DATA, AI AND GOVERNANCE

Forms of intelligence? We need them all!

The vegetal resilience, the human judgement and the artificial potential

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Rational intelligence – the exclusively human capacity of thinking, speculating, knowing – has been, since the start of the Modern Era, the keystone of our place in the world: “More than nature, different from machines”. While we have intelligence, animals only have instincts and machines are simply mechanical.

But today, these principles are being questioned. For one thing, the climatic and social emergency obliges us to put the superiority of rational intelligence on stand-by, at least as regards conservation and continuation of life. For another thing, artificial intelligence is better than human beings at resolving certain “rational” problems, leading us to wonder whether this is the relevant difference.

The development cycle based on fossil fuels is coming to an end. We have dug up reserves that took tens of millions of years to form, and we have scattered them in the form of plastics and gases over the entire earth and into the atmosphere, where they will remain for centuries to come. Human activity threatens the conditions that allow life to exist on earth. Vegetable and animal species disappear with increasing speed [1] and five hundred million people live in areas affected by desertification.

Quality of life is also threatened. Concentration of wealth and vital opportunities seem to have entered a loop. Centralised sources of fossil energy are also reproduced in centralised economic and social structures. The appearance of intelligent machines and the algorithms of an economy based on intangibles accelerates the concentration of capital and devalues the productive capacity of people.

The middle class that, while it is more numerous than the elites and the poor, balances the cycles and sustains democracies, is diluted to form a new “useless class”. Young people with no future take peacefully to the city streets every Friday, but return to them violently when their shrinking opportunities are cut further.

Faced with the evidence of a threat, human beings have three main options: hide, flee or fight. In 1972, the Club of Rome published the report “The limits to growth” [2]. Since then, science has produced more empirical evidence and the effects can already be felt, but successive international meetings have not succeeded in sufficient universal commitment. The time for inaction looks like it has come to an end.

The richest human being on the planet, who theoretically is more able than anyone to decide where and how to live on this Earth, prefers to escape from it. Jeff Bezos, the creator of Amazon, promotes, via his company Blue Origin, the development of human colonies floating in space, promising them “the climate of *Maui* (Hawaii) at its best, everyday”. A collective interstellar *Truman Show.* Along the same lines, the post-humanist current anticipates the fusion with machines, and explores abandoning the body to project our “self” in a different, immaterial cloud. Fleeing this time means escaping from our habitat, declaring the earth dead or ceasing to think with our senses, mutating our nature.

We can always fight. There seems to be no shortage of charismatic leaders and desperate populations, anywhere in the world. But in this question, it is difficult to identify an enemy. Any “us and them” reduces to “we”, in as much as we are all inhabitants of the Earth. The climate wars are planetary civil wars. Or can we perhaps fight against nature itself, temper the planet, maintain the ice caps, tame the tsunamis? There is nothing to indicate that this is an enemy that we can beat.

In Aristotle’s famous pyramid of the souls, the rational (human) soul is in the peak position. Animals, sentient and mobile, occupy an intermediate position. The adaptive soul, corresponding to plants, is considered inferior.

Nevertheless, plants are the champions of nature. They were there before, and they will be there after, they thrive in places where human beings cannot survive, they represent more than 95% of the planetary biomass. Our food, our energy, everything that we need to live comes, in one way or another, from plants.

Plants cannot flee in the face of threats. Plants have developed their intelligence [3] so that they can stay where they are. This is the intelligence of here and now. Without centralised organs, plants have a modular design, in which the loss of one part does not imply the loss of everything

Plants do not predict, they do not anticipate: they react. Each leaf, each filament of the root, has dozens of sensors and has the ability to react independently to changing conditions. Information is collected and processed in the extremities. Decisions are taken independently. Life has a decentralised structure.

Plants are the community. We look at a tree, and our anthropomorphic vision adds eyes and a mouth, so that we perceive a being, a person. Below ground, hidden from us, there is a network of roots, spores and bacteria that interconnect the inhabitants of the subsoil. Elements of distinct species communicate information and organise nutrient flows, warn of danger and exchange substances. Life is organised into communities in order to survive.

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In the vegetable kingdom, nothing is wasted. Energy and nutrients are obtained from sunlight, water, and the surrounding soil. The materials produced by growth and then death are recycled, to enrich life. Adaptive intelligence is not linear: it is cyclic, circular. If we want to continue in this planet, the intelligence of plants can help us to design a structure for life

A new wave of low-cost sensors and ubiquitous real-time communications will soon connect the great majority of persons and a significant proportion of the machines around us. Light bulbs, thermometers, cars, pace-makers, solar panels and door locks. The explosion of data, texts, sounds and images can also be processed. Nurtured by them, artificial intelligence is advancing in its capacity to perceive its surroundings and to process information, to reason and to take decisions. The frontier between what is alive and what is manufactured, between human and artificial reason, is becoming blurred.

Lee Sedol, the World Champion of Go, the most complex game ever invented by human beings, stopped playing two years after being defeated by AlphaGo. He explained that he could not compete against machines. Perhaps we are “different” from machines, not particularly because of our rational intelligence, which is being surpassed in ever more fields, but more because of our sensitivity, our empathy, our capacity to formulate new questions, to share fantasies, to improvise and to disobey.

Angela Merkel said in the Davos meeting in January 2018 that data is the raw material of the 21st Century. Just as petroleum was in the 20th Century. Later, she said: “the answer to the question ‘Who owns the data?’ will determine in great part whether democracy, a participative social model, and economic prosperity, are compatible”. Data property, government and management will determine to a great extent how this new wave of technology will contribute to accelerate or slow down the current climatic and social emergency.

We are already living between a benevolent supervised liberty and the dictatorship of data. Algorithms select persons for a relationship, or routes, or a song or a film. They also determine who has access to credit or social benefits. A little further on, control takes over social status and the loss of freedom of movement, among other freedoms.

Control of data grants the possibility of changing behaviour. The power to fix objectives – commercial or ideological – that algorithms will then optimise. Algorithms resolve problems, often better that human beings can, but we cannot always understand the processes and criteria that have been used. There is a “deficit of understanding” that we have to live with in order to benefit from automated decision taking. We can transfer decision taking to algorithms, we can even accept that we cannot understand the processes involved, but we cannot surrender our responsibility. Fixing the collective goals must be done by humans.

If we are not superior – in everything – to plants, nor different – in everything – to machines, then perhaps we can think of intelligences as a system of continuities and complements. The Internet environment, with everything connected, is an ideal space for the emergence of new technological architectures and social institutions that focus the power of artificial intelligence on improving the conditions for life on the planet and the vital opportunities for the people who live on it.

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This new distributed architecture is based on the change that Sir Tim Berners Lee – who invented the World Wide Web in 1994 – demanded for the Internet: separate the provision of services (applications) from data storage. We would not accept that the postman needed to read our letters in order to deliver them, or that a taxi driver had permanent access to our location just because one day he took us from A to B.

Personal repositories like Digi.me, CozyCloud or Solid (promoted by Tim Berners Lee himself) allow everyone to store all of their data, from all sources, in a single place. According to this scheme, people’s data would no longer be dispersed and – in many occasions – held by institutions, companies and applications. The first step towards control of the data is non-intermediated access.

Federated artificial intelligence consists of algorithms capable of analysing data from diverse sources without generating a centralised data base. Four hospitals can carry out a joint study without merging their data bases. Hypotheses are validated in each of the distributed data bases, the conclusions are compared and their consistency is verified again in each data base.

This new technological architecture is completed by end-point computation, the capacity of connected devices – sensors, mobile devices, etc. – to process data and so share information, rather than data. The doorman of a discotheque does not need to know my age, it is sufficient for him to know that I am over eighteen. Personal repositories, distributed algorithms and edge computing configure a decentralised architecture with end-point agent capacity more aligned with the principles that govern the intelligence of life

A new technological architecture that is complemented with a new social organisation. The GDPR (The EU General Data Protection Regulations, 2018), which acts as a de facto global reference, already recognises fundamental individual rights over data management. Blockchain technologies allow registration to be guaranteed and automate confidence.

The British think tankreport by Nesta, "The new ecosystem of truth", underlines the importance of data for the common good, diagnoses the asymmetry between the level of control that citizens have over data and their ability to contribute, and finally identifies new organisations that can facilitate its use. Two new types of institution stand out: Datatrusts (for publicly or privately owned data) and Data Co-ops.

Saluscoop, a citizens' data co-op for health research, was created in Barcelona in 2017 and is one of the initiatives presented as an example in the Nesta report. The idea is that citizens can share their relevant data for health research under the conditions that they determine. The Salus Common Good license co-created with citizens proposes a standard with five conditions for the donation of data for health research.

A new view of intelligences allows us to channel the power of sensors, connectivity and data to improve conditions and opportunities for life on earth. Using nature and humanity at the speed of machines.

Vegetable architecture, human criteria, artificial intelligence.

REFERENCES

1 — Intergovernmental Panel on Climate Change (IPCC), *Climate change and the Earth*
2 — "Els límits del creixement", Club de Roma, 1972.
3 — Mancuso, Stefano i Viola, Alessandra; Sensibilidad e inteligencia en el mundo vegetal. Barcelona: Galaxia Gutenberg. 2015.

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