# Quantum Gravity and Consciousness – Some Mathematics

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**Abstract**

Epimorphisms are used (to the best of the authors knowledge) to describe the interaction between geometries and awareness. Again the Generalised Lagrangian Operator is used (see previous papers). The connection to quantum gravity is that of geometries being aware of each other. That consciousness can be defined in a few different manners should be investigated. There may not be one all-encompassing definition.

An epimorphism is defined as, (this is a slightly more sophisticated concept) for two maps,:

$$g_1, g_2$$

We have

$$g_1 f = g_2 f \;\; for\ a\ \ map\ f : X \to Y$$

Reading previous papers we have the generalised Lagrangian Operator:

$$[E - B]$$

(often described ß in other papers).

Which has two choice functions E and B. This is connected to the very structure of particles and space – time as expounded in previous papers.

Results: The only way an object can change shape is with time. So defining:

$$g_1 \circ \Delta t = \; g_2 \Delta t$$

We have equality in math:

$$\Delta t = I \;\; unless\ \ the\ \ epimorphism\ is\ \ applied.$$

This is whenever:

$$g_1\, f = \;\; g_2\, f$$

For map f. Here it is time that alters geometry, such that a given time is a given distance (Analogous to relativity).

An object can “see: another object if:

$$g_1\, f \;\, = g_2\, f$$

Incorporating time we have:

$g_1 \circ \Delta x\ \Delta t = g_2 \circ \Delta x \Delta t$

And if an object is coincident upon the same point in space:

$$\Delta x = 0$$

But if the mapping:

$$g \rightarrow \Delta x \Delta t \rightarrow \frac{\Delta x}{\Delta t} = v \ s.t \ g^{\circ} t = \frac{1}{t}$$

We have:

$$v_1 f = v_2 f \ \ and \ letting \ f = \omega \ ( \ frequency)$$

We have :

$$v \ \omega \rightarrow \ v \ \omega = \frac{x}{t} \omega = \Delta x$$

The "seeing" process is related to consciousness - thus a fundamental link between consciousness and geometries is:

$$g_i{}^{\circ} \{ t^{\pm n} \Delta x\}$$

Where n ranges from negative infinity to infinity ( usually around 1).

Now defining loosely and abstractly (distance) x (time) - A quantity involved in consciousness. We have a function f:

$$f = \Delta x \, \Delta t$$

And g s.t:

$$g : g \circ t^n \rightarrow \frac{1}{t^n}$$

And:

$$g \circ x \rightarrow \ x$$

Thus in general:

$$g^{\circ} \, x^i t^j$$

And specifically for j = -1 i = 1 = v: N.B for i = 0 j = 1:

$$for \ i = 0, j = 1 ; \quad g \circ t^n \rightarrow \frac{1}{t^n} = I$$

Thus for a wave function ϕ describing a particle:

$$g_1{}^{\circ} \, \phi \, \Delta t \rightarrow g_2 \phi \Delta t$$

So a wave is aware of another wave only if:

$$g_1 \phi = g_2 \phi$$

(an epimorphism). Using:

$$g \circ t^n \to \frac{1}{t^n} then\ g^{\circ} x^2 t^n = \frac{kx^2}{t^2} = E_k$$

Thus a distance is simply:

$$g_1{}^{\circ}x\ not\ \ equal\ to\ g_2{}^{\circ}x$$

Where g now operates on x.

So a shape is anything where:

$$\Delta x\ does\ \ not\ equal\ 0.$$

So:

$$g_1 x\ not\ \ equal\ to\ \ g_2 x\ or\ \ g_1 x - \ \ g_2 x = k'$$

But if time is supplied:

$$g\ x \to \frac{x}{t} = v\ (NB\ \ dropped\ operator\ symbol).$$

So if:

$$v_1 - v_2 = k'$$

And velocity is innate in k', s.t if consciousness is a seeing/ moving process then the mappings are equivalent if :

$$v_1 - v_2 = 0$$

This however is a contradiction which implies:

$$g_1\ x\ \ \to \frac{x}{t} \to g_2\ x$$

Following the work that, regarding information, 0 and 1 are not actually arbitrary:

$$\frac{g_1 f}{g_2 f} = I\ or\ 1 s.t\ \ \frac{g_1 x_1 t}{g_2 x_2 t} \to \ \frac{x_1}{x_2}$$

N.B it is only possible for this to equal 0 if:

$$g_1 x_1 t = 0\ or\ if\ mapping\ g_2 \to \infty$$

When

$$g\ t^n \to \frac{1}{t^n} and\ \ t^n \to 0$$

s.t:

$$\frac{1}{t^n} \to\ \infty\ \ for\ t^n = 0\ (Zero\ time\ interval)$$

We can also define:

$$gx^n \to \frac{1}{x^n}$$

s.t:

$$g\ x^n t \to \frac{t}{x} = \frac{1}{v}$$

Which is a duality where:

$$\frac{1}{v} \to 0\ \ when\, v \to\ \infty\ and\ \frac{1}{v} \to\ \infty\ when\, v \to 0$$

Thus for the mapping:

$$g\ x^n\ t^i$$

Two shapes are aware if:

$$X =\ \ x_1 - x_2$$

That is :

$$X\ is\ \ the\ \ distance\ seperating\ \ and\ x_1 - x_2\ are\ qualities.$$

So if we apply:

$$[E - B]\{\ g\ x^i t^j\}$$

We return energies, velocities etc , that is, using the assumption that consciousness is the selection process selecting itself, we can redefine Anti – Information as:

$$g_1 f - g_2 f = k'$$

Or:

$$[E - B]g_1\ x_1 t - [E - B]\ g_2 x_2 t = k'$$

Where mappings and selections are noted. Thus an epimorphism for any wave function ф, $g[E - B]$ф:

The structure :

$$[E - B]g\ \ selects\ \ only\ \ that\ \ which\, produces\ a\ logical\ equality.$$

By saying that equality of logic is a form of awareness we have demonstrated that shapes are aware of each other. This has implications in Quantum Gravity in saying that whatever form or structure space-time has these structures are aware of each other:

Now for some calculation regarding consciousness. Remember the definition that entropy is:

$$dS = \frac{x - B\ x}{x'}\ where\ \ B\ is\ a\ \ choice\ function.$$

We can write for:

$$dS = \frac{E}{T} = \ \frac{x - Bx}{x'}$$

Where $x' is\ \ the\ \ length\, X\ \ mentioned\ above.$

Now for resonance:

$$X = \frac{F_0}{2m\omega} t \sin(\omega t)$$

For a brain, modelled as a sphere with radius .15 m, using 12 watts, at 300 kelvin and using.

$$\frac{x - Bx}{X} = \frac{E}{T}$$

$$where\ \ X = \frac{F_0}{2m\omega} t \sin(\omega t)$$

$$\frac{.15}{X} = \frac{12}{300}\ for\ \ 1\ second$$

$$\frac{F_0}{2m\omega} t \sin(\omega t) = \frac{.15}{0.04}$$

Assuming the mind is energy ( 12 W = 12j/s)

$E = mc^2$ ; $m = \frac{E}{c^2} = \frac{12}{(3e^8)^2} = 1.333e^{-}16$ kg

So after rearranging and using 10 Hz for a one second cycle:

$$F_0 = \frac{2m\omega(3.75)}{tsin(\omega t)}$$

$$F_0 = \frac{(2.66e^{\wedge} - 16)(10)\ 3.75}{1 \sin(10)}$$

$$= -1.8\, e \quad -14$$

$Newtons$.(take absolute value but NB negative time in consciousness)

So for a single electron:

$$F = ma\, m = 9.11e^{-31}\ kg\ ; \quad a = 2\ e^{16}\frac{m}{s^2}$$

Using :

$$v = c\ =\ \ at\ ;\ the\ brain\ could\ take\ 1.5e^{-8}s$$

$$to\ accelerate\ an\ electron\ to\ near\ c$$

Assuming there are around :

$$5\ e^{26}\ electrons\ in\ the\ brain$$

The brain could accelerate each electron at ;

$$4\ e^{\wedge} - 11\frac{m}{s^2}$$

Velocities etc can be worked out.

References:

Auslander, M., Buchsbaum,D., Groups, Rings and Modules, Harper And Row Publishers., 1974,.pp. 9

Wikipedia, Wattage of brain and other data.