

## Wave Collapses Have Structure

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<https://youtu.be/YpnuAJGaShE&lc=Ugykz3RbhZ4Zo0CIZAp4AaABAq>

A Comment on the [Closer To Truth](#) YouTube post:  
Stuart Kauffman - *Is the World Self-Organizing?* (Jul 15, 2023)  
<https://youtu.be/YpnuAJGaShE?t=2m34s>

**Abstract:** The Newtonian xyzt approximation emerges only in systems with sufficient densities of microscopic momentum exchanges (microcollapses) to suppress wavelike behaviors, resulting in approximations of points and space [1]. When the density of these collapse events falls too low to support the Newtonian approximation, perplexing non-space, non-time behaviors such as double-slit self-interference emerge [2]. This note mainly addresses similarities of emergent complexity in biology and, more subtly, physics, but the point most worth noting is that the only way self-consistent Newtonian approximations can emerge from high densities of microcollapses is if each microcollapse preferentially selects for such a structure. Wave collapses are experimentally accessible, so exploring this internal structure could provide insights into how the non-xyzt deep universe operates.

### A Biological Take on the Emergence of Complexity

What a delightfully insight-packed video! [2:34](#) SK: *"... the parts and processes ... interact with one another, and out of that emerges a kind of crystallization [that does] something useful. [1:53] If we're right ... Newton, after 350 years, has reached a terminus."*

### Emergence of the Newtonian xyzt Approximation

Picture a universe where, far from being inexplicable givens, Newton's concepts of space, time, and particles emerge together from a scintillating sea of almost uncountable but experimentally observable energetic actions. These simpler units defy our usual concepts of how space and time behave, yet collectively, they also *define* space and time, at least within the limits of a single current inertial frame.

That universe would be ours. The units of action that defy classical space and time would be quantum wave collapse — not the absurdly overcomplicated version of that phrase that inevitably ends up attached to undefinable and untestable words, but the simple microscopic version in which innumerable and often thermal exchanges of momentum "relocalize" and restart the ability of particles to form waves that reflect and diffract [1].

### Relocalization and xyzt Emergence

The word "relocalize" is the key. When applied often enough and at sufficiently short momentum wavelengths, these relocalizations create the initially blurry images of what we think of as "space," "time," and "particles." Quantum uncertainty was never about fuzzy particles residing in some inexplicably pristine, perfect, and eternal Einsteinian spacetime. A better explanation is that spacetime blurs in the same way that tends to happen if you peer closely at an entity or action composed of many small, similar parts.

## A Possible Link Between Newtonian and Biological Emergence

I must note, however, that no matter how powerful binary networks may be for modeling biological emergence, they cannot possibly model the deeper level of creative emergence behind information-preserving — and thus biology-enabling — Newtonian physics. That is because the certainty of binary logic is very much a part of that same emergence.

More is needed, and it needs to come from that same indifference to space and time seen in collapse. The deep universe is more complex than we see, and existing physics does not fully describe it. That includes space-resident quantum physics, though that does give delightful hints.

Nor is there any need to restrict all of the features of the deep universe solely to physics since the pixelated emulation of Newtonian physics is not, and can never be, that complete. My best guess is that even the biology networks will, in time, prove to need and use more profound levels of non-space, non-time physics.

## A Challenge to the Biology Emergence Community

The challenge for insightful folks like you, Professor Kauffman, is how you and folks like you can convey your message to those who need it most. Imagine the kinds of research that might break loose if the emergence of spacetime itself proves to be the first and most potent example of the ceaseless creativity you have been describing for many years.

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## References

- [1] T. Bollinger, *Classical Physics Is an App Running on the Deep Universe*, Apabistia Notes (2023-07-13). <https://sarxiv.org/apa.2023-07-13.2120.pdf>
- [2] T. Bollinger, *The Particle Illusion: A Closer Look at Feynman's Double-Slit Paradox*, Apabistia Notes (2023-7-12). <https://sarxiv.org/apa.2023-07-12.1720.pdf>