

Consciousness, Nature, and the Twist of Innovation

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“(…) You will leap to name it
As though for the first time, your lit blood
Rushing not to a word but a sound
Small-boned, thin faced, in a hurry, (…)
The fox! The fox!”

TRANSCENDING SCIENCE

In July 2024, mass media announced that scientists have found a source of “dark oxygen” 4,000 meters below the surface of the Pacific, stating that “we know more about the surface of the Moon than we do about the deep ocean.” The discovery reveals the fact that oxygen is being produced in the total darkness of the abyssal ocean.

Until now, we knew that the common factor in oxygen production is sunlight which makes photosynthesis of plants and marine algae possible, both on land and at the surface of the ocean. Yet, “polymetallic nodules” found on the deep-sea floor are producing oxygen through a process known as seawater electrolysis, and eventually give off almost as much electricity as AA batteries.

I recently had a discussion with an investor about the so called “nature-based solutions (NbS),” and about strategies for setting up funding mechanisms globally to invest in NbS. He argued that

he preferred to focus on science-based solutions, and to invest in technologies such as the digital ones, for example videoconferencing, which was enabling the two of us to have a live conversation in the first place, across distance. Moreover, he maintained that all advancements in terms of quality of life on Earth (for humans, obviously), were made possible by technology, and not by nature.

I found the affirmation quite puzzling, hence I went to check what the notions of “science” and “technology” mean. Thus, science refers to “the system or process of acquiring knowledge about the natural world,” and to explaining “what causes what to happen” by understanding causal relationships between the objects it studies. Then, “technology” is defined as “the application of scientific knowledge to the practical aims of human life, or to the change and manipulation of the environment.” Beyond the mainstream definitions, it is worth mentioning that one of the vulnerabilities of science consists of the fact that it often relies on correlations, when causality cannot be directly identified, due to practical, financial, or ethical concerns. Even though correlational studies can reveal associations between variables, generate hypotheses, and guide further experimental research, they cannot establish causation.

To apply the reasoning to the example with the dark oxygen from the abyss of the ocean, we then would say that *nature* is producing oxygen through one of its inherent and innumerable processes, and that, according to current scientific research (e.g., knowledge about chemical elements and their reactions), we can explain *how* nature achieves the production of oxygen. Furthermore, if we were to replicate, in the laboratory, the structures and the processes

available in nature, we could produce, for example, batteries, meaning the *technology* resulted from our *scientific* observation of *nature*.

Consequently, it is fair to say that most of the technologies we use every day are “nature-based solutions” discovered through science and applied in the same or a different manner than initially created by nature, and then observed by us. I am convinced that the startups my financier colleague invests in produce technologies by following the same methodological steps. We need to remember and acknowledge the fact that the Earth is source of everything we managed to create with our own brain and hands, and that our scientific “discoveries” are limited to what we can nowadays observe using sensory empiricism and explain, in terms of causal relations or mere correlations.

Yet, on the contrary, in the face of extinction, we are relying on technology as our salvation, and we grant authority to science in guiding our decisions about the present and the future, even though our technologies stem from the “three Ms of Plate-Glass Science”—materialism, mechanism, and measurement, as observed by de Quincey—and they leave no room for the organic and holistic quality of nature—in particular the role of subjectivity or sentience in the natural world—as science sees nature as an object solely.

Science should revisit its foundations, according to which there is a mind-matter split, and the only way to overcome it is by limiting science to the study of the only “real” component / aspect, i.e., matter. Moreover, science should consider panpsychism, instead of dualism or materialism, as the foundation for a new science of consciousness-within-matter, where the informing activity of consciousness is intrinsic to matter, it is its own interiority and self-shaping

dynamics. Finally, science should (re)acknowledge consciousness—the sentience of nature, of animals, including humans, and of the entire universe, so far obliterated, because consciousness “could not be measured,” by Plate-Glass Science based on sensory empiricism.

To achieve this metamorphosis of science, we need to develop what de Quincey defines as “Looking-Glass Science,” where the knower becomes the known, there is no separation between subject and object, and consciousness is studying consciousness.

CONSCIOUSNESS AND NATURE

The attention that researchers recently paid to nature-based solutions is grounded in the outstanding potential of nature to mitigate and reverse the effects of climate change. In terms of data, there is consensus that the global mitigation potential of NbS is around 11 giga tons of CO² emissions per year, while the potential to reduce peak warming is up to 0.1 degrees, if warming peaks at 2 degrees by 2085.

Hence, we are motivated to safeguard and restore nature due to its *instrumental* value in saving us from the problems that we created. Yet, what about the intrinsic value of nature? What about its sentience? What about the intimate connection between nature and all beings?

Nearby my horse farm, at a walking distance of 10-15 minutes, a walnut tree emerged and grew alone, in the middle of the land used for pasture and agriculture. I observed it for many years, as I was passing with my horses besides it—summer or winter, sun or rain, the tree continued its life path, getting taller and regenerating its leaves and branches, according to precise and well-established processes.

From time to time, I walk to the tree, and I lean against its trunk, while overlooking the landscape around. Away from human intelligence, I get the sense of nature's intelligence and sentience. As my focus shifts away from my inner concerns, my perspective enlarges, and I feel relieved by the feeling of being part of something bigger and far more intelligent. The experience accumulated by the surrounding nature is bigger than mine. As I lean next to the tree, I perceive that there is some form of communication going on between us. I would not wish to translate it into words, as I prefer to distinguish the sentiments of communion, "lightness," quietness, and warmth.

David Abram, American ecologist and philosopher, invites us "to turn inside-out," by saying that "the human mind is not some otherworldly essence that comes to house itself inside our physiology. Rather, it is instilled and provoked by the sensorial field itself, induced by the tensions and participations between the human body and the animate Earth." He maintains that intelligence is, in this context, "not ours alone, but it is the property of Earth."

When looking to find the source that accounts for this feeling of being immersed in a sentient world, we always arrive at the oral traditions of the indigenous peoples. The shamans nurture a profound relationship with nature, encompassing principles, practices, and ways to engage with nature, such as:

- *Nature as a Source of Wisdom:* Shamans view nature as a wellspring of wisdom and spiritual insights. They immerse themselves in natural environments to observe and learn from the cycles of life and the interconnectedness of ecosystems.

This is substantiated by panpsychism, which argues that the entire cosmos is made up of sentient energy (which forms into atoms and molecules), the same that makes up our bodies. Then, given that it has been already demonstrated that sentience cannot evolve or emerge from insentient atoms, nature logically has a mind of its own.

- *Spirits of Nature, Animal and Plant Allies*: In shamanic belief systems, all elements of nature, such as trees, rivers, and animals, are considered to possess spirits. Shamans develop relationships with these spirits, which are seen as sources of guidance and healing. Moreover, they form alliances with animal and plant spirits, which provide support during shamanic journeys and rituals.

From a panpsychist perspective, the “spirits” are the sentient molecules of trees or rivers, with which the shaman enters into an intersubjective communication and communion. During plant-facilitated alternative states of consciousness, shamans testify that, for example, ayahuasca *told them and taught them* valuable information about the universe. With regards to interspecies communication and sharing of meaning, I shall extensively approach the topic in a next essay.

- *Rituals and Offerings*: Shamans perform rituals and make offerings to express gratitude and maintain harmony with nature. These practices reinforce their awareness of the interconnectedness of all life and non-life, too.

Abram emphasizes the fact that the shaman lives at the border between the natural environment and the human community, to make sure that the right balance is sustained between what humans take, and what they give back to nature.

I am working with a researcher in the Nordic countries on her innovative research to create a “sheep network,” with the primary goal to share the substantial, yet practically unknown,

knowledge of the small-scale community farmers in South Africa, Australia, and Patagonia. Her ambition is to change the perspective on sheep as only part of human projects, to sheep as “subjects,” fully fledged beings. As well, she aims to disrupt the Northern-centric global view, by giving space to the Southern versions (i.e., indigenous, as most of the community farmers are).

Following her suggestion, I purchased the book of Ed Yong, who starts by presenting the hypothetical example of several species entering a big school gym room and spending one day and one night there—an elephant, a mouse, a robin, a bat, a rattlesnake, a human, etc.—each of them endowed with their own specific sensorial capabilities, and perceiving the space and the presence of the other species in different ways. The scene is vivid, and the metaphor is excellent to sustain the case about how each species experiences space, time, and the world in totally different ways.

This unique way to experience reality, by each species, was called *Umwelt* by the Baltic-German zoologist Jacob von Uexkuell, quoted by Yong in his book. According to what was a radical view at that time (1909), the zoologist viewed animals as sentient beings, with their own inner worlds. On the other hand, he argued, the inner world of the human is just the same—even if it feels all-encompassing for us, it is still limited. Furthermore, Yong quotes the American naturalist Henry Beston—“They are not brethren, they are not underlings; they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the earth.”

Of course, coming from the perspective of consciousness research, animals (including us) are all sentient beings, in our own standing. We are moral equals, intertwined and connected, learning

from each other. The German zoologist von Uexkuell came to acknowledge all these aspects from the perspective of scientific research, and the awe that he felt in front of the complexity and depth of the animals' inner worlds brought him to (re)discover their consciousness.

As Abram suggested, we need to “turn inside-out,” to twist back our twisted perception of nature and other beings as only objects and secondary ingredients of life on Earth, solely at the whims of humans. Let us delete any separation line drawn between nature, all other beings, and us. We are counterparts, we are partners in dialogue, we are part of something bigger that makes sense by itself, something endowed with sentience, something that makes decisions, and thrives.

Nature's intelligence exceeds our intelligence countless times! We need to remember, and (re)state this reality within our scientific research laboratories, and within our enterprises. We need to look and “listen” to Earth's knowledge with fresh eyes and ears, while reconnecting with nature's consciousness and sentience, through our consciousness and sentience.

The next section briefly addresses one of our most praised current technologies, the so-called “artificial intelligence,” with the aim of highlighting that AI is an excellent example of a technology stemming out of the Plate-Glass Science, a paragon of the fracture we created between animate Earth and our rational constructs, one of the strongest symbols of our science-driven artificial world.

NON-CONSCIOUSNESS AND TECHNOLOGY

World-renowned physicist Michio Kaku, while envisioning the evolution of humankind in relation to technological evolution, brings consciousness into discussion, yet only for the sake of arguing that, sooner or later, the machines and robots that we create will be “self-conscious.” Moreover, Kaku maintains that we shall be able to achieve “digital immortality,” by storing all the individual data within a “soul library,” where anyone could have a conversation with, for example, the holographic image of Albert Einstein.

Even though these might sound alluring perspectives, it has been already argued by Christian de Quincey that machines will not be endowed with consciousness (ever!), as consciousness cannot simply emerge from its nonexistence (from *non-conscious* precursors). Also, by using the words *soul* and *immortality* as supposedly enabled, or generated, by technology, we are not doing any justice to consciousness or even mainstream science. Kaku is approaching consciousness as if it is an objective entity, which it is certainly not.

Some people ask me, when they hear about my Ph.D. work in consciousness studies, if AI will ever be endowed with consciousness. I would like to reiterate that it will never be the case, as de Quincey explains: the complexity of AI does not change its ontological status (from physical) to “physical and non-physical,” and, given that intelligence requires consciousness, the very term “artificial intelligence” is an oxymoron. No doubt about it, computers can *display* intelligent behaviour, hence a better term would be “simulated intelligence,” as philosopher de Quincey argues.

Despite this, nowadays we look to artificial intelligence for guidance about what to do in our everyday lives. We award individuality and authority to AI but, regardless of its many attractions and uses, AI will never be our “counterpart” in nature, with all other sentient beings on Earth.

I asked Perplexity what the notion of “technology” means, and it responded in the same human-centric and egocentric manner as we would—saying that technology is the way to apply scientific knowledge for practical purposes, aiming to solve problems and improve human life. It also acknowledged that it has downsides, such as pollution, resource depletion, and unemployment.

As mentioned earlier, we are excited about the technologies we create to fight climate change. Nevertheless, wind turbines kill migrating birds, and infrastructures in the ocean hinder the life of marine animals. Our main revolutionary negative emissions technologies (NETs)—encompassing, for example, direct air carbon capture, mineralisation, or cloud treatment with alkali—have major weaknesses, namely they are too energy and/or land intensive, hence they trade-off with ecosystems and their biodiversity.

On the other hand, nature-based solutions are achieving carbon and overall greenhouse gas emissions removal through ecosystem restoration, and soil carbon enhancement, without any negative impacts, whatsoever. *What nature can do to restore and refresh itself goes far beyond what we can achieve with our technologies.*

Nature’s intelligence holistically sustains balance, harmony, refreshment, and soundness of the entire ecosystem/web of life. *Scientific intelligence*, on the other hand, propels the human

adventurous and discovery spirit, but also human ego's wishes and delusions. For a most needed *reality check*, we need to intersubjectively communicate with the consciousness of nature and Earth and benchmark our solutions against it.

I do not want to downplay technology, as we benefit from it every day; yet I am saying that it does not make any sense to give credit to it for outcomes it cannot achieve. Let us remember that we should perceive technology (AI included) as it really is—a production of our minds, and not a sentient entity beyond us. Also, let us remember that our technology-driven future is the Anthropocene, on a barely habitable planet, where we potentially live longer, yet without becoming any wiser.

RENEWAL AND EVOLUTION

As a teenager, I got the chance to spend time in nature, and I remember vividly the afternoons when I was dozing off in my hammock, suspended between two cherry trees. Birds were singing, insects were buzzing, and everything around was humming to the rhythm of the cosmos. All felt good, all felt at the right place, and I was sometimes dreaming in my sleep, about the trees and the grass around me. I was part of everything, protected and at home.

Nowadays, I have the chance to spend most of my time at the farm, with my family, which encompasses not only humans, but also horses, dogs, cats, and birds . . . I use technology to deploy my consulting work, and to connect with people from all over the world. Yet when I shut down my computer, I go back to nature, where I feel alive, human, and at my best.

As I write this essay, and reflecting on how consciousness research could rise at this moment in history and attempting to bridge the gap between “nature” and “technology,” my own Western education conditioning shouts out: “what you are proposing has to be science-based!” Yet, as de Quincey argues, “Plate Glass” science does not have anything to say, about consciousness. Science does not account for the bliss of feeling alive, for the sentiment of communion with nature, it does not account for our dreams of the day and the night, it does not explain our very essence.

It is time, more than ever, to make room for consciousness in scientific labs, not for the mere purpose of human survival, but for the purpose of recognising and reconnecting with the sentience of everything. Then, from this state of expanded knowledge, we could innovate *with* nature, not against it, as nature is the *master innovator*, constantly evolving and renovating.

Consequently, I would favour the use of the terms *renewal* and *evolution*, instead of the mainstream *innovation* notion that we use to primarily define a (science-based) invention that is turned into a profitable business. The innovation that we should aim for should be at its core in sync with the creative processes of nature. An example in this regard is biomimicry, which acknowledges that humans are a part of nature, affecting and affected by all other organisms within Earth’s interconnected systems, and encourages us to observe and spend time in nature to better understand how life works so that we may more effectively appreciate and emulate biological strategies in our designs.

I would go even further and suggest that researchers should cultivate alternative states of consciousness as part of their scientific endeavours, for example by meditating *with* the subject

of their research, or by connecting, through ASCs, to nature's consciousness. We are compelled to move beyond Plate-Glass science, and to develop "Looking-Glass" science if we are ever to advance in our knowledge of consciousness. By developing and employing the "Looking Glass" approach, proposed by de Quincey, we can confidently move towards creating a professional role of "Chief Consciousness Officer" within enterprises and research organisations, with the vision and mission to regain the knowledge we lost or overlooked due to the compromise of focusing exclusively on the physical world at the starting point of science.

In September 2024, mass-media announced that researchers, led by Professor Peter Noble at the University of Washington and Alex Pozhitkov at City of Hope National Medical Center, have identified a so-called "third state" that challenges traditional notions of life and death. This state emerges when certain cells from deceased organisms continue to function and even develop new capabilities under specific conditions, such as the provision of nutrients, oxygen, or bioelectrical stimuli. While the exact mechanisms remain unclear to the scientists, ongoing research aims to uncover the fundamental processes that enable cellular survival and transformation beyond conventional definitions of life and death. As the authors claim, this finding raises profound questions about the nature of consciousness, identity, and the boundaries of individual existence, potentially altering our understanding of what it means to be "alive" or "dead."

The team of researchers working on this topic would benefit from the presence of a "Chief Consciousness Officer," if only to properly define the terms involved, as follows:

- Whether a cell is alive, dead or in a (presumable) liminal domain between life and death does not say anything about the presence or absence of consciousness. According to panpsychism, even non-living molecules and atoms are *sentient*, hence the presence or absence of life is no indication of the presence or absence of consciousness.
- As panpsychism maintains, the cells from deceased organisms continue to possess consciousness and perform a series of biological processes (until those cells themselves die).
- From the point of view of the philosophical meaning of “consciousness,” there is no “third state”—i.e., consciousness is present or not, independently from life or death (or any hypothetical “in between”). Moreover, as the cells observed by the scientists continue to perform biological functions, they are alive *de facto*.
- From the point of view of the psychological meaning of “consciousness,” shamanic-inspired “Looking-Glass” research could investigate whether individual molecules or atoms or subatomic entities have different *forms* of consciousness, or how different *forms* of consciousness are dependent on different forms of life and non-life (molecules are not alive).
- Concerning the implications of the scientific discovery on the topic of life and death: panpsychism already explained that after the biological death of an organism, consciousness continues to be present, at cellular level.

By taking one step back from our convictions of being the supreme beings on the planet, and at the same time the centre of an inanimate world, and by taking one step forward in embracing extra-rational means of knowing, we shall potentially “un-learn” what Plate-Glass science taught us, and uncover innovations driven by our understanding of matter possessing consciousness “all the way up and down.”

What if the research laboratories and the enterprises of the future would organise weekly meditation sessions and nature walks; what if their chief consciousness officers would train the staff on the ABCs of the domain of consciousness studies and research; and what if Looking-Glass Science would become our genuine approach to accompanying Earth's renewal and evolution? I invite you to ponder on this future scenario and, why not, already entertain it in your professional setting!

I invite you to return to the amazement of shouting "The Fox, The Fox!" as in the poem by Mary Oliver; to the amazement of being part of a sentient and innovative cosmos that makes oxygen in the abyssal ocean. I urge you to come back to the refreshing awareness that we are just one species among countless millions, and that we are part of a bigger meaning than our individual consciousness can grasp and account for. Let us look again in awe to the stars that we are *literally* made of and be grateful for getting *one* chance to learn from the sentient universe, and to bring our "shamanic offerings" to it, in return, with love, and respect.