Twitter Thread by Carlos E. Perez



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I woke up realizing that there is something very wrong with thinking in categories and classifications. Many people accept the idea that this kind of thinking is at the core of abstract thought.

Douglas Hofstadter argues otherwise in a very thick (not dumb in the Brit sense) book of his ('Surface and Essences') where he argues that analogy is at the core of thinking. You'll have to read his book, specifically the last chapter to understand what he means.

The problem with categories is that they create artificial boundaries that are too crisp. But we know that when we master any subject that there is a distinct fluidity between concepts. The master seems wrong from a by-the-book novice because he keeps on breaking definitions.

Analogy making employs the tacit knowledge gained through experience to adroitly navigate between similar and competing concepts. A master has an intuitive feel of the vocabulary he employs to create expressions that have previously never been heard.

Biological brains feel their way through their realities. Something feels like red because our interactions with that thing feels the same as if it was red. We do not see the color red, we feel the color red. There is no red in this picture:



Analogy making is the interplay between the iconic and the indexical (see Peirce). We land on each relevant sameness and make cognitive leaps between relevant distinctness.

A master sees the implicate wholeness of process rather than the fragmented collection of classifications. Analogy making is that just-in-time thought process that connects thoughts together.

Analogy is therefore that bridges thoughts or concepts together. Categorization or classification is just a subset of this concept. It is the assignment of a thought to a classification. A bridging of something that is observed to what was previously categorized.

In psychology, tests for general intelligence typically involves tests of analogy making (see: Raven progressive matrices). There has been some Deep Learning research to solve these, but most of them had unsatisfactory results.

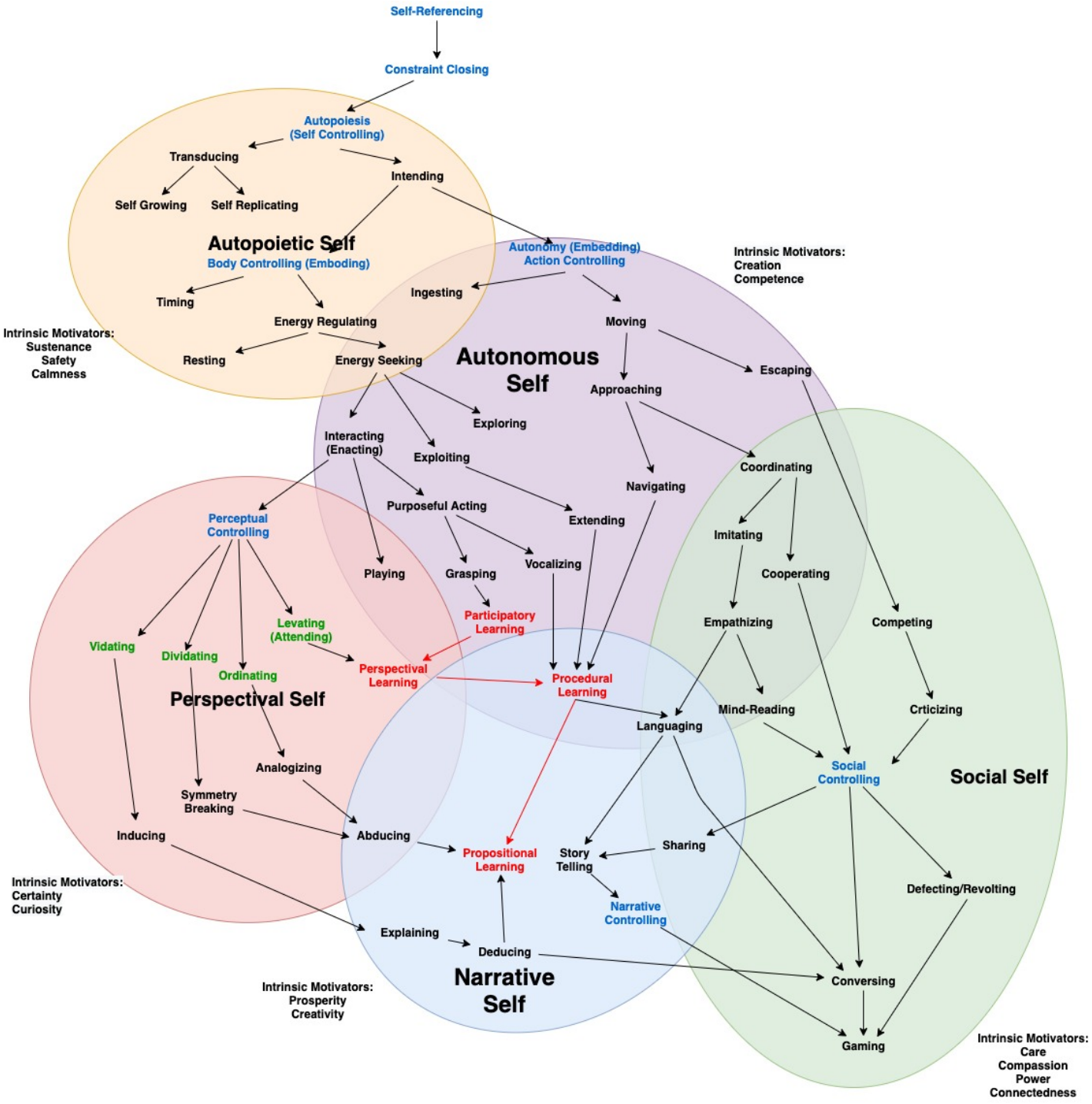
I conjecture that the same process that an animal employs for navigation is the root of analogy making.
https://t.co/lNqClJLE8W

Unlike animal navigation that connects what is perceived to internal concepts, analogy making internal concepts with each other. Indeed this capability is critical for any creature that needs to follow a complex conversation. You cannot converse if you can't analogize!

But analogizing bridges two concepts together, what's the process of bridging three concepts together?

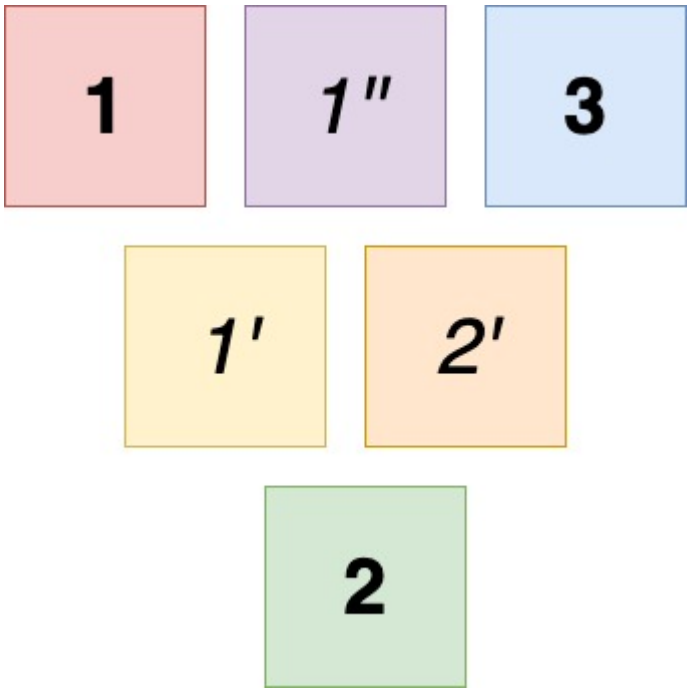
100 years ago Charles Sanders Peirce (pronounced 'purse') introduced his method of triadic thinking to William James. Peirce believed it to be the core of all his insights. William James however never understood it!

Which finally brings me to the reason I woke up and wrote this tweet storm. Peirce triadic reasoning is the core of thinking about emergent phenomena.



Emergent phenomena is a difficult to grasp because it appears like magic. In simple terms, the interactive behavior of parts leads to an emergent behavior of the parts. Think of the phenomena of 'rubber-necking' as an emergent one.

Peirce's triadic thinking connects the parts with the whole in a systematic way. When one first here's about firstness, secondness, and thirdness, it sounds extremely weird.



But baked in the approach is an explicit expression of how concepts progressively constructed. The problem with symbols (or even categorization) as a starting point is that it never expresses how a mind actually arrived at a symbol.

C.S.Peirce's writings are all about a meta-level evolutionary process. The method always begins with firstness. That is something that is (well) first and by itself. Firstness is defined as the characteristics of being first!

It is here where I will lose most of my audience. It's perhaps also the point where William James also lost the plot! But let me assure you that if you ever want to seek out the 'big picture' of intelligence then you aren't going to find it without knowing Peirce.

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