

Decision Systems: Line of Research Motivation

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I've been desirous to write for some time now, given the right context I can talk a lot so I thought maybe I could also write a lot; so finally I've taken the courage needed to pay for a Wordpress site, and through the struggle of finding something good to write about I thought: maybe I might as well start by explaining the motivation for the line of research I want to invest a couple of years on, because I believe it is of uttermost importance to externalize this problem; one of the most critical challenges on human history, and one we face today.

For any group of intelligent beings with a certain set of necessities they will eventually have to decide on how to decide, what I mean is that they will have to organize themselves to take decisions on how to obtain goods, manage them and produce services for their community so that they can secure their survival. Human beings have been doing these "rules of decision" for as long as we can remember, we nowadays call them economy, politics and even some times our so hated term "bureaucracy". Lets make something clear, I don't want to sound like a "system hater", I want to make a neutral analysis on what we humans do, need to do, and how we do it, how we self govern.

These governing systems always change through history, for example in the western middle ages the feudalism was the government structure in which military lords would protect a set of peasants in exchange of their agricultural labor force, but there are no more kings, knights or peasants today (in a literal way, some people may find themselves making metaphors for modern poverty and socioeconomic positions). Athens had an extreme notion of democracy and Sparta was ruled by 2 kings which power was only limited by a council of elders; but there are no state-cities nowadays in Greece. Rome had a long history of economical and political transformations, from a kingdom to a republic and into an empire. History has taught us that systems change depending on necessities, so the real question is not if we are going to change our economical and political systems again, but when? to what, how and why?

This is the part in which I express a personal concern: what also history has taught us about centralized power. If one dares to analyze our political systems as a computational system one may find that these are vulnerable to certain type of errors and failures; what happens if one of the community members desires destruction? and what happens when that member has most or all of the political power? that's when most wars begin with, and mass destruction do happen, some examples are the slaughter of Jerusalem (or even numerous slaughters during several crusades), the mongol conquests guided by Genghis Khan, or the 60-85 million deaths in

World War II mainly caused by the leadership of one man, Adolf Hitler. But the real problem comes with the development of mass destruction weapons.

The world have access to nuclear, biological and chemical weaponry, today it exists a handful of men who have the power of decision to destroy a portion of the earth and sterilize it on nuclear radiation.

And when people like Donald Trump become serious candidates to obtain decision power over these weapons things become scary and obviously wrong. It is only time before absolutists decide to wage unconscious war with such modern mass destruction.

And the possibility of a mass destruction war is just one problem between so many, the failure of our political and economical systems reflect on huge issues like hunger, poverty, human caused mass extinctions, climate change, corruption. And of course we must consider future extremely important challenges, like the right development of Artificial Intelligence.

But why does the system fails? the problem is not who is on the power seat, but why they can be on it? or even why does our system can be so prompt to failure? Computer scientists actually study this, distributed systems have been the solution to many problems, that is why the internet is so resilient. If we are to design a better system we must be failure tolerant, it seems that corruption is part of the nature of human kind, but it shouldn't really affect the whole system if the system is failure tolerant or self healing.

Lets now talk about the real power of mathematics, not so many people know what a mathematician really does, and I think I could summarize it into 2 things, abstract and prove the cosmos, this topic deserves a post by itself but let me tell you that when a mathematician achieves to abstract something the world changes, for example Alan Turing single-handedly discovered the piece of mathematics that allowed the existence of computers and mostly won WWII in the process, John Von Neumann created the field of Game Theory, which now helps us understand economic, political, psychological and biological systems so much better, even as dumb as it sounds Pythagoras gave us a theorem which is now essential to maybe every field of engineering. Actually every peace of modern technology exists thanks to millennial mathematical efforts.

There is no better way of deeply understanding and transform a natural phenomena than achieving the formal rigor, product of the beautiful and passionate language of mathematics.

In this case, what if we abstract and model decision systems, discover the framework which will allow us to understand and design how we interact, how we evolve, how we can save ourselves from our auto destruction. This is my line of research, the implications of achieving such mathematical model are huge, we could understand why our current decision systems work like they currently work, and we could design new systems with new properties, properties that we could mathematically prove that work, even more complex systems which are automated with the help of computer systems.

The rate of improvement for scientific discovery, open software and open hardware development, economics, politics, organizational structures, we could evolve to a much better world where everything is better thanks just to how we create and adapt systems of decision, where corruption and bureaucracy are no longer an issue, where mathematics, computation and reasoning are our best tools of evolution.

I will soon enough post a draft with the formalisms of such model.