

Study Day

Materialities and representations in artificial intelligence: AI through the prism of the human and social sciences

CALL FOR PARTICIPANTS

Submission procedure

Proposals should be for presentations of 20 to 30 minutes followed by a discussion with the audience. A summary of no more than 3,000 characters must be sent by May 15, 2022. It will be reviewed by the scientific council whose decisions will be delivered at the beginning of July 2022. The full presentation text must be sent before the study day, which will take place on October 13, 2022 (to be confirmed).

Scientific committee

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Synopsis

Every time there has been renewed interest in the field of research and development into artificial intelligence, at each of the so-called AI springs (Cardon, Cointet, and Mazières, 2018), philosophers, sociologists, and anthropologists have mobilized to study it. The third “spring,” which we are experiencing now, is no exception. Among contemporary approaches, there are several that look at the relationship between artificial intelligence and the human and social sciences. On one side, the human and social sciences are used in the production of industrial AI devices (epistemic assumptions, databases, collection tools, etc.). On the other, AI technologies are used to aid research in the human and social sciences (modelling, processing research data, identifying patterns, etc.). Both these approaches look at AI in terms of the criteria of operationality, where it is the operation of the algorithm-data ensemble that enables the validation or invalidation of a hypothesis. The approaches thus dismiss the question of the social meaning of these technologies, which nevertheless constitute a technological choice, a choice that deserves to be “conditioned by analysis of the social relations integrated into the technological organization”¹ (Geslin, 1999). This analysis of the social relations embodied by artificial intelligence begins by observing two intellectual acts.

¹ Translator’s note: Our translation. Unless otherwise stated, all translations of cited foreign language material in this article are our own.

The first, identified by Harry Collins, posits that “the artificial intelligence experiment is, then, not just a problem of engineering or psychology but an empirical test of deep theses in the philosophy of the social sciences.” Collins grasps AI in terms of two fundamental traits: it involves a *theory of the social*, being related to a vision of what humans are and what a society is; and it is applied, having a performative power that contributes to the validation of its fundamental hypothesis, the identification of the real with the calculable (Collins, 1990). The second intellectual act consists of what Antoine Garapon and Jean Lassègue have called “a conflict of legality arbitrated in favour of calculation and to the detriment of the symbolic” (Garapon and Lassègue, 2021). This arbitration is based on the dissociation of signs (graphic marks inscribed in the operations of calculation) from meaning (the practice of collective symbolization). This act of desymbolization is at the foundation of computing, and it persists in the hypothesis of artificial intelligence. In that sense, artificial intelligence is radically opposed to an idea that is fundamental to the study of technologies in the human and social sciences, namely that every technology concretizes a particular relationship between a dimension of operation and a dimension of representation: the *functional and fictional* dimensions, to use Pierre Musso’s terminology (Musso, 2021). Technical systems are inscribed in the social world because they manage to create meaning beyond their functions, to participate in a social imaginary, a representation that society produces of itself.

This poses a challenge to anyone trying to shed light on the social meaning of AI technologies: how to study and understand the symbolic aspects of a technology that is based on desymbolization?

We propose approaching artificial intelligence comprehensively, from three interdependent angles: as a technology integrated into a system, as a scientific theory, and as a social imaginary. The relations linking these three facets are not obvious: the path that leads from a research hypothesis to a product, or connects a technological procedure to a mythic narrative, demands to be elucidated. To do so, we must use methodologies capable of revealing the ties that bind a social reality and a technological reality, of thinking about them as a whole. The concept of *social imaginary* (Castoriadis, 1987; Ricœur, 1984), like that of “configuration” suggested by Lucy Suchman (Suchman, 2012; Relieu and Velkovska, 2021), allows us to grasp the composite character of artificial intelligence. It posits the interdependence of practices—e.g., the technological reality of AI as a tool for automatic data categorization, its economic reality as a product that is bought and sold, its material reality as a digital artefact that is developed and used, its semiotic and political reality as an algorithmic mediation, etc.—and representations—e.g., the discursive reality of artificial intelligence as a narrative, as an articulation of values and representations implemented for commercial, scientific, or mythical purposes. These two facets must be understood as neither opposed nor fundamentally distinct. The analysis must include crucial limit points like the practices involved in the production of representations (scientific popularization, commercial communication, grey literature relating to technological predictions, etc.). Several approaches are currently working to shed light on one or another of these aspects (Kirtchik, 2019): from the study of extraction practices (Crawford, 2021) to the use of algorithms in public life (Christin, 2020) and in politics (Chavalarias, 2015), from work environments preparing to adopt AI (Casili, 2019) to laboratory work to create algorithms (Jaton, 2021), or the historical contexts of the development of the cognitive neurosciences (Carr, 2020). The study of sociotechnological realities through this double prism of imaginary and material dimensions also inherits a vast corpus of

methodologies: cultural technology (Bensa, Cresswell, 1996) as championed by Leroi-Gourhan; technology as a human science (Haudricourt, 1964), which proposes the study of technologies as a branch of the human sciences; or the French school of ergology (Schwartz, 2012), which aims to understand technological systems in their relation to the entirety of their users' lives. The development of digital technologies invites us to reinterpret this methodological heritage (Moricot, 2020) and to test its solidity in the face of the technological transformations our society is going through.

We will dwell particularly on the socioanthropology of technologies, but the multifaceted nature of AI makes it, in our eyes, a *dispositif* (Barbot and Dodier, 2016), a composite object that requires, for its analysis, a variety of disciplines equipped for the study of social facts: history, sociology, economics, anthropology, psychology, epistemology. It is, however, important to note that as a theory, AI is already present within a number of these disciplines. Whole swathes of philosophy, psychology, and sociology are devoted to exploring the suitability of AI as a hypothesis for understanding the nature of human thought, emotions, and interactions (Ehrenberg, 2018). The sociotechnological object that is artificial intelligence thus engages the human and social sciences in an analysis in which these sciences are not neutral and must be open about the way in which their subject challenges or transforms them.

Bearing all this in mind, we propose this study day as an opportunity to approach AI through the prism of the human and social sciences and along three interdependent axes, which we distinguish purely for the sake of practicality in that they allow us to explore the subject's multiple aspects:

Axes:

1. AI as a field of research. What are the practices, representations, and social arrangements that contribute to the emergence of AI as a research hypothesis within the field of computer science, data science, and the cognitive neurosciences? AI has been defined in various ways since interest in it was revived by the turn towards statistical models. Is it a discipline, a theory, a tool, or a research topic, and how do these diverse aspects interact? As part of a discipline that is itself multifaceted—computer science—it combines disciplines close to the human sciences, such as didactics and psychology, with applied disciplines such as engineering and neuroscience. It questions the relationship between the production of knowledge and the performance of an action. How do the social worlds of these different disciplines and practices come together and interact? Approaches based on the history and sociology of science and technology, the history of ideas, the study of laboratories, and epistemology, among others, all offer ways to investigate the relationships between AI and science, relationships which are anything but obvious.
2. AI as a technical apparatus. What are the practices, representations, and social arrangements that produce AI as an artefact, a tool of production, or an industrial product? Artificial intelligence as a digital technology presents several challenges: the large number of technical devices in which it is found, from industrial machinery to household appliances via a wide variety of *digital objects* (Hui, 2018); the distributed nature of its infrastructures, from data production and capture to data aggregation, and from data storage to online data usage; or, finally, the almost invisible dimension of AI devices melded with digital interfaces, which complicates the study of occupations and

usages. Approaches based on the philosophy of technologies, the epistemology and socioanthropology of technologies, the sociology of professions and technologies, among others, make it possible to go beyond the supposed opacity of digital objects and to produce shared knowledge about their materiality and the work necessary for their design.

3. AI as an ideology. The development of AI, whether as industrial product or research subject, is intrinsically linked to the development of a vaguely defined discourse that invokes both science and myth (Habermas, 1987). Science and myth form an imaginary, social, political, and economic context that goes beyond a simple scientific hypothesis and contributes to the diffusion of a representation of humanity. Just as AI is technically based on the convergence of embedded microcomputers that produce massive amounts of data with the power of processors that can calculate this data, it also relies on discourses that enable the establishment of the financial and legal conditions for its development by building its “social acceptability.” AI’s role in integrating into the social world and legitimizing a discourse around *what humans are* points us towards an understanding of AI as an ideology. Lewis Mumford, and others after him, have shown how representations condition technical choices in a decisive way (Mumford, 1934). We intend, therefore, to make use of methodologies that allow us to grasp this entanglement between technical practices and representations. What status should be given to these discourses? How can we understand the diversity of levels of utterance at which they exist? What are the practices that contribute to their development? Finally, what is their role in the production of technical systems and beyond?

To explore these multiple facets of artificial intelligence, we welcome contributions looking at related fields (IoT, technology evangelism, the digital economy, big data, algorithms) or fields experiencing similar challenges (Blockchain, internet, robotics, etc.) as well as those looking at AI in the strict sense. Studies of software or the digital economy, for example, are very useful for shedding light on the social conditions for the existence of artificial intelligence.

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