Twitter Thread by Carlos E. Perez



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"Three modes of evolution have thus been brought before us: evolution by fortuitous variation, evolution by mechanical necessity, and evolution by creative love." - C.S. Peirce 1893

These words were spoken prior to the discovery of quantum mechanics and computation. What if Peirce knew of these discoveries? If so, how would he have conceptualized these evolutionary modes differently?

I believe there is an extreme benefit in revisiting the writings of great minds in the past and refining them based on scientific discoveries that occurred only in their futures.

@stephen_wolfram wrote the book "A New Kind of Science" that speculated how science would be different if computers existed prior to calculus.

In the same way, let me explore C.S.Peirce ideas of evolutionary philosophy from the vantage point of knowing of the discoveries of quantum physics and universal computation.

Peirce thinking methodology is based on identifying a firstness, secondness and thirdness where the latter concept is dependent on the previous ones. It's is a constructive logic where one a latter concept cannot exist without the prior concept.

The first mode of evolution identified by Peirce can be associated to chance. "God does play dice" according to Peirce. The interpretations of quantum mechanics appear to reveal this fundamental condition.

What quantum mechanics truly reveals is the subjective nature of observations in our universe. The randomness is a consequence of the quantum entanglement intrinsic in the universe. One cannot pick a reference frame without inadvertently perturbing what is observed.

Randomness is not a fundamental property but a side-effect of entanglement.

Therefore variation cannot be firstness. I propose instead that computation is firstness.

Variation which Peirce argues to be necessary for firstness arise out of the features of computation. Variation reveals itself in the irreducible complexity of computation.

Evolution through habit is reducible complexity in computation. The tractable patterns that lead to momentary invariance found in reality are the consequences of pockets of reducible complexity.

Peirce's leap to the concept of 'evolutionary love' may have been motivated by his observation that Darwin's theory implied a 'Gospel of Greed'. https://t.co/GMAtwhNKR1

He noted the absence of 'sympathy': "The gospel of Christ says that progress comes from every individual merging his individuality in sympathy with his neighbors." The word 'empathy' had yet to be introduced to English vocabulary.

The word 'empathy' was introduced in English vocabulary in 1909. 16 years before Peirce wrote about 'Evolutionary Love'.

Peirce was motivated to show that Darwin's evolution rested on the importance of variation lead to a humanistic interpretation at a higher level. He wrote is conjecture from within the context of biological evolution.

Within the context of biology, the concept of self is present. So when we speak of habit, we connect that habit to the maintenance of the self (i.e. homeostasis in biological sense).

What Peirce describes as 'Evolutionary Love' as a thirdness from variation and habit is a conceptual leap that should include the establishment of the biological self. Thirdness from a computational perspective at best implies 'amortized inference' or a 'nature to fit' algorithm.

From there you build of the elements of life such as Varela's self-referentiality, closure, autopoeisis, and autonomy. To get to a 'Gospel of Empathy' one has to get first to a state of the living.

The emergence of empathy requires the evolution of minds.

https://t.co/CKl7IvNWys