Twitter Thread by Paras Chopra

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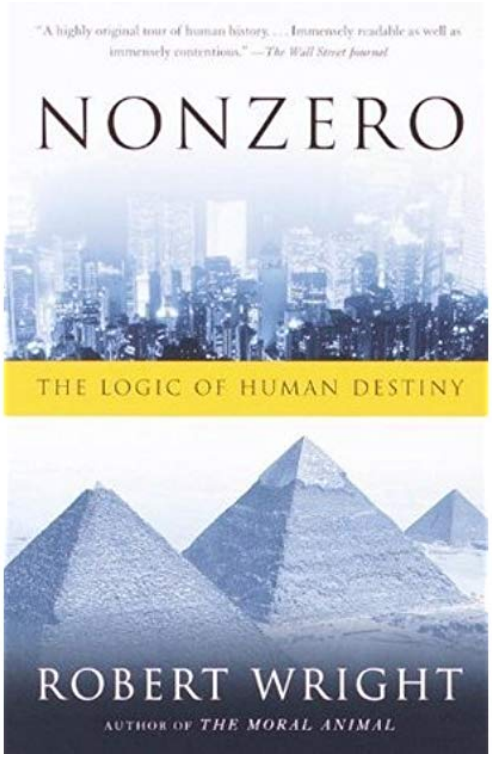
1/ Here are my notes from @robertwrighter's book - Nonzero: the logic of human destiny. I enjoyed the book very much.

The basic premise of the book is that history has a direction which favors co-operation and non-zero sum games, and that causes an increase in complexity.



2/ Starting from the first replicating molecule which co-operated with an outer layer to form first proto-cell, evolutionary and cultural history is full of examples where two entities come together to survive and progress a lot more than they would have done individually.

3/ This co-operative entity fares much better than two individual entities because of specialization. If two entities are in the same boat - that they win together or lose together - then trust is implicit.

4/ In a non-zero sum game, trust causes entities to focus on what they do best.

For example, eukaryotic cells - the ones animals and plants have - emerged when two proto-cells merged, and one took the role of energy generator (mitochondria), the other specialized in protection.

5/ Some scientists believe that even nucleus in a cell is a result of an early cell merging with another cell.

So M&A is not a recent phenomena, entities have been merging because of common interests ever since life started.

6/ Even a single cell is an emergent entity because different genes/DNA "decided" that co-operating and specializing via a single genome is a much better survival mechanism as compared to individual genes/DNA trying to replicate in the wild.

7/ By making an organism, the genes in the genes, seal their common fate. Either they survive together or they die together.

This is truly a non-zero sum game.

8/ However, within the broader non-zero sum game, there are oppurtunities for playing zero sum games.

Like, even though we're a family and there's a single ice-cream left in the fridge, you'd want to have it.

9/ After emergence of eukaroytic cells, the big leap was multiple eukaroyotic cells coming together to form a multi-cellular organism.

10/ An organism is a pact that billions of cells share that they either survive together or die together.

This "trust" enables them to specialize and co-operate together for better survival. Some become specialists at taking in oxygen, and others at writing poetry.

11/ Now onto cultural evolution.

What I thought was perhaps the most clever idea in the book: ideas that support co-operation and specialization survive and get adopted because they enable win-win deals for idea holders. (Non-zero sum games)

12/ Technologies - like hammer and spear - enable a group of humans to co-operate and do things they individually couldn't have done: like taking on a mammoth, or going to the moon.

13/ And there's a nice feedback loop in technology<--->co-operation cycle. The more people co-operate, the more they're able to specialize, which leads to more sophisticated technology.

14/ Out of all technologies, perhaps information technologies are most conducive to enabling more non-zero sum games.

As writing skill spread, more and more people entered into simple written contracts that helped people co-operate and specialize.

15/ Perhaps the biggest information technology was money and the corresponding meme of capitalism that helped people express their desires clearly and others to fulfil those desires.

16/ We have a thousand different types of shoes because shoe-makers today do not have to worry about baking their own bread. This "trust" in the larger entity of commerce helps everyone progress.

17/ This loop of technology<--->co-operation accelerates specialization and causes complexity to grow even in face of the second law of thermodynamics, which states universe tends to move towards dis-order.

18/ One good way to think why non-zero sum games are inevitable throughout history is to see that entities that co-operate overpower entities that don't.

In this way, war or threat of war actually causes people to come together as a nation-state.

19/ This threat of zero-sum or even negative sum game (of say "nuclear war" or "climate change") is the catalyst for greater levels of co-operation.

The book discusses EU and UN as early and emerging examples of a possible future "world govenment" (whataver shape it may take)

20/ So even though history is full of accidents and you can't precisely tell time and location of major shifts/innovations, you can tell that (social, information, energy and material) technologies that enable entities to co-operate are inevitable.

21/ Eye was "discovered" by evolution multiple times, and so was flight.

Similarly, the book argues, if humans vanish, perhaps our close cousins (primates) will have an oppurtunity to evolve towards greater level of co-operation and reinventing writing, capitalism and culture.

22/ That reminded me of the movie "Planet of the apes"!

Of course, tribalism is rampant today and the age of Trump and Brexit will be a good test for book's ideas. My sense is that these are hiccups and counter-trends such as crypto, Internet and UBI will enable cohesion.

23/ To reiterate: the trajectory of history pushes co-operation and complexity while the second law pushes dissolution and disorder.

Is it the old yin-yang meme at play? You decide.

That's all! The book is full of perspective-shifting insights. Hope you like my notes :)