The philosophical debate between idealism and materialism might be settled if there exists an isomorphism (structure preserving mapping) between phenomenal states and physical states. Both phenomenal states and physical states are describable by set theory, as will be shown in this article. I will show that for each physical state, such as systems described by physics, one can construct a possible mind such that there's an isomorphism between the phenomenal experience of the possible mind and the physical system described by physics. This has the implication of justifying some kind of neutral monism which is neither idealist nor materialist since they are really "just the same".

Let's take a very basic system as a start. Imagine a space with one spatial dimension $\mathbb{R}$ and two boxes at a singular location $x, y \in \mathbb{R}$. The euclidean distance between these two boxes is easily described as $|x - y|$. Let $t \in [0, \infty)$ be the time of the system. Let v_y be the velocity of box y.

The system can be visualised as:
t = 0 ---[ ]----------[ ]--------

t = 1 ---[ ]----------------[ ]-----

Let us now construct a possible mind that is isomorphic with this system. A possible mind is a novel idea that takes inspiration from possible world semantics. Instead of describing a state of affairs in a world w_i with for example a set of objects and statements about those objects, it instead posits a possible phenomenal experience e_i which for example is a set of phenomenal experiential "pixels".

Take for example a visual field $V = \{\{(x, y)_i, h_i, b_i\}_i\}$ which gives us a set of visual "pixels" at position in the visual field $(x, y)_i$ (in three dimensions we have a two-dimensional visual field) and hue $h_i \in [0, 1]$ and brightness $b_i \in [0, 1]$ for each visual pixel $i \in I$ in some index set I. Same goes for a large range of possible experiential fields (more on this in a future blog post). Hue has the same topology as the ring, brightness the same topology as the line.

Now since the two box system is one dimensional, it will have a zero-dimensional visual field, so each object may only need one single visual point

$e_x = F = \{h_x, b_x\}$
$e_y = F = \{h_y, b_y\}$

The system is entirely describable by four variables: The distance $|x - y|$ between the boxes and velocity v_y for y (given an reference frame set to x, we assume no acceleration). So the physical system is entirely describable by the following variables:

Physical system:
$S = \{|x - y|, dx/dt, t\}$

And the ideal system:
$E = \{h_x, b_x, b_y\}$

With h_y removed since it's not possible to make an isomorphism with it. Recall that it's fine for us to arbitrarily change the ideal system as we want since what I'm trying to proove is that ther exists an ideal system for every physical system, so I can construct it however I want.

Since hue and brightness was bounded to between 0 and 1, it might not seem possible to form an identity. Or can they? The topologies between them are homeomorphic,

If the universe minimise phenomenal experience in the same way it minimises energy, then if y and x has the same experience then there's only one experience actually taking place.

This system works just as well in the discrete case. Let $x, y \in \{1, 2, \dots, n\}$ be an space with n points and let $t \in \{1, 2, \dots, T\}$, then the system is updated.

Hermonic occelator

Two gifs
[Harmonic occelator]

[Brightness going up and down in sync]
[Another one where the color changes as it goes past the 0 points]
https://www.feynmanlectures.caltech.edu/I_21.html

In this section I will display two two possible phenomenal structures with the harmonic occelators. Harmonic occelators are infamous in physics for their prevalance, so a phenomenal model of them should allow us to seriously scale up the theory to more advanced systems.

Let m be a point mass on spring performing simple harmonic motion with spring konstant k and assume no friction.

Then we get the physical and phenomenal states

S =E =

Underdetermination: Multiple minds can be constructed that are isomorphic to a physical system. But such minds are isomorphic to eachother, and thus all such minds and the physical system form a category.

A Newtonian only needs a few fundamental equations and values to simulate the future of a newtonian system:

The state of the system (momentum and posititon) and the future evolution of the system (the equations of motion) that follow certain restrictions (such as determinism) [TODO: Find all the restrictions, probably Susskind lectures].

Sense experience is a set. Sense experience is bounded, but it's not immediately clear if it's continious or not.

If it is discrete

Nortons dome
https://en.wikipedia.org/wiki/Norton%27s_dome
Extension to Lagrangian
Hamiltonian

Maxwells Equations
Navier-Stokes Equations
Electrohydrodynamics

Indeterminancy between phenomenal experiences who are isomorphic with classical physical systems which forms a category.

Extension to non-classical physics

Where is the experience "stored" in spacetime? Two electrons may really be experiencing spin, charge and mass. Combination problem: how do they combine into one phenomenal experience?!

Newtonian mechanics is not falsified for some wrongterms say within velocity $v < x$ there exists wrongterms on our equations for distances, momentum e.t.c. within some error term $mv < mx$. Length of something plus e. Measurement is where the wrongterm show up. Newtonian mechanics might work 100% on slow enough speeds and around flat enough space-time.

The blue of the kinetic energy and the red of the potential energy can be added to form one purple pixel which has the same color always.

Maybe useful [Sense-Data and Physics - Mysticism and Logic - Bertrand Russell (drew.edu)]