

**The Most
Fundamental
Law**

- the basis of

Quantum Mind –

the smallest of all

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What is ontology?

Ontology is an identification of what exists, i.e., existents.

“That department of the science of metaphysics which investigates and explains the nature and essential properties and relations of all beings, as such, or the principles and causes of being.”
(www.dictionary.com)

Importance: We should know that something is before talking about it.

What is consciousness?

So many definitions exist, but let's say that it is a state in of perception either of ourselves or something else.

A larger issue is whether consciousness is found totally within or partially within this universe.

What, then, makes up this universe (what exists)? If we know, we may have an idea its relationship to consciousness. The universe, itself, may be “conscious”.

Find what exists by reductionism

1: A theory that all complex systems can be completely understood in terms of their components 2: the analysis of complex things into simpler constituents

<http://dictionary.reference.com/>

Adapted definition: Breaking down into the smallest units and attempting to explain something in terms of these units.

(Expanding an entity to infinity fails to reveal its constituents.)

What is the Lowest Common Denominator of Our Universe?

- **Use reductionism to conceive of the smallest “particle”. It is the size of Planck Length - (roughly equal to 1.6×10^{-35} m or about 10^{-20} times the size of a proton).**
- **➤ What are the parameters allowing “particles” of this size?**
- **➤ Think of the smallest allowable change, or movement, that would allow our existence as a universe. This is the smallest “inflection of space-time”, the object-process boundary parameter.**

Space-time boundary conditions

What happens at the “boundary” between a Plank Length (PL) entity and a non-PL one?

Suggestion – Space-Time merges, as was in the singularity.

Anything less than PL is a micro black hole, also a singularity.

The singularity and that began is now at the “edge” of our universe, is not space-time dependent.

In what way do space and time exist, and how do we know?

A process expresses these objects, and the objects, in turn, give process its existential status.

Something exists in terms of what it is not!!!!

This *most fundamental law* helps us to understand such apparent paradoxes as “particle wave duality”. As an analogy: Wave may be regarded as process. The “particle” is evidence. In turn, without the particle, we would not know about the wave.

Space-Time is Time-Space

Space = Time

This is Process.

This process dimensional boundary parameter may be regarded as, a “Character of Physical Law” (borrowing from Feynman). For example, we have these constants:

- The speed of light**
- Newton's gravitational constant**
- Smallest size limited as Planck length**

What of Materialism vs. Non-materialism?

If:

- **Planck length (PL) is the smallest entity**
- **Process is the factor allowing us to distinguish PL from what it is not**
- **Space merges with time at the process boundary**

then:

any distinction between material and non-material simply is heuristic – a device created for our convenience.

The Abstract is real; the real is abstract.

- **Process exists in terms of object, object in terms of process.**
- **The universe exists in terms of what it is not.**

At this level, a binary world exists.

John A. Wheeler (the physicist):

"...a machinery for the combination of yes-no or true-false elements does not have to be invented. It already exists."

**(Misner, C.W., Thorne K.S., Wheeler J.A. (1973)
Gravitation New York: W.H. Freeman and Company)**

Binary world/space repeats itself, and is uniform. Because of the reduction process, everything is expressible in binary form with the 16 dyadic functions $[(f_n)(p,q)]$:

f_0	f_1	f_2	f_3	f_4	f_5	f_6	f_7	f_8	f_9	f_{10}	f_{11}	f_{12}	f_{13}	f_{14}	f_{15}
0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1

$F_a(f_i, f_j) \rightarrow f_b \quad f_a(f_b, f_j) \rightarrow f_c \quad f_a(f_c, f_j) \rightarrow \dots$ - outputs are forward-fed as inputs into succeeding functions, until the original function is repeated.

(Recursion of logical operators and regeneration of discrete binary space June 2000, Informatica, Josef Stefan Institute, Ljubljana, Slovenia)

Dialectics binds our consciousness

The universe is uniform at the reductionist level – everything is composed of Planck length entities in terms of what they are not.

This means EVERYTHING – “material” and “non-material”. However, the previous panel suggests that there is no distinction.

Dialectics means: whatever exists does so in terms of what it is not. This, recall, is the *most fundamental law*.

Dialectics is the process that binds consciousness to everything else. Could the universe be conscious? 11

Principle of Induction – The future resembles the past.

– the rationale for scientific methods

Previous panels show that the universe is uniform – being composed of Planck length entities in terms of what they are not.

Further, the recursion of binary space is mathematical proof of that uniformity.

Hence, the ontology of how we know – scientific methods is dialectics – the *most fundamental law*.

What is a scientific method?

A scientific method is an epistemology, a way of knowing.

Essential steps:

- **Observe some aspect of the universe.**
- **Invent a tentative description (a *hypothesis*) consistent with observation, and use it to make predictions**
- **Test those predictions by experiments or further observations (including data collection), and modify the hypothesis in the light of your results. Note: You never prove a hypothesis, but confirm/fail to confirm**
- **Analyze and derive conclusion. Repeat steps 3 and 4 until there are no discrepancies between theory and experiment or observation.**

Belief... is ours not for ourselves but for humanity. It is rightly used on truths that have been established by long experience and waiting toil, and which have stood in the fierce light of free and fearless questioning. ... It is desecrated when given to unproved and unquestioned statements, ... The danger to society is not merely that it should believe wrong things,... but that it should ... lose the habit of testing things ...; for then it must sink back into savagery. It is wrong always, everywhere, and for anyone, to believe anything upon insufficient evidence. ... Inquiry into the evidence of a doctrine is not to be made once and for all It is never lawful to stifle a doubt; for either it can be honestly answered by means of the inquiry already made, or else it proves that the inquiry was not complete."

From W.K. Clifford. Lectures and Essays (London: Macmillan, 1879).

Summary

Ontology means, “What exists”.

Look at the nature of things by expansion to infinity or reduction to Planck Length (PL).

Planck length is expressed in terms of a process-giving rise to it. In turn the process is expressed by Planck length.

This relationship is uniform throughout the universe, thus affirming the *Principle of Induction*, the basis of scientific methods.

The ontology of scientific method is: “That which exists does so in terms of what it is not.” It is a process ontology, the process being the *most fundamental law*.

Abstract -

The most fundamental law of the ontology of consciousness

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Philosophers, especially those in science, attempt to discern the smallest in terms of an object, such as a subatomic particle. However, the process of repeated Cartesian subdivision takes us to a different and binary world.¹ This is a world seen by philosophers like Hesiod² to physicists (such as John A. Wheeler – “It from bit”).³ We enter a universe confined by a process boundary (as opposed to a physical boundary) that may allow a change of condition or exchange with another universe having other processes. Feynman might agree that this is a process boundary by virtue of the “Character of Physical Law” true for this dimension.⁴ The nature of process is expressed by the most fundamental law of all – that which exists does so in terms of what it is not.⁵ Our dimension as object is in terms of what it is not – either other dimensions with different parameters or “nothingness”. Process not only is the foundation for binary existence but also might be considered analogous to Aristotle’s “substratum” underpinning all of what we think of as reality (e.g., Whitehead).^{6,7}

What we can understand, phenomenologically, is bounded by our capacity to measure. Our scientific understanding relies upon our ability to conceptualize and verify by observation.⁸ But the boundary parameter set by the character of process determines the ultimate measurement limit. We may be able some day to discern that smallest inflection of space-time, thus apprehending fundamental process. However, now we paradoxically are forced to discern its deductive nature by inductive reasoning, thus knowing something probabilistically. We may say, then, this indiscernible abstract is the Real, and what we take to be real revealed by our “contaminated” (Heisenberg) measurements is abstract. The Real consists of that which is and the underpinning of our dimension. The smallest entity, as the smallest inflection of space-time, forms the basis of that which is constructed and populates our dimension (quarks, atoms, molecules, you, me, and even ideas). Yet, that which is constructed may be altered. Whatever is alterable is abstract and “contaminated” by the means of constructing it. What is unchangeable is Real, and that Real is process operating on the dimensional boundary. Indeed, boundary proximity may generate new universes (e.g., Hawking, Steinhardt).⁹ More broadly put, process is responsible for that which is alterable, but Reality has its own will that may permeate us (e.g.: Kafatos)¹⁰. While the abstract has its locus, Reality governs the limits of our apprehending space-time and its loci.

The nature of this universe underpins the philosophy for scientific methods, i.e., uniformity, or the “Principle of Induction”. That is, the future resembles the past (Hume and Russell). However, this approach, drawn in large part from philosophers such as William Whewell (1794-1866)¹¹, is only an assumption. The methodology that discerns the smallest in terms of process may assist in providing a philosophy of uniformity, thus clarifying why scientific methods “work”.¹²

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