

An Interface between Quantum Physics and Human Consciousness can be found in the Sensory Level of the mind

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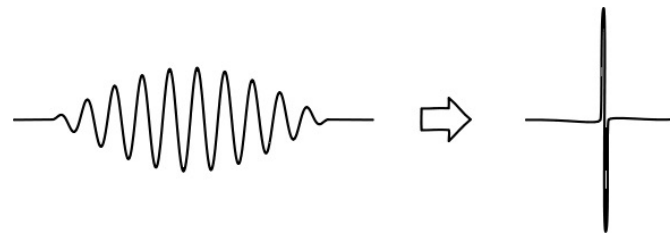
Version 5

Outline

1. Here are two problems presently unsolved in science:
 - Quantum measurement problem
 - How we quickly recognize external objects
 - Show some materialist or mechanical proposals trying solving these problems
2. How should we understand all this from the Writings?
 - The sensory mind and the brain are distinct discrete degrees.
3. Sensory mind acts as a Quantum-like Epistemic Engine (QLEE):
 - Use joint quantum measurements affecting the brain and the QLEE together.
 - Its quantum probabilities can represent sensory credences.
4. Proposed new interface between mental and physical degrees:
 - Fast object recognition via Asymmetric joint measurement events

Quantum measurement problem

- Contrast between classical and quantum waves:
 - Classical waves (e.g. air or ocean) affect everywhere where that wave is
 - Quantum waves (e.g. electrons or light) affect only one place in where that wave is.
- Why?
- Problem also known as:
 - “Reduction of the wave packet”



- “Selection of actual outcome”
- “Reducing a superposition of alternatives to only one actually occurring”

Materialist Proposals to solve the Quantum Measurement Problem

Trying to make quantum physics a bit more classical:

Is there a quantum limit to one of these properties?

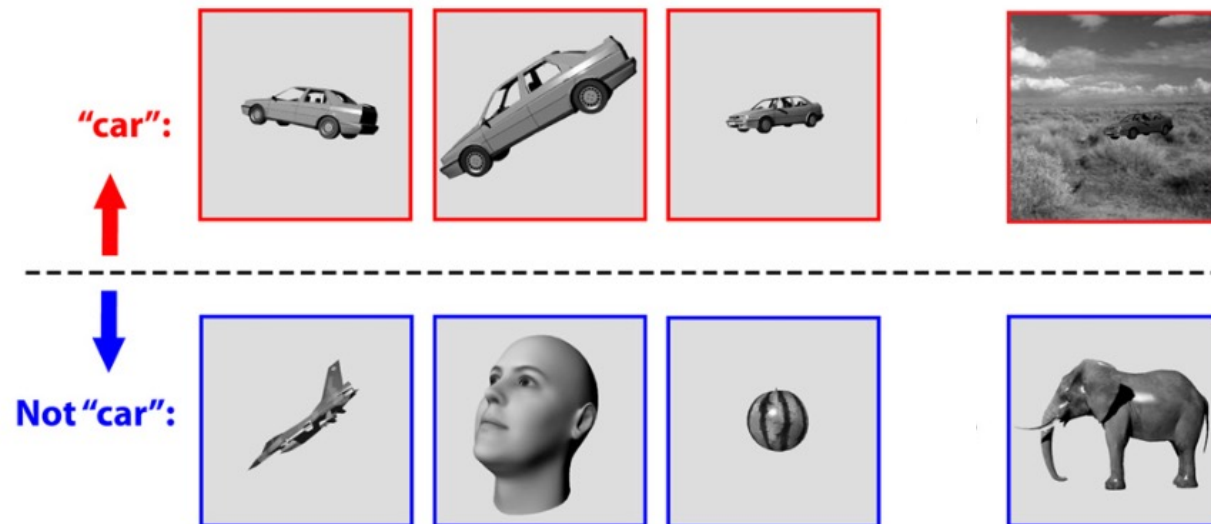
1. Maximum distance within superposition (Einstein in 1930s)
2. Maximum energy difference (Maxwell)
3. Maximum gravitational energy difference (Penrose)
4. Maximum complexity (Weingarten)
5. Some new spontaneous mechanism (Ghirardi, Rimini, Weber)

More details in chapter 12 of my book “Philosophy of Nature and Quantum Reality”,
<http://www.generativescience.org/books/pnb/pnb.html>

But very difficult to find any limit experimentally: nothing found yet!

Sensory object-recognition problem

- Humans and animals quickly recognize visible objects
 - Do this despite varying distance, rotation, lighting, movement, etc.
 - Do this within 1/10 second: only ~ 100 neural steps possible.



This is done in the sensory mind.

How?

Figure from Rudrauf et al, J.Theo.Bio. 428 (2017) 106

Mechanical Proposals to solve the Sensory Recognition Problem

- This a problem in cognitive psychology.
They want to propose a mechanism to do object recognition.
- Two kinds of proposals:
 - **Bottom-up**: Progressing extraction of abstract properties, such as edges > lines > boundary curves > 3D objects.
 - **Top-Down**: quickly adjusting the parameters of a predictive mechanism until it agrees with the input from the senses.
- Both of these kinds require a very much 'neural computation'.
 - There might be enough neurons in brain,
but getting to coordinate quickly enough is very difficult.

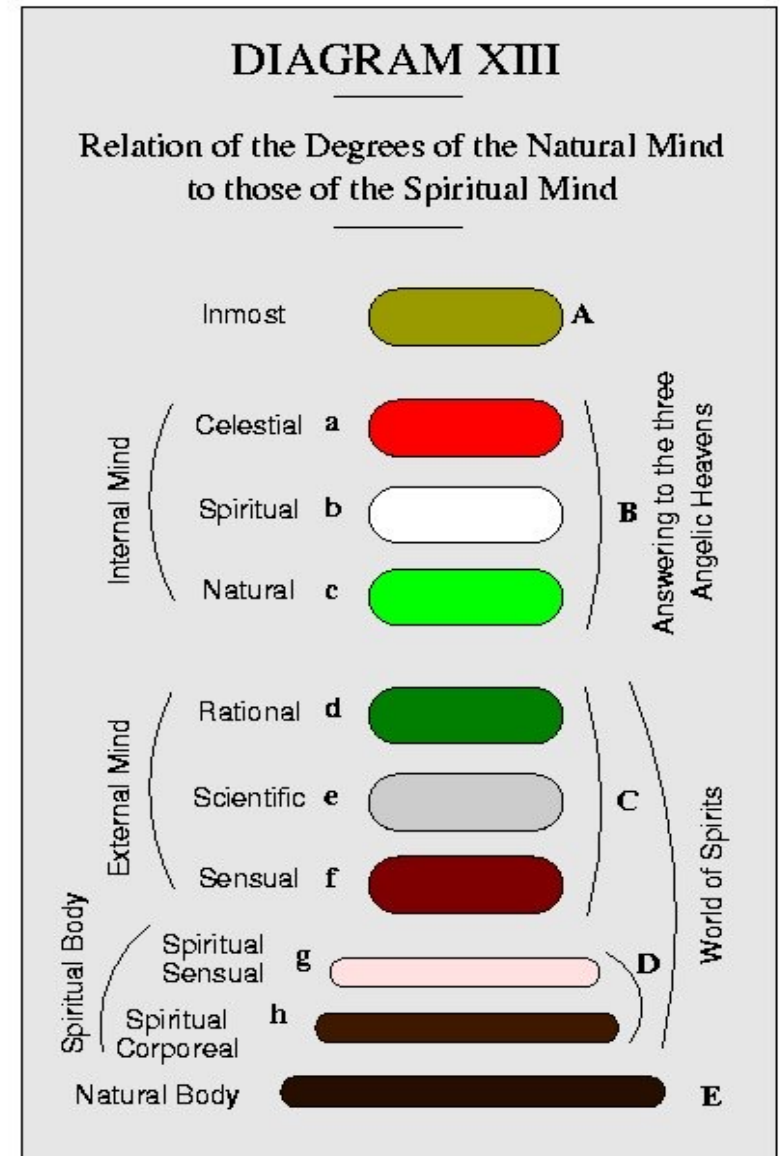
Principles from the Writings

- The **mental** and **physical** are distinct discrete degrees
- Connected by influx from mental to physical,
 - which generates correspondences.
 - Correspondences are patterns of similar functions.
 - Correspondences facilitate repeated influx in all the parts
- Sensory mind and visual cortex are closely connected.
 - We should expect many correspondences between them

Place of the sensory mind.

- There is a whole cascade of discrete degrees though the spiritual and natural worlds.
 - All of them have their own roles in preparing for actual results in the physical.
 - Sensory awareness is the very outmost mental degree of the external mind (**f** here).

Picture from N.C. Burnham's book "Discrete Degrees", 1887.
theisticscience.org/books/burnham/index.htm



Similarities of ideal solutions to 2 problems:

for Quantum selections in green, sensory selections in blue.

1. Should select among many alternatives 'already there'.
 - Photon or electron exposes one photographic grain in whole film.
 - Sensory shape could be one of very many objects recognizable
2. Should select alternatives in configuration spaces with very large numbers of dimensions
 - Entangled particles require 3 dimensions for each particle.
 - Recognizable objects appear in very many possible transformations
3. Should be very fast, so outcome 'pops into existence'
 - The selection of one photographic grain collapses whole state, and quickly produces (e.g.) just one exposed grain in a film.
 - Our sensory mind can rapidly recognize objects.
Especially dangerous objects!

These are corresponding functions

- Many corresponding features of **quantum** and **sensory** observation events.
 - Both are 'observations' in a sense.
- But **Quantum events** are random but **Sensory events** are determined
- Maybe: both result from an influx event
 - **Joint event**: both physical and epistemic (recognizing) effects
 - **Interface** between two discrete degrees: how influx works

Sensory mind as a QLEE: Quantum-like Epistemic Engine

Use correspondences to design a sensory mind with some features of an analog quantum computer:

1. Initial quantum state has stored correlations about objects in the world and their possible appearances
2. Further production of possible spatial translations, rotations (etc) as affects our seeing
3. First joint measurement on QLEE determined by the sensory input.
4. Second interior measurement on QLEE gives credences for the objects seen

This might work, but is too slow by Standard Quantum Mechanics

- Normal quantum mechanics:
 - when there are very many possible outcomes, they selected randomly.
- The first measurement would need to be repeated many times until it gives a view agreeing with senses.
- This slow speed is caused by the Probability Gap.

From the Writings

- The outmost degree is terminating and fixed.
 - Makes a foundation for higher discrete degrees.
 - Not itself conscious.
 - The outer degrees are physical degrees.
- Suggests:
 - This outermost physical is the location of definite quantum selections as effects or uses.
 - The outermost physical in some way contains or constrains the outermost mental (the sensory mind).

Speed up by using constraints from the outermost physical degree

From the Writings, since quantum measurements still mostly a mystery:

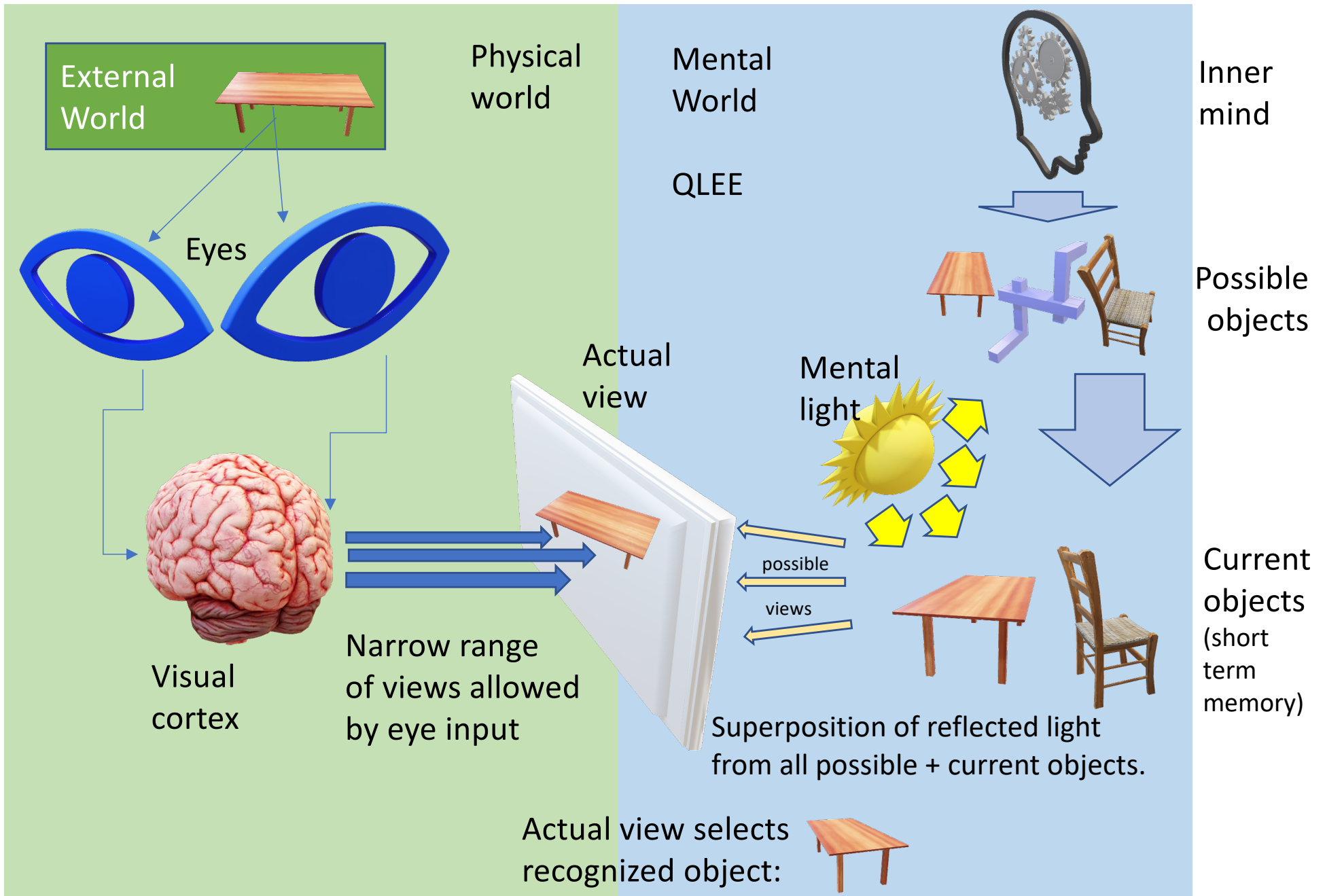
- Specific joint measurement events exist with **QLEE** and **the brain**.
- **Joint Probabilities of outcomes determined only by outermost degree**.
 - Senses constrain sensations!
 - Not by both sides as in normal quantum theory.
- Now: an Outer degree contains and constrains the next Inner degree.
- New physics: call them **Asymmetric Joint Measurement Events**.
 - This **a**symmetry is why I call it a quantum-**like** epistemic engine.
 - Quick transmission of sensory information to the Epistemic Engine
 - So sensory recognizing is not (much) random.

Summary

View the sensory mind as a Quantum-like Epistemic Engine

1. A kind of analog quantum computer
 - Uses probabilities to represent epistemic credences.
 - Uses entangled quantum states to store connections between objects in the mind and possible sensory views.
 - Neurons in the brain in joint quantum measurements with GLEE
 - Asymmetric measurements mean sensory inputs select specific associations in the sensory minds.
 - Hence very fast selection of **the observed objects that caused the view** actually seen.
2. Better understanding of the interface between discrete degrees.

Conscious Object Recognition by Quantum Selection



THE END

'Consciousness' in the Writings

- What is 'consciousness' in the Writings?
 - The manner in which love and wisdom operate together: DWis 6, 7.
 - Personal consciousness only arises after birth when lungs-and-heart operate together like love-and-wisdom.
- The power to do anything, or create something
 - is love in conjunction with wisdom: that power of creating.
 - Not 'awareness' or 'consciousness' by itself

Alongside our earlier theory

- How spiritual influx shows itself in physics by means of modifying some of the 'constant' parameters in physics (like charge or electric permittivity).
- See *New Philosophy*, Vol 121, pp 284-294 (2020)

Role of God here

- God operates everywhere throughout the physical universe.
 - God is not in time and not in space.
 - God is present non-temporally and non-spatially.
- God is able to ‘see’ *both* super-position *and* collapse of the wave function
 - As God can be present to physical substance without violating God’s own laws of order.
- This occurs whether or not a human being is present to observe it.