AI and the ambiguity of the pharmakon.

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The main theme of the roundtable was to reflect on “how social science can contribute to new advances in artificial intelligence.” In the pages that follow, I explore the connections between quantum social sciences and AI, especially how relational approaches may offer conceptual frameworks to conceptualize and evaluate AI and how the United Nations and Academia may offer avenues for engaging ethically with this borderless phenomenon.

Some have argued that AI is not a tool, but another species, with the potential to become competitive with human beings. Humans’ aspiration to control nature and the machines they construct is deeply shaken and challenged by the fear that AI may overpower the beings who engineered it, or that some of those beings can deploy it destructively. Ironically, humans seem to be in the same predicament towards AI as the biblical God was towards “his” own creatures, Adam and Eve, when, despite “his” orders, they ate from the tree of knowledge thus becoming potential competitors. For acquiring access to knowledge, they were thrown out of the Garden of Eden and condemned to life on earth.

Engaging with AI demands a change in ontological perspective. Analytical frameworks that portray humans as the master of a world that is causally simple, amenable to be understood through mechanical models and that can be governed by planning rationalities are inadequate to understand and address AI. AI is not a “thing” out there. It is not a mechanical assemblage, whose functioning, properties, and effects can be understood by addressing it with the conceptual tools of Newtonian physics. Isabel Stenger notes the aversion of the Western philosophical tradition to uncertainty and ambiguity, an aversion that started with Platonism’s pushback against the Sophists. Stenger argues we still live in Platonic times. “We require a fixed point, a foundation, a guarantee. We require a stable distinction between the beneficial medicament and the armful drug” (Stenger 2011, 29). AI challenges this quest for certainty. AI embodies the ambiguity of the pharmakon, which has been defined by Isabel Stenger as “a drug that may act as a poison or a remedy” (Ibid.,). The pharmakon, she argues, “can mutate into its opposite, depending on the dose, the circumstances, or the context, it is a drug whose action provides no guarantee, defines no fixed point of reference that would allow us to recognize and understand its effects with some reassurance” (Ibid.,).

The few examples that follow elucidate the pharmacological characteristics of AI. On the positive side, the internet and social media fostered the emergence and consolidation of communities and human relations beyond geographic proximity, as well as the creation of global social movements. AI can be useful for conducting and sharing the results of scientific research, it can be employed in addressing climate change and in facilitating communication across languages. It has made it possible to delocalize many everyday practices, from the purchasing of goods to the sharing of information. The United Nations Advisory Body on AI (2003) noted some of its important beneficial sectoral opportunities, including in education, in early warning systems for floods and wildfires, in the assistance to people with physical impairments, in medical research and in optimizing energy systems. Some commentators have hypothesized that shifting the research for information away from search engines into Chat GPT will change the dynamic of the industry and shield the public from being targeted by advertisements. On the negative side, algorithms have changed the way information circulates, reinforcing communities of beliefs, fake news, political polarization, racism, hate speech, bullying, sexual exploitation, etc. Search engines shaped for instance the way how journalists construct titles to reach a wider audience. By using platforms and feeding them with data in our everyday life (for instance by using a navigator, or "smart appliances") we relinquish privacy and contribute to building, free of charge, the capital of big data companies. AI can be used to manipulate value systems and may threaten the stability of the financial system. High-tech companies can shape what information is available to whom, withdraw their services, use their platforms to orient public opinion and sell the data they have harvested from us for marketing and other purposes. Political entrepreneurs and governments may use AI technology to manipulate public opinion across borders as part of information wars. AI can be employed to devise and hit targets in conflict and contribute to causing massive destruction and human suffering. Furthermore, as the United Nations noted in its recent report, "though AI is transforming our world, its development and rewards are currently concentrated among a small number of private sector actors in an even smaller number of states." (Advisory Body, 2023, 4).

The examples above illustrate the fact that AI cannot be addressed as an "object" that can be separated and disentangled from our way of life. It is embedded with an increasing number of aspects of our existence, with outcomes that are inevitably unstable and ambiguous. AI is designed by humans, but in turn, it contributes to shaping the way humans live. AI is also rapidly changing and evolving in its capabilities and fields of application. AI contributions and dangers cannot be analyzed according to a linear logic and the ethical attitudes towards it cannot be based upon abstract universal principles. Newtonian onto epistemologies, abstract normativity, and the quest for control are not apt to analyze, navigate, and govern its complexities. To engage with AI, we need an ontological and epistemological shift away from frameworks relying on substantialist assumptions and mechanistic causal models. The recent "relationality turn" in political science and international studies offers insightful conceptual tools in this regard. In what follows I will engage with some of those concepts, such as the notion of "ecology of practice" proposed by Isabel Stenger and Bruno Latour and the ontology of entanglement proposed by quantum social scientist Karen Barad.

For Stenger, ecologies of practice "are about the production *of new relations that are added* to a situation already produced by a multiplicity of relations" (Stenger, 2011, 33). "Ecology is, then, a science of multiplicities, disparate causalities, and unintentional creation of meaning" (Stenger, 2011, 34). Ecologies of practice are not functions, therefore there is no "unitary point of view from which the role assigned to each participant can be deduced" (Ibid). AI is generated in connection with multiple other practices. It is fast evolving in its applications, and it produces different effects within different webs of relations. The problem of the ambiguity of the pharmakon can only be resolved provisionally and contextually, through a pharmacological attitude. For Stenger "pharmacological knowledge is a science of processes where good intentions risk turning into disasters, and in terms of which no action has an identity independent of the whole that stabilizes it, but also causes it, under certain circumstances, to change its meaning"" (Stenger, 2011, 35). Like the pharmakon, AI interacts with the bodies and the situations where it is deployed, and which it contributes to constituting. Like the pharmakon, its effects of poison/cure can only be adjudicated within the contexts and practices of its application. Like the pharmakon, AI is ambiguous, and it needs to be managed and administered with competence, prudence, and care.

In embracing deep relationality and uncertainty quantum social science offers conceptual tools that allow analysts to think outside the constraints of Newtonian linear causality, the distinction of subject-object, and mechanical models for how social interactions may be understood. Quantum social theory proposes a worldview that challenges the assumption of separability at the foundation of methodological individualism. It embraces non-linear relations of causality, focuses on change instead of immutable regularities, and acknowledges the need for contextual assessments in policy-making and ethical decisions. Karen Barad's ontological position affirms that phenomena, not entities, are the primary ontological referents, "pre-existing relations: relations without pre-existing *relata*" (Barad 2007, 139). For Barad, while inter-action presupposes the existence of independent entities (i.e. an atomistic ontology), intra-action maintains that "the boundaries and properties of the components of phenomena become determinate" only within the context of intra-actions (Barad 2007, 139). Her post-humanist position shifts the attention from representation and human mastery over nature to "mattering practices." Because we are *of* the world, not *above* it, our actions contribute to manifesting ontology, while the world "out there" shapes our being. In Barad's words, "post-humanism eschews both humanist and structuralist accounts of the subject that position the human as either a pure cause or pure effect […] post-humanism doesn't presume the separateness of any-'thing,' let alone the alleged spatial, ontological, and epistemological distinction that sets humans apart." (Barad 2007, 136). *Indeterminacy*, for Barad, is not an epistemological issue but an ontological one. Entities emerge (provisionally) out of the intra-action among the apparatuses through which we engage the world and phenomena that always have degrees of indeterminacy. These intra-actions are productive of "ontological cuts" and specific "materializations of matter." (Barad, 2007).

Karen Barad's notion of apparatus, which she borrows from Michel Foucault, is central to her theoretical framework and to the theorization of ethics I have proposed (Zanotti, 2019). Barad relies on the work of Niels Bohr (1937) and adopts the Copenhagen interpretation of the findings of quantum physics. Apparatuses of observation do not leave their "objects" of inquiry untouched. Apparatuses, according to Barad (and Foucault), are performative. For Barad, apparatuses produce specific ontological cuts, and these ontological cuts bring about configurations of human-nonhuman relations, what Barad calls materializations of matter. Barad embraces Foucault's notion of *dispositi*f, which argues that apparatuses are not only observational instruments, but are themselves "productive (and part of) phenomena" (Barad 2007, 142). Foucault's "Panopticon" is an example of such an apparatus (Foucault 1977). The Panopticon embodies ways of knowing, of exerting social control, and of organizing space that in turn reinforce and enable a variety of different social practices through which modern subjectivity is shaped. Similarly, Barad argues the *experimental apparatus* sets the condition of determinability of the properties of entities (Barad, 2007, 127). Importantly, apparatuses are neither "mere ideations" nor "Kantian conceptual frameworks: they are physical arrangements" (Barad, 2007, 129). This position changes the way we relate to the physical world and the way we can conceptualize our entanglement with AI. As Barad insightfully puts it, there is no such thing as "absolute freedom in our choice of apparatus, and, on the other hand, a strict deterministic causal relationship whereby objects simply 'do their things' once the apparatus has been chosen" (Barad, 2007, 130). Thinking of AI as an *apparatus,* a material contraption that has no necessity, but which constitutes how we engage with the world, introduces the relevance of material entanglements in a way that is not deterministic but relational, and as such, deeply relevant for conceptualizing its role in human life. Apparatuses are what make possible the determination of boundaries and properties of objects (Barad's intra-agential cuts). As an apparatus, AI is performative, it does not leave the participants in its entanglements untouched, but it contributes to shaping them, and it produces differentiated materializations of matter depending upon the specific networks and contexts within which it is deployed. For Barad, phenomena are not solely the *result* of human agency. Instead "the world is a dynamic process of intra-activity and materialization in the enactment of determinate causal structures which determine boundaries, properties, meaning, and patterns of marks on bodies" (Barad, 2007, 140). We design AI and AI designs us back.

AI calls for what I have called elsewhere an ethics of practice (Zanotti 2019 and 2021). In this perspective, the effects of inclusion/exclusion of AI's specific entanglements need to be carefully and responsibly assessed in the contexts within which they are enacted. Thorough contextual assessments of the possible outcomes of our designing AI, rather than abstract principles of reasoning, must constitute the basis for ethical and policy decisions about AI. Instead of asking whether AI is good or bad, we need to explore how it is constituted as an ecology of practice, how it relates to other ecologies of practice, and what kind of distributive outcomes it produces in its intra-actions within the different phenomena with which it is differentially entangled. Social scientists and policymakers should approach AI with conceptual tools that explore its multiple entanglements, such as what it does for whom, in which circumstances, who oversees and owns it, what kind of capital investments and capital concentration it entails, who has access to natural resources and how this access is obtained, what kind of the energy demands it generates and the environmental impact of these demands, what are the consequences of AI use for human rights, what are its implications for democracy, who is included and who is excluded from digitalization, how citizens may have a say in AI developments, just to cite a few.

In its December 2023 report entitled "Governing AI for Humanity" the United Nations indicated that a major challenge for policymakers is how to grow successful AI ecosystems around the world while holding established and emerging players accountable". (United Nations, 2023, 5). To this question, the UN does not give a straightforward answer. However, the same report identifies five principles that should guide the formation of new global AI governance institutions:

- **Inclusivity:** all citizens, including those in the Global South, should be able to access and meaningfully use AI tools.
- **Public interest:** governance should go beyond the do no harm principle and define a broader accountability framework for companies that build, deploy and control AI, as well as downstream users.
- **Centrality of data governance:** AI governance cannot be divorced from the governance of data and the promotion of data commons.
- **Universal, networked and multistakeholder:** AI governance should prioritize universal buy-in by countries and stakeholders. It should leverage existing institutions through a networked approach.
- **International Law:** AI governance needs to be anchored in the UN Charter, International Human Rights Law, and the Sustainable Development Goals. (Advisory Body, 2023)

The United Nations Advisory Body indicates that "A more cohesive, inclusive, participatory, and coordinated approach is needed, involving diverse communities worldwide, especially those from the Global South or Global Majority" (Advisory Body 2023, 1). The same document also suggests that in governing AI the United Nations faces the same challenges to its effort to shape other aspects of transborder processes:

> The United Nations holds no panacea for the governance of AI. But its unique legitimacy as a body with universal membership founded on the UN Charter, agreed universally, as well as its commitment to embracing the diversity of all peoples of the world, offer a pivotal node for sharing knowledge, agreeing on norms and principles, and ensuring good governance and accountability." (ibid.)

In summary, while the UN may have a relevant role in agenda setting, it cannot enforce policies. However, like in other issue areas, the United Nations can bring together expert analyses, make them public and suggest to governments directions for the way ahead.

While quantum social science cannot provide a straightforward answer to the United Nations Advisory Body question on how to govern AI, an ethics of practice suggests that prudence is a criterion more relevant than abstract universal principles for ethical policy decision-making. The main question to ask in adjudicating policy decisions is what kind of materialization of matter and ontological cuts the deployment of specific apparatuses, including AI, likely entails. Quantum ontologies invite an attitude of caution, modesty, curiosity, and relentless attention to the transformative possibilities that may open up in the practices within which we intra-act. If we embrace quantum ontology, externalities are not "external" but are ontologically embedded within the world's entanglements. Quantum ontologies affirm the centrality of *how apparatuses* are constructed. Because AI is a complex entangled phenomenon and not an inert object, planning rationalities or attempts to regulate it from above based upon simplified assumptions regarding causality may not be successful. Because AI is complex and entangled, it does not produce the same effects across situations and circumstances. This consideration is central to suggesting prudence in designing and assessing it.

To foster a more cohesive approach to AI advocated by the United Nations, higher education has certainly a role to play. Universities can contribute to the important task of forming a cohort of citizens who are not only passive AI users, but who are competent to understand both its technical functioning and its political and social implications. As the web of relations AI generates and is entangled with increases, Universities need to cultivate radical interdisciplinarity. Creating conversations among scholars from different disciplines is a valuable starting point, but higher education should also build interdisciplinary departments and curricula. Pharmacological knowledge needs to take the place of disciplinary silos and of analytical frameworks that favor abstractions, focus on certainty over complexity, and where practices of knowledge are limited by disciplinary biases. In this regard, it is important to build bridges between the social and the “hard sciences.” Technical, social, and political competencies need to be brought together to train citizens who can competently engage with the changing features of ways of life of which AI is an increasingly relevant component. Only by endowing citizens with such a set of skills the United Nations aspirational principles for building AI for humanity may become a reality. Post-colonial scholar Arturo Escobar proposed the notion of “ontological design”, that is the awareness that “in designing tools (objects, structures, policies, expert systems, discourses, even narratives) we are creating ways of being” (Escobar, 2018, 4). In other words, “we design our world, and our world designs us back” (ibid). We design AI and AI designs us back. Prudence and competence in the process of designing and applying AI are central for citizens not to be poisoned by the pharmakon and for governments to use AI for improving human life. Developing pharmacological knowledge is more than ever urgent and necessary.

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