

A Natural World-view

A dive into cosmology, encountering the vast amounts we do and do not know about the universe, and provoking some discussion of philosophy from a natural perspective

Part 2

Fermilab philosophy society meeting

Jim Hlyen

Dec. 6, 2019 follow on from Nov. 22, 2019 talk

Naturalism in philosophy

Ontological Naturalism in philosophy

The view that there is no supernatural; nature encompasses everything and everything can be studied scientifically. Philosophy and science are studying the same things.

Methodological Naturalism

Science looks for natural connections; ascribing a not-understood phenomenon to a supernatural cause would be a dead end for science. One does not have to subscribe to Ontological Naturalism to practice Methodological Naturalism.

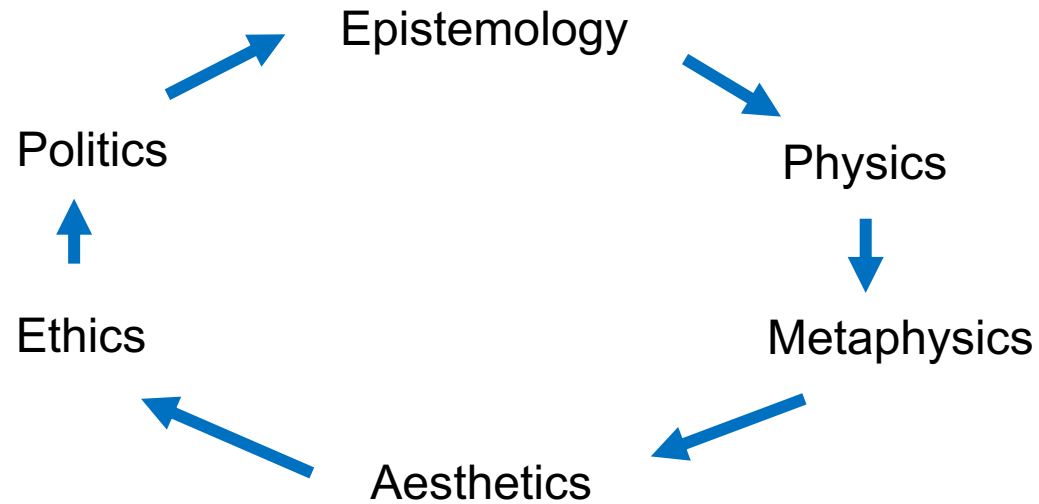
Poetic Naturalism

Coined by Sean Carroll to label stories of the world that emerge at different levels. Different ontologies for different usages, but ones that need to be consistent.

Personal basis of a natural world-view (not derived from the above)

Gaining knowledge is a bootstrap process, where one gains knowledge of how to gain knowledge as one goes along. Gods, dualism, etc. would all be fine if there were evidence for them, and not contradictions produced by them. But observations seem pretty consistent with a natural world.

A philosophical framework



Even if your philosophical position is that you can have a priori philosophical knowledge, your philosophy should take into account progress in the physical understanding of the world and not be in conflict with observations.

Epistemology lite

Ways of knowing, and what we can know

- Sensory perception
- Pure logic
- Intuition
- Emotion
- Art
- Divine Revelation
- Being told by others
- etc.

Science is a combination of sensory perception, applying logic to data, exchanging information with others about their sensory perceptions and theories, & peer review

Physics builds models of the world

je pense, donc je suis / Cogito, ergo sum
(I cannot doubt that I doubt) René Descartes

Know one thing with 100% certainty - something exists, not nothing

All other knowledge is not 100%

- I could be dreaming right now
- I could be in the Matrix (per the sci fi movie)
- I could be a simulation in the computer of some teenager in a garage
- I could be a simulation in the mind of God who is comparing worlds to instantiate – and he will throw this one away because it so far away from being the optimum

From just thinking, I don't know in fact what "I" is, its basis, its organization, its environment, its logicity, how it changes in time...

To go further, Descartes declared that God would not lie... I don't have that faith.

My grandmother the race-car driver !

I have conscious experience both sleeping and awake

Sleep experience is chaotic, often non-sensical, self-contradictory

Awake experience is **ordered and consistent, patterned**

Does awake science through sensory perception give a decent model for interpretation?

We can observe other people sleeping, and construct a reasonable model:
when you are sleeping, your conscious mind is kicking through
your brain's model of the world.

Our bodies sensibly disconnects our brain from our muscles during sleep

Recognizing patterns and order bootstraps us in our quest for knowledge.

This is a shaky base, but it is really the only base we have.

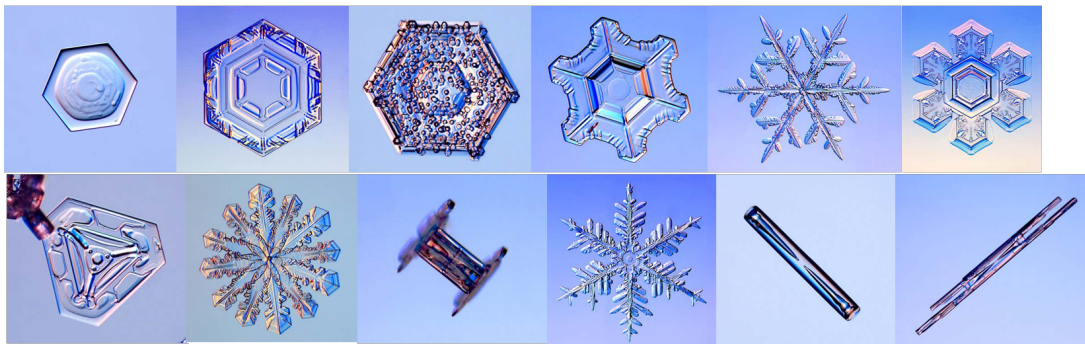
I assume the world is ordered because I see it is ordered.

My calculational failure (for now) on “crisis in cosmology”

What we see:

- Could be result of String Theory Multiverse (Physics motivated) freezing out into many types of universe ?

Yes, multiverse can easily
be large enough to solve
“crisis in cosmology”



- Could be unique result of some physics model we don't have yet ? Well, suppose so.
- Could be special creation ? Well, yes, suppose so. But I don't see the necessity.

Not enough data yet

Conclude Bible is not divine revelation, based on understanding of stars etc.:

Theological creation in order Genesis chapter 1		Observational history of universe
V1-2: heaven & earth & waters (in darkness)		Big Bang: high energy plasma of light (photons), quarks, gluons, electrons, neutrinos
V3-5: let there be light; divide light from darkness; 1 st day		Transition to where quarks and gluons bind into nucleons, then nuclei (hydrogen, helium, lithium)
V6-8: firmament divides waters from waters, the firmament is called heaven: 2 nd day		Cool enough that electrons bind to nucleons (atoms); neutral matter so CMB propagates
V9-13: dry land, grass & trees (life): 3 rd day		Hydrogen & some helium form stars , burning to heavier elements: create oxygen
V14-19: lights in the firmament, for days, years; stars : 4 th day		Supernova & Hypernova spread heavier elements, so water & planets can form (water = H₂O)
V20-23: every living creature that moves in water & fowl: 5 th day		Planets can have day & night
V24-31: land creatures & man: 6 th day		Life on planet Earth

Mind/body dualism – probably not

Sean Carroll makes a strong case that we have explored enough physics that, while there may be and likely are other undiscovered forces, the limits we have on their possible interaction strengths rule them out as having sufficient interaction with our brains to have anything to do with thinking.

This leaves one with essentially standard model physics for brain function for our everyday lives.

Imaging the impact to philosophy if Multi-Worlds is confirmed !

Two models of **Quantum Mechanics**

(there are several others)

Copenhagen (~1927)	Everett Multi-Worlds (1957)
The wave function is a two-dimensional square-root of probability	The wave function is a two-dimensional square-root of probability
Wave function follows Schrodinger's equation for time evolution	Wave function follows Schrodinger's equation for time evolution
Wave function has superposition	Wave function has superposition
At a "measurement", wave function collapses over the entire universe; start over again with new wave function	Wave function continues; "you" are part of the wave function, entangled with different "measurement outcomes"
QM gives probability of what the measurement will pick randomly – probability is deterministic, but what the measurement will show is totally random following that probability distribution	Wave function proceeds totally deterministically
Schrodinger's cat is either dead or alive after measurement (but not before)	Schrodinger's cat is both dead and alive ; versions of you are entangled with each
Collapse of wave-function serves as an arrow of time	Schrodinger's equation is symmetric in time , as Newtonian equations are
Entanglement is spooky action at a distance when wave function collapses	Entanglement is continuous; spooky action at a distance not necessary

Conventional physics

Backup - scratch

Backup

On ultimate mind creator of universe

if the world is based on an ultimate mind, that keeps the mathematics in place, and the rules and order in place

- What are the rules that govern that ultimate mind?
- Who or what put those rules in place?
- Who or what keeps those rules instantiated?

For ultimate mind to qualify as a theory, need to address

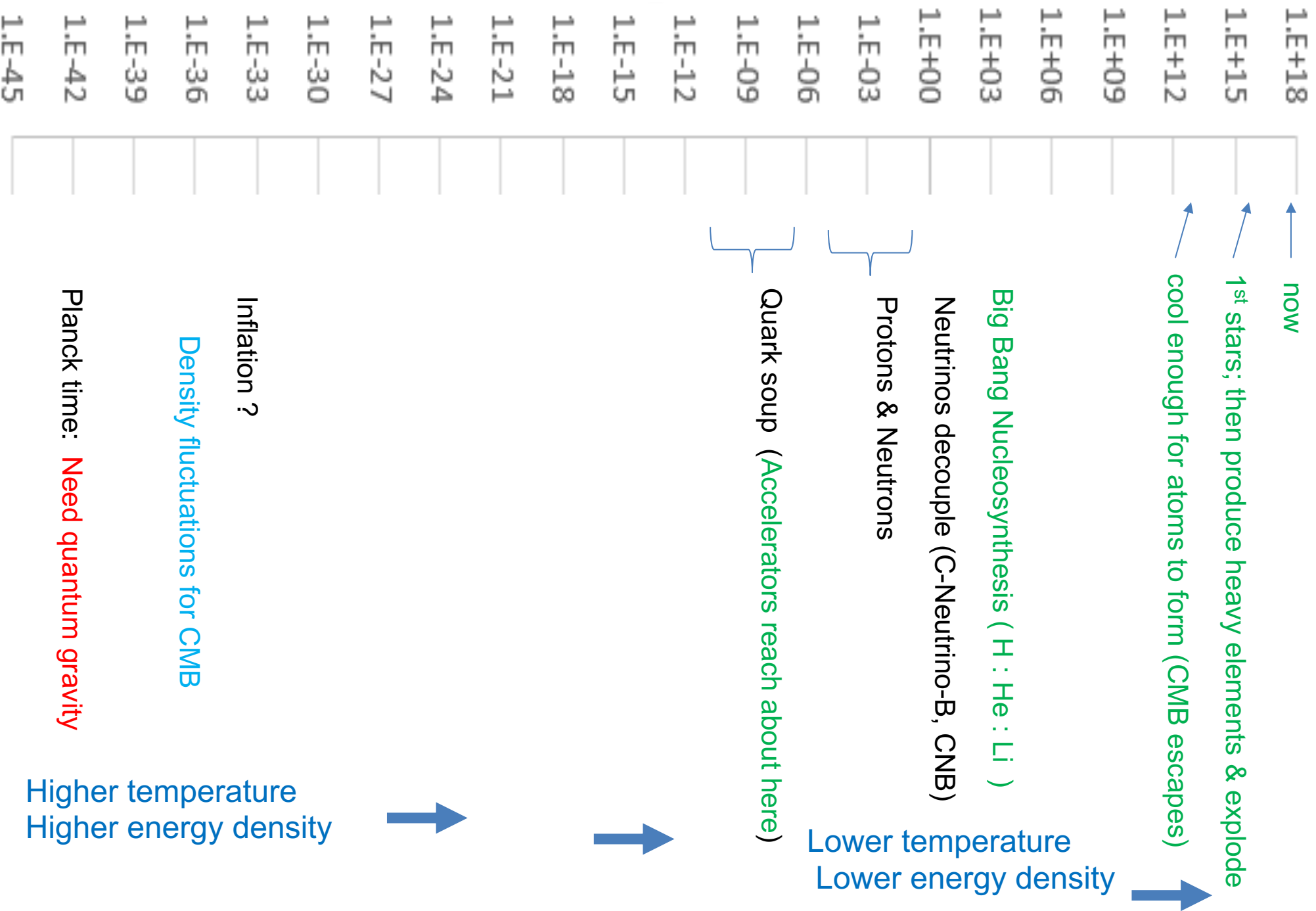
- What is a mind?
- What is a thought?
- How does a mind create a universe?
- How do thoughts guide physical systems to be consistent?
- Can the ultimate mind change its mind?
- Does the ultimate mind have emotions?

For humans, having a thought is a change. Change is time.

- If the ultimate mind decided to create a universe, that is a change, and it implies time?
- If the ultimate mind changes, at which time was it ultimate?

I find the theory of the ultimate mind incoherent.

Cosmological time-line (seconds)



What is observable ?

