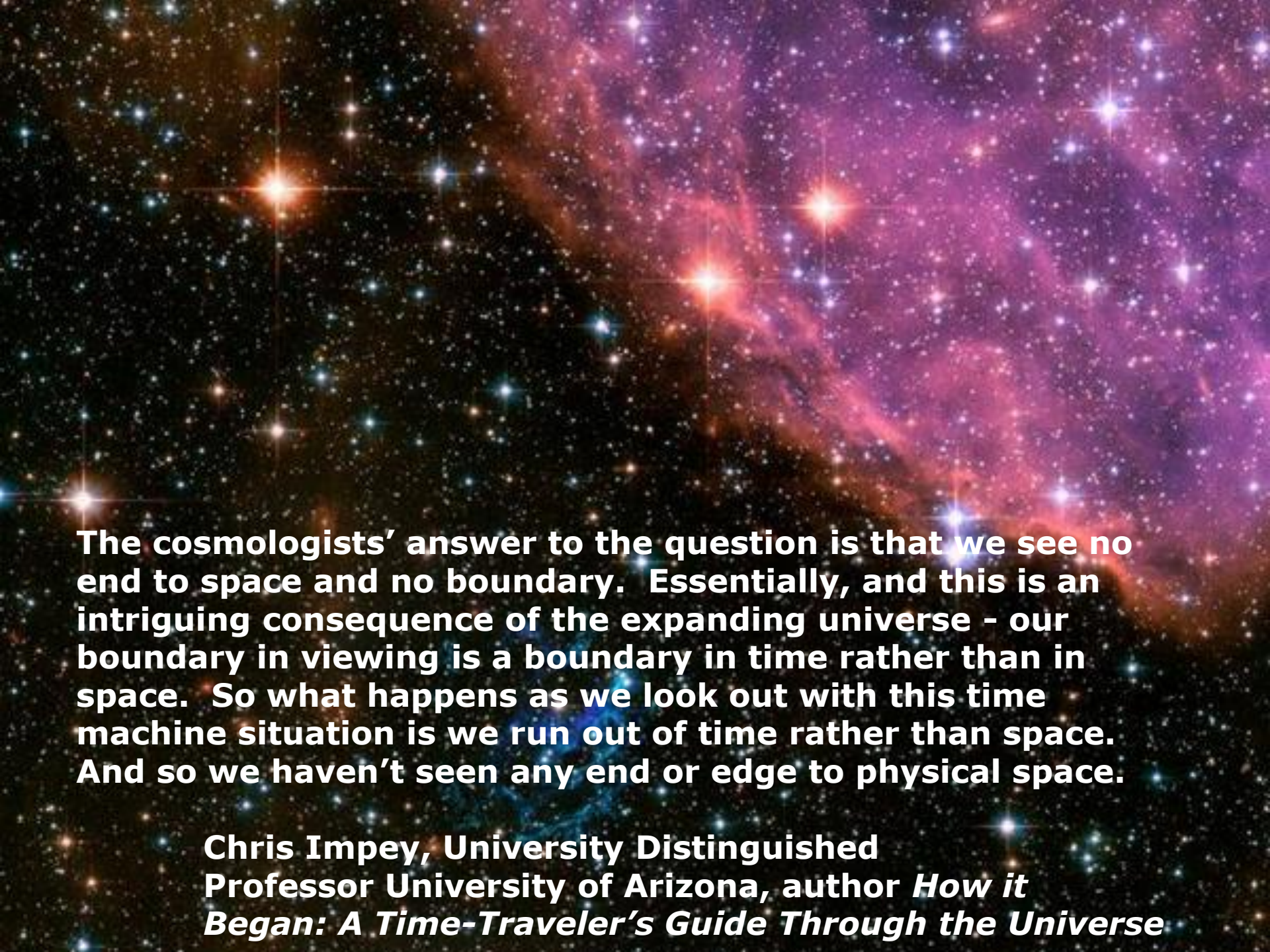
<https://www.edge.org/conversation/brain-time>

Eagleman, DM (2009) Brain Time, in What’s Next? Dispatches on the Future of Science. Ed. M. Brockman. New York: Vintage.

# *Time is flexible*





A vibrant, multi-colored nebula or galaxy with a grid overlay. The colors range from deep reds and oranges to bright blues and purples, with numerous bright stars scattered throughout. A faint grid is visible over the image.

**The cosmologists' answer to the question is that we see no end to space and no boundary. Essentially, and this is an intriguing consequence of the expanding universe - our boundary in viewing is a boundary in time rather than in space. So what happens as we look out with this time machine situation is we run out of time rather than space. And so we haven't seen any end or edge to physical space.**

**Chris Impey, University Distinguished Professor University of Arizona, author *How it Began: A Time-Traveler's Guide Through the Universe***

**Thank you.**



**Steve Gallop, OD**  
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