

Commentary

AI Futures Literacy

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“We should abandon the effort to try to be so clever that we can choose the right model, find the right data, or make the best guess. There is no way to outsmart the complexity of reality; unforeseeable novelty is a certainty. Instead, the approach should be to try and develop the capacity to use the future in a range of different ways, and not be limited by prediction or by narrow conceptions of a desired future. It is about being Futures Literate.”

—Riel Miller, “Futures Literacy: Embracing Complexity and Using the Future,” *Ethos*, 10, pp. 26–27, 2011.

■ **WHEN WE ARE THINKING** about the ethics of AI and the ramifications for selfhood and society brought about by technologically enabled modes of modern indentured servitude, we are thinking about the future. We are anticipating future risks, imagining potential disruptions and disruptors, considering the balance of harms and benefits, assessing their probability and their scale, and planning mitigation strategies to deal with them. This article proposes some new ways through which we might better understand the scope (and the limitations) of this mode of anticipatory thinking and so develop a stronger sociotechnical capability in what we might characterize as “ethical AI futures literacy.” It also suggests some first steps toward developing this new approach by highlighting some of the cognitive biases and deficiencies which particularly affect such futures thinking and which shape the anticipatory dynamics of both human and artificial intelligence [1].

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Concerns about such biases and deficiencies and the lack of rigor and reliability in the traditional foresight tools and methods in use by governments and other organizations for futures thinking—especially about the sociotechnical impacts and ethics of emerging technologies—have long been recognized [2]. Indeed, it is perhaps surprising that the standard futuring toolkit used by governments and businesses has not evolved significantly since the 1960s, when “futurologist” Nicholas Rescher observed that [3] “Basically three items of predictive methodology are at our disposal: the extrapolation of historical experience, the utilization of analytical models, and the use of experts as forecasters.” These lacks and limitations in the theory and praxis of foresight and futures thinking were flagged again by UNESCO in 2012, when it began to focus on the development of a global “futures literacy” capability [4].

For UNESCO, futures literacy does not involve attempts to foresee, predict, prophesy, or divine in any way the probable, possible, utopian, or dystopian future(s) for society. Instead, being futures literate means recognizing the volatility, uncertainty, complexity, and ambiguity involved in all futures-focused or anticipatory activity. It means appreciating the heuristics and biases that shape futures thinking and applying that understanding to make better decisions in the present. And it means acknowledging the lacks and deficiencies in anticipatory activities and taking steps, wherever possible, to mitigate them.

Futures thinking is a sense-making process linked to the human cognitive faculty that enables us to imagine and plan; it preexists our ability to walk or talk [5]. As such, it is particularly susceptible to cognitive bias—such as the “principle of minimal

departure” where we make sense of the unfamiliar or unknown by assuming its likeness to what is familiar and known [6]. The risk in this (and similar heuristics in futures thinking) is that we, therefore, tend to imagine future scenarios that differ only minimally from the present—failing to factor for the significant sociotechnical disruptions and discontinuities that emerging technologies can bring about. For example, among the primary heuristics and cognitive biases which exert particular influence upon futures thinking, foresight, and anticipation, we find:

1. anchoring bias (or availability bias)—where focus and attention are captured by current concerns and significant events in recent memory, resulting in the overestimation of the likelihood that these will recur in the future;
2. confirmation bias—where we struggle to detect and make sense of novel phenomena that do not relate to preexisting models;
3. declinism—where we view the past nostalgically and the future negatively;
4. planning or continuation bias—where we fail to recognize when an original plan of action (or regulation or legislation) is no longer appropriate for a changing or unanticipated situation;
5. projection bias (the “end of history” bias)—where we overestimate the similarities between our past, present, and future selves, institutions, and organizations;
6. narrative bias—where we view the past, present, and future as discrete but connected chapters in a coherent and teleological (hi)story.

Alongside these cognitive biases in futures thinking, “futures literacy” may further comprise a stack of wider deficiencies, including anticipatory activities which demonstrate a lack of:

- breadth;
- diversity;
- complexity;
- novelty;
- agency;
- competence.

Lack of breadth: Conventional approaches to “foresight” and anticipatory governance, particularly those which seek to gauge and mitigate the social and ethical impacts of emerging technologies, are dependent on a relatively limited palette of tools and methods [7]. These are typically weighted toward

the use of quantitative and statistical data; qualitative and narrative data are often sidelined as lacking perceived objectivity, and crowd wisdom is undervalued as lacking perceived expert insights. The result is a form of futures “illiteracy” where such lack of breadth restricts the imagination and anticipation of the potential harms threatened by emerging technologies, including the myriad harms of modern sociotechnical slavery.

Lack of diversity: A cognate deficiency—lack of diversity—exacerbates the impact of this lack of breadth. When the futures for the many in society are imagined by the few, this unintentionally cements past inequalities into these futures by reproducing the values and the biases of those already holding positions of power. This resulting “illiteracy” contributes to the reinforcement of historically asymmetric power relations and the ongoing marginalization of those who do not already have agency, power, or full autonomy—compounding the potential for futures that might be deemed “utopian” for some parts of society but will be experienced as “dystopian” by others.

Lack of complexity: These already serious deficiencies in futures thinking are further compromised by anticipatory processes which avoid or smooth-over complexity. Strategic forecasts and anticipatory governance policies used by governments and businesses tend to overemphasize stability, certainty, unity, and clarity in the future, implying that trends are inevitable or simplifying and restricting the wider range of *possible* futures to focus only upon a narrower selection of those futures that are deemed *probable* or *preferable*. The perceived objectivity and value neutrality of quantitative and statistical data-driven futures approaches can also obscure their lack of complicating contextual awareness, and a closed-system quasimechanical worldview emerges. In this mode of anticipation, a view of “the” future as linear, closed, singular, and predictable becomes privileged—despite the latest scientific trends emphasizing the value of systems thinking, or the plurality and unpredictability of “quantum and organic worlds of open possibilities, chaos and complexity, and self-adaptive organization” [8].

Lack of novelty: Such “futures illiteracy” consequently risks limiting the ability of decision-makers and developers to consider the risks and benefits of sociotechnical innovation and novelty in robust and impactful ways. Supposedly “strategic” forecasts

and anticipations based on past and present experiences, or data that fail to imagine the new with sufficient rigor, will necessarily be limited by “presentism” or “chronocentrism” [9], that is, they will limit opportunities to “expect the unexpected,” to factor in surprise, discontinuities, reversals, or tipping points. “Illiterate” future scenarios offer temporal extensions of the present that highlight known trends and privilege the concerns and interests of the present moment, effectively “colonizing” the future as a new world much like the old [10].

Lack of agency: Indeed, extending the colonizing futures metaphor, philosopher Roman Krznaric charges governments with treating the future “like a distant colonial outpost devoid of people, where we can freely dump ecological degradation, technological risk, nuclear waste, and public debt, and that we feel at liberty to plunder as we please” [11]. Krznaric represents the futures of government imaginaries as typically “devoid of people” here, but the histories and lived experiences of first peoples who have been enslaved as their lands have been colonized reminds us that our sociotechnical futures are always already populated. They warn us too of the importance of thinking seriously about new and emerging technologies in the context of people-centered futures and of thinking hard about the possible, probable, and potential human costs of technological innovations, especially the risks of modern sociotechnical slavery.

However, illiterate futures thinking is too often “techno-utopian” in its orientation. Technological “sci-fi” futures can too readily appear dehumanizing, assuming a mechanistic model of human beings and human society, representing a thin cybernetic view of both human and machine intelligence that downplays individuals’ agency, autonomy, and investment in their own futures. The Copenhagen Institute for Futures Studies argues, to the contrary, that [12]: “Imagining the future is an opportunity space for humans to comprehend the formulation of desires toward their personal lives and careers. The better humans can become at understanding different explanations of and methods for imagining the future, the less reason there will be to fear the future, and the better they will be able to harness future opportunities and make sense of change and novelty.” At the heart of this style of (literate) futures thinking is an emphasis on human agency—upon harnessing the power of people to imagine and

shape their own better futures and to secure individual autonomy and personal freedoms in so doing.

Lack of competence: Indeed, UNESCO suggests that one of the benefits of a futures literate approach to anticipatory work is that it helps to expose and address the human biases and deficiencies—the lack of basic competence—that so often limit the full potential of “rigorous thinking” about the future(s) [13]: “The point of futures literacy (FL) is to become more adept at inventing imaginary futures: 1) to use these futures to discern system boundaries, relationships, and emergence; 2) to invent and detect changes in the conditions of change; and 3) to rethink the assumptions we use to understand the present.” That is, futures literacy helps to reveal the limitations not only in futures thinking but in policy, decision making, and action taking in the present. It describes anticipatory competence, a practical skillset that helps people to imagine and to set about making better futures for themselves and others. For example, in any anticipation process, we are not dealing with concrete actualities (whatever the data may suggest) but with present imaginaries of future possible worlds—with a possibility space akin to that encountered in narrative fiction. This means that a quantitative or data-driven skillset is a necessary but insufficient competency for navigating this space. Complementary qualitative and narrative-driven skills are needed to ensure rigorous futures thinking and anticipatory analysis. And one way in which we can become more adept at thinking about the future risks, benefits, and ethics of AI is to make greater use of storytelling as a tool; to tell—and to listen—to a greater range of the voices and viewpoints captured in cultural, organizational, and personal narratives.

IN THIS LIGHT, then, futures literacy has the potential to make a significant contribution to present conversations about the future of AI ethics and ethical AI. Indeed, futures literate pathways are already informing programs of reflective and anticipatory governance in global challenge areas such as environment and climate policy [14], nanotechnology [15], and bioethics [16]. Perhaps, *now* is the time to bring a more “futures literate” approach to human-centered sociotechnical futures thinking and anticipatory governance in the context of ethical AI futures too. ■

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