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## **The politics of post-human technologies: human enhancements, artificial intelligence and virtual reality.**

Post-human technologies refer to *technologies that blur or displace features deemed characteristic of our common humanity*. In theory, and increasingly in practice, we are capable of transforming human physiologies, immune systems and life expectancies, but also human intellectual and emotional capacities. Moreover, we are now surrounded with miniature mobile devices that extend our powers of communication, computation, memorisation and perception (smart phones, laptops, hearing aids, cloud storage, etc.) While most devices are still separable from our body, connected implants are increasingly in use. The latter include therapeutic devices such as thought-operated bionic arms, retina implants and bionic ears. But also surveillance devices such as intra-dermic microchips gathering data on soldiers and prisoners. A third, and less certain, development concerns the production of novel life forms which could disrupt our understanding of ‘life’, ‘consciousness’ and ‘humanity’. While the creation of novel organic life forms is an established possibility, the creation of inorganic life forms (let alone conscious ones) remains speculative though, to date, unrefuted (Archer 2019; 2021).

In the face of these new technologies, some social theorists query whether we should talk of ‘post-human societies’ and wonder whether we should revise our understanding of humanity in light of these technological developments (Braidotti 2016; Haraway 2010/1985; Hayles 2000; Kurzweil 2014; and more recently edited collections by Al-Amoudi & Morgan 2018; Al-Amoudi & Lazega 2019; Carrigan and Porpora 2021; Archer and Maccarini 2021, see also Sayer 2023). In this anniversary essay, I would like to encourage fellow scholars to consider critical organizational studies of post-human technologies. My principal argument is that while these technologies hold many promises, they also risk exacerbating several unacceptable organizational features that have been regularly documented, discussed and combated in *Organization* over the past 30 years. These unwelcome features include *inter alia*

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corporate domination and colonization; further erosion of social solidarity; entrenchment of inegalitarian imaginaries; and impoverished lifeworlds oriented towards instrumental efficiency alone. In order to steer post-human technologies democratically, we need reflexive empirical studies of post-human technologies in connection with big societal issues.

### **‘So, what is the fuss with post-human technologies?’**

Returning to the short definition that opens this essay, post-human technologies clearly include human enhancements (HE) such as bionic limbs and genetic engineering. HE are distinctive because they are internally related to their carriers’ minds and bodies (Al-Amoudi 2021; Al-Amoudi & Islam 2021). They enhance (some) of the powers of the carrier while also transforming the latter’s human nature. Most scholars would also add artificial intelligence (AI) because it performs some (though not all) intellectual tasks that could hitherto only be performed by humans. We should also add metaverses, or virtual reality (VR), as virtual worlds where users both enjoy vastly different powers from those granted by biology alone (yes, you can finally fly) and where they meet entities that only exist in VR (is that flirtatious character impersonated by an algorithm or by a human?).

Unfortunately, too many colleagues still believe that post-human technologies, organizations and societies are a futuristic topic for tomorrow or after-tomorrow, rather than a sociological or organizational problem for today. To show that we have already entered post-human society, and to initiate a reflection on its dangers and limitations, I decided to ask a popular AI-powered chatbot (ChatGPT, <https://chat.openai.com/chat>) the following question: **‘what are post-human technologies?’** After a few seconds, the chatbot produced the following answer:

*Post-human technologies are a broad range of technologies that are aimed at enhancing or extending human capabilities beyond their current biological limitations. These technologies include:*

- 1. Genetic engineering: Genetic engineering involves manipulating the DNA of an organism to change its characteristics. In humans, this could involve eliminating genetic diseases or enhancing physical or cognitive abilities.*

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2. *Nanotechnology: Nanotechnology involves the manipulation of matter at the nanoscale level. This technology has the potential to revolutionize medicine by allowing for the development of new diagnostic tools and targeted drug delivery systems.*
3. *Artificial intelligence: Artificial intelligence involves the development of computer systems that can perform tasks that normally require human intelligence, such as recognizing speech, making decisions, and solving problems.*
4. *Cybernetics: Cybernetics involves the integration of electronic and mechanical devices with human biology. This could include the development of prosthetics that are controlled by the brain or the enhancement of cognitive abilities through the use of brain-computer interfaces.*
5. *Robotics: Robotics involves the development of machines that can perform tasks that are normally done by humans. This could include the development of humanoid robots that can assist with tasks such as caring for the elderly or performing dangerous jobs.*

*These technologies have the potential to transform the human experience, but they also raise ethical and social concerns that must be addressed.*

Not bad. Though not great either. The definition provided seems to encompass any kind of technology under the sun and ignores, therefore, what is specific about post-human as distinct from other technologies (ie. blurring humanity's boundaries). Clearly, robotics (#5) could be subsumed under artificial intelligence (#3). Moreover, genetic engineering (#1), nanotechnology (#2) and cybernetics (#4) deserve inclusion as long as they are also instances of human enhancement. For some reason, Virtual Reality was not mentioned at all, so I probed further: **'should we include virtual reality in the list of post-human technologies?'**

The chatbot responded : *Yes, virtual reality (VR) can be considered a post-human technology. VR technology enables individuals to enter and interact with a simulated environment through the use of immersive devices such as headsets, gloves, and controllers. This technology has the potential to enhance and even surpass human capabilities, allowing individuals to experience and interact with virtual environments in ways that were previously impossible.*

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Besides the oddity of the chatbot not realizing that its previous answer was incomplete, this response was similar to the previous: generally correct though too vague to distinguish post-human from other technologies. But since the chatbot had alluded to ethical and social concerns' in its first response, I asked in return: **'so, what is the fuss with post-human technologies?'**

It responded, blatantly ignoring our previous interaction: *Post-human technologies refer to a broad range of technologies that are aimed at enhancing or extending human capabilities beyond their current biological limitations. This can include technologies such as genetic engineering, nanotechnology, artificial intelligence, and cybernetics.*

*There is a lot of buzz around post-human technologies because they have the potential to fundamentally transform the human experience. For example, genetic engineering could allow us to eliminate genetic diseases, extend lifespan, and enhance cognitive and physical abilities. Nanotechnology could lead to the development of advanced medical treatments, while artificial intelligence could transform the way we work, learn, and interact with the world around us.*

*However, there are also concerns about the ethical and social implications of these technologies. Some worry that post-human technologies could exacerbate existing inequalities and create new forms of discrimination. There are also concerns about the potential for these technologies to be used for nefarious purposes, such as creating super soldiers or perpetuating authoritarian regimes.*

*Overall, post-human technologies are a topic of intense interest and debate, as they have the potential to reshape our understanding of what it means to be human.*

At this point, I had three problems with ChatGPT's response but also a glimmer of hope. The first problem was that all three responses were heavily monological. Perhaps because AI as it currently exists has no sense of self (Morgan 2019; Smith 2019), the chatbot never seemed to reflect critically on how the arguments or questions I would raise could and should change its opinions. This absence of dialogue is perhaps condonable for researchers drawn to positivist or encyclopaedic conceptions of knowledge. However, it is deeply problematic for those who view

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the production of human knowledge as a dialectical process based on concertation and discordance.

My second problem was that the answer seemed highly doxical. Because of the very way Deep Machine Learning operates, the answers reflected a compilation of opinions accessible via the internet. Crucially, these opinions had been assembled by a programme that was not equipped with the power to discriminate between sound and superficial arguments. This also meant that I was reading a compilation of hegemonic views on the topic. At my individual level, this meant that I was left with the onus of distinguishing between points made because they were correct and relevant, and points made because they were frequent or popular. At the level of the organisations and societies that I inhabit, this meant that ChatGPT operates as a hegemonic agent that consolidates ideological opinions while undermining disconcerting voices that are nonetheless vital to both science and democracy (Calas and Smircich 2013).

The third problem was that the answer was heavily apolitical as it failed to mention the existence and significance of the groups and organizations that manage the production, distribution and consumption of post-human technologies. It also failed to mention the coercive ways through which post-human technologies might be imposed by powerful actors on large sections of the population – as has been the case in the military, in hospitals, and increasingly in work organizations (Harari 2016). On the sole basis of this apolitical account, it seemed exceedingly difficult to initiate a critique of post-human technologies based on sociological, anthropological and economic considerations.

But there is also a glimmer of hope that stems from the scholarly readers and writers of *Organization* and other critical journals in the social sciences. On the one hand, they appreciate that seeming apolitical is also one of the most powerful ways of being conservatively political by maintaining the status quo. On the other, they have the resources (intellectual, institutional, economic) to initiate both empirical studies and deeply informed reflections on the politics of post-human technologies. On *Organization*'s 20<sup>th</sup> anniversary, Matts Alvesson (2013) asked 'if we still had anything important to say?' Let me attempt to suggest, if not claims, at least a few questions and problems worth considering together ...

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## **Why do we need critical studies of post-human technologies?**

To date, most studies of post-human technologies are conducted from philosophical or macro-sociological perspectives. Extant philosophical perspectives are typically tethered to bioethics and tend to focus on the moral rights and obligations of individuals (e.g. is it morally acceptable to modify one's own DNA?) Conversely, macro-sociological perspectives observe and explain phenomena extending across relatively large sections of society (e.g. how AI and VR influence the dating practices of Generation Z?)

But both approaches are limited if we consider that we live in organizational societies (Perrow 1991) where the power of individuals and even states are dwarfed in comparison with Big Business's. While I examined the prospects of a techno-totalitarian organizational society elsewhere (Al-Amoudi & Lazega 2019), I would like to specify a few reasons to place critical studies of post-human technology on the agenda for management and organizational studies.

To start, business organizations are the main actors of the advent of post-human societies. While the fact was conveniently omitted by ChatGPT (cf. exchange above), it is commercial organizations that design, market, sell, communicate around, lobby for, and eventually impose post-human technologies to large sections of the population. This observation holds equally for artificial intelligence (Al-Amoudi and Latsis 2019), for human enhancements (Al-Amoudi 2021b) and for virtual reality (a corporate ecosystem dominated by the GAFAs and gigantic videogame studios such as Activision or Electronic Arts). These corporate actors have a vested interest in routinely monitoring the intimate activities of their own workers, customers and critics; as well as their competitors'. They hold the financial muscle to produce post-human technologies but equally importantly to legitimise specific ways of using them and to delegitimize resistance to their nefarious consequences. Organizations are a key site of struggle, negotiation and imposition of post-human technologies. Yet, we still know relatively little about how they impose their domination in practice and even less about the multiple resistances their attempts must generate.

Furthermore, post-human technologies, as they are currently being developed, facilitate punishment by association, that is, when a group or organization is punished for the activities of one of its members. Hannah Arendt, who studied this phenomenon in the context of totalitarian political regimes, remarked that punishment by association can only work if the

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group's sense of internal solidarity is already eroded, and that it contributes to eroding solidarity further. The person suspected of a crime is promptly shunned and betrayed by her closest friends and colleagues. The latter fear the stigma by association and feel so desperate to prove their trustworthiness as to produce false accusations (Arendt 1951: 423). My point is not only that solidarity is endangered by certain applications of artificial intelligence (in the case of health systems, see Al-Amoudi & Latsis 2019) or that human enhancements create temptations to withdraw solidarity with those differently enhanced (Al-Amoudi & Islam 2021). My full point is rather that in order to understand the broad social dynamics of struggle for/against post-human technologies, we also need to understand the meso-level mechanisms of solidarity, their erosion and the various struggles for/against their vivification in human groups and organizations.

Finally, we should entrust studies of post-human technologies to (critical) organizational scholars because whatever solutions people can collectively imagine will include organizational mechanisms. Either in the form of institutions and procedures that we should expect from decent organizations, or in the form of yet under-developed, organizations needed to maintain democracy in post-human societies. For instance, Lazega (2019) identifies the importance of collegial pockets of 'oppositional solidarity' through which lower-ranked employees may discuss (and if needed resist) hierarchical injunctions. Lazega argues, on the basis of an empirical study, that these pockets of collegiality are currently being dried up through the use of pervasive monitoring empowered by AI and Big Data. Similarly, Al-Amoudi and Latsis (2019) reach the conclusion that, to halt a techno-totalitarian slide where human moral arguments would be routinely silenced by AI computers, we urgently need novel organizations (eg. Think tanks, watch dogs, discussion forums) but also novel institutions (eg. protecting individuals who refuse to share their data beyond GDPR) and novel schemes of interpretation and adjudication (as when the classifications of a machine contradict the judgement of a human being).

### **New combat zones for old wars: building on extant critical scholarship**

As a critical journal, *Organization* has always been sensitive to the struggles that traverse society with particular attention to how people manage to live in organizations and societies

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marked by necessary difference and contingent injustice (Rhodes and Wray-Bliss 2013). In the dual regard of difference and injustice, there is certainly a lot to say about post-human technologies. And I would be most interested to read more about what contributors to *Organization* in relation to post-human technologies and societies.

When looking sociologically and critically at post-human technologies, we should certainly expect to see traces of the struggles that traverse contemporary societies. Here I am thinking of such important topics as feminism (Harding, Ford and Fotaki 2013) and neo-colonialism (Mir & Mir 2013) that are all too often relegated into the ellipses of technological discourse. If anything, we should remember that most post-human technologies have been developed through imaginaries that are unquestionably male, white, Western, geek and bourgeois. In addition, we should also be aware that the discussions that reach Western academics are usually formulated by Western academics addressing other Western academics. And conversely, we can very reasonably expect that the development of post-human technologies will influence in turn the configurations and outcomes of struggles occurring beyond the social spheres conventionally associated with ‘technology’.

But this is perhaps how far social theoretical speculation can go, and I guess anyone would be hard-pressed to tell what exact forms the above-mentioned struggles will take in relation to post-human technologies, or how they will transform other spheres of social and organizational life. To this end, we will need reflexive empirical studies of post-human technologies in connection with big societal issues of race, gender, environmental destruction, capital accumulation, dispossession of the poorest, and so on. There are arguably quite a few excellent journals where such studies can find a home. But for studies that focus on the organizational meso-level of analysis, I can’t think of a better outlet than *Organization*.

### **Conclusion: reclaiming post-human technologies that work for everyone**

To recap, this essay calls for critical organizational studies that will nourish constructive discussions of how post-human technologies may be harnessed for the common good. With hindsight, I wonder whether the outcome of the multiple struggles mentioned throughout this essay will all depend on a primary condition of possibility: that we the users preserve our agentic powers by adopting reasonably convivial post-human technologies.

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Convivial technologies (Illich 1973) are those that are responsibly limited so as to be operated by the users and for their own interests, rather than by and for expert groups or bureaucracies or economic elites, as it is the case for “industrial technologies”. A key idea behind the concept of conviviality is that users’ lives and interests are rarely as mono-dimensional as suggested by those industrial organizations that massively produce and sell, or purchase and impose, technological objects and associated systems (Ellul 1954, see also Lindebaum, Ashraf, Moser and Glaser 2022). Rather, a technological balance must be sought between narrowly instrumental efficiency and other considerations such as environmental pollution (Klein 2015), the flourishing of human natural potentials (MacIntyre 1999), social isolation (Elias 2001), extreme social polarization and specialisation (Braverman 1974), or ‘when cancerous acceleration enforces social change at a rate that rules out legal, cultural, and political precedents as formal guidelines to present behavior.’ (Illich 1973: 5).

The bicycle and the car constitute paradigmatic examples of convivial and industrial technologies. They may sound terribly “retro” in a discussion about cutting-edge tech, yet they remain tremendously helpful to clarify the meaning, and meaningfulness, of ‘conviviality’. While the car is undoubtedly more efficient on the single dimension of maximum speed, its mass usage generates overwhelming evils on other dimensions. Not only does the car pollute and cause deadly accidents, but its mass usage is conditioned on people spending enormous amounts of time in salaried work just to pay the car, the loan, the gasoline, the repairs, the fines and all other taxes relative to road construction and maintenance. Proponents of convivial technologies calculated that the average American drove 10,000 km and spent 1,500 hours working for their car. Ultimately, a car required about one hour of human work to advance 6 km... Definitely slower than most cyclists, and in an environment that must be thoroughly disfigured before the first car can circulate.

Back to the present, I would like to suggest that the issue of conviviality is more pressing than ever in the face of post-human technologies. On one hand, post-human technologies hold the potential to brutally curtail human agency, especially when it is collective (Lazega 2019), normative (Al-Amoudi & Latsis 2019) and political (Islam 2021). On the other, most technological objects and systems are produced today by behemoth organizations that are unable and unwilling to make room for conviviality by limiting mono-dimensional performance. It is unclear how the struggles for more egalitarian and politically-empowering

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post-human technologies can succeed if the latter are tightly locked-in by large organizations and elite interest groups. Concretely, this means that, in addition to social and organizational studies of the political effects of post-human technologies, we also need studies of the struggles for/against post-human conviviality in, around and through organizations.

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