https://doi.org/10.48417/technolang.2024.03.01
Editorial introduction

Speculative Technologies: Here and Now, There and Then

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Abstract
Speculative technologies emerge at the intersection of imagination and scientific knowledge. They stretch the limits of what is currently possible, offering glimpses of the shape of things to come. Existing in the domains of theory, design, and fantasy, they may sometimes seem impractical, unrealistic, or even impossible from the perspective of the present. Nevertheless, they serve as provocations and inspirations, pointing to new possibilities, alternate horizons, and different worlds beyond our current reality. Speculative technologies are not just products of speculation; they are also generators, drivers, and focalizers of speculation, instruments of subjunctivity. The essays collected in this two-part special issue examine speculative technologies through historical reconstructions, philosophical reflections, cultural-technology assessments, museological engagements, and literary experiments.

Keywords: Speculative technologies; Imagined futures; Alternative worlds

Citation: Kotomina, A. & Milburn, C. (2024). Speculative Technologies: Here and Now, There and Then. *Technology and Language*, *5*(3), 1-9. https://doi.org/10.48417/technolang.2024.03.01

УДК 13:159.954
https://doi.org/10.48417/technolang.2024.03.01
Научная статья

Спекулятивные технологии: Здесь и сейчас, там и тогда

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Аннотация
Спекулятивные технологии возникают на стыке воображения и научного знания. Они расширяют границы возможного в настоящем, предлагая намеки на вероятное будущее. Реализуясь преимущественно в области теории, проектирования и фантастики, они иногда могут казаться бесполезными, эфемерными или даже невозможными с точки зрения здравого смысла. Тем не менее, они провоцируют и вдохновляют, указывая на новые возможности, альтернативные горизонты и другие миры за пределами нашей текущей реальности. Спекулятивные технологии — это не просто вымысел; они также могут создавать, ускорять и концентрировать творчество, проявление субъектности. Эссе, собранные в этом специальном выпуске из двух частей, рассматривая спекулятивные технологии, идут путем исторических реконструкций, философских размышлений, оценок культурных технологий, музеологических практик и литературных экспериментов.

Ключевые слова: Спекулятивные технологии; Воображаемое будущее; Альтернативные миры

Для цитирования: Kotomina, A., Milburn, C. Speculative Technologies: Here and Now, There and Then. // *Technology and Language*. 2024. № 5(3). X-X. https://doi.org/10.48417/technolang.2024.03.01

Speculative technologies proliferate at the crossroads of imagination and scientific knowledge, often conceptualized but not yet fully realized. They push the boundaries of what is currently feasible, offering glimpses of a future that may be conceivable but not yet fully cognizable. They thrive in the realms of theory and design. They dwell in the dens of fable and fantasy. Yet even if they may not always appear to be feasible, plausible, or realistic in the context of the present, they nevertheless serve as provocations, insinuations, and inspirations, suggesting pathways to other horizons and other worlds, elsewheres and elsewhens.

Today, speculative technologies are everywhere. Certainly, they feature prominently in the zones of science fiction—novels, films, comic books, and video games—where they regularly appear as quotidian artifacts of high-tech worlds, preparing audiences for possible futures to come by making strange and outlandish ideas seem familiar, utilitarian, and tangible (Vint, 2021). As such, they also frequently serve as conceptual resources for real-world research programs, innovation pipelines, and technical practices (Milburn, 2010, 2018; Kirby, 2010). But speculative technologies are by no means consigned or limited to the domains of entertainment media. They also appear regularly in the forward-looking statements, patent documents, and advertising campaigns of high-tech corporations (Carroll, 2024; Fortun, 2008; Sunder Rajan, 2006). They appear in the white papers and workshops of scenario planners, foresight researchers, and futurists (Andersson, 2018; Bowler, 2017; Clayton, 2013; Johnson, 2021; Nordmann, 2007). They appear in scientific grant proposals and research articles, where descriptions of current studies tend to drift into promises of future applications and broader social impacts (Audétat, 2015; Robinson et al., 2021). They appear in the fields of speculative design and design fiction, where anticipatory diagrams, blueprints, artistic renderings, and experimental models solicit critical reflections (Dunne and Raby, 2013; Bleecker et al. 2022). They appear in the form of prototypes, bespoke technoscientific objects, and proof-of-concept demos that, in and of themselves, herald more advanced iterations to come (Bensaude-Vincent et al., 2017).

To the degree that such otherwise different areas of cultural production cite, pilfer, or adapt each other's future-laden creations, the promissory dimensions of speculative technologies become increasingly reified (Milburn, 2015). As they circulate, some speculative technologies offer reassurances of stability and continuity, conjuring a future that looks quite similar to the present, albeit with extra gizmos and gadgets that aspire to enhance the quality of modern life. Other speculative technologies present overt challenges to the configurations of the present world, introducing radical uncertainties in our anticipations and forecasts of possible futures to come (uncertain commons, 2013). Some speculative technologies galvanize preventative responses, others cultivate preemptive engagements (Kaiser, 2015). Regardless, either way, they are agents of change – asking us to consider things otherwise. Particular speculative technologies, once ventured, may or may not become actual, tangible things in the world. But even as purely virtual things, even as fictional conceits – such stuff as dreams are made on – they encourage further innovation, experimentation, and dialogue around future possibilities and alternatives to the status quo. In other words, they are not just products of speculation; they are also generators, drivers, and focalizers of speculation, instruments of subjunctivity.

In this regard, speculative technologies – both semiotic and material at the same time (Grunwald et al., 2023; Haraway, 1992; Latour, 1987) – function within and without the regime of language. They amplify the playful twists and turns of representation, the tenses and moods of the subjunctive and the conditional, to refer to things that aren't there—events in the future or the past, and even to things that will never exist. They perform as figures of analepsis and prolepsis, shifting time out of joint. As technical objects, whether composed from words alone or in combination with gross matter, they instantiate interrogatives that exceed the narrow constraints of indexical realism: what if, or what could have been, or what might yet be? Whether they refer to plausible eventualities or fundamental impossibilities, they invite us to engage in hypothetical thinking about alternate worlds.

Although we live in a world where speculative technologies abound, where discussions of atomically precise manufacturing, quantum computing, brain-computer interfaces, and artificial general intelligence (AGI) are commonplace, to understand how we got here we must also look to earlier eras. There is, of course, a long tradition of wish-fulfillment machines (flying cars, cold-fusion reactors), and a long tradition of difference engines with different settings for various contingencies. By looking backwards, situating speculative technologies in their historical contexts, we can better observe how they emerge from particular sociotechnical milieux and how they simultaneously propagate new sociotechnical imaginaries, affording other ways of thinking even while speaking to the prevailing concerns of their own times (Jasanoff and Kim, 2015; Vint, 2021). Astronomical clocks invoke ideas of the cosmic order – but not only; a *perpetuum mobile* reflects the human ambition to conquer physical limits – and more; von Kempelen's chess player challenges humans to question the potentials of machine intelligence – and their own; envisioned carbon-reduction technologies enter into climate models – revealing more about our own present even while multiplying the uncertainties of any future to come; and so on, and so forth.

The history of such speculative technologies reveals a pattern of dreams and desires. Around the world, museums and archives contain an impressive number of plans, drawings, diagrams, and descriptions of technical devices that have never existed except on paper. For example, the Patent Library in Moscow has by now existed for more than 130 years, and it has accumulated more than a thousand projects for a *perpetuum mobile*. At times, when the boundaries between professional science and amateurism become porous, the archives and libraries cannot even accommodate the rush of proposals. What source of energy has generated this bulk of semi-material fantasies? To some degree, it is an irrational passion for technology, reproduced century after century. It generates inflated expectations and does not want to consider the limitations prescribed by the laws of society or nature. Innovative technical projects, from the point of view of Marshall Poe (2010), appear when a certain demand matures in society, and it meets the support by groups of organized interests. If a technical project remains speculative, it does not necessarily mean that it represents an impossible fantasy; rather, it could simply mean that it was ahead of its time, or that it did not provide a very satisfactory answer to a public demand, or that organized interest groups did not support it. If nothing else, the sheer

number of speculative technical projects shows how many unclear and unrealized demands society still has.

In preparing this special issue, we had to think about how to study numerous and diverse speculative projects. Should we treat them as a certain genre of literature, a collection of aesthetic objects, a set of historical anecdotes, a repertoire of performative gestures, or as a form of social behavior? By gathering together different perspectives on this question, we aimed to illuminate the myriad social and cultural functions of speculative technologies—here and now, there and then.

The essays collected in this two-part special issue examine speculative technologies through historical reconstructions, philosophical reflections, cultural-technology assessments, museological engagements, and literary analyses. The first part features a formally and topically diverse collection of seven papers, followed by several reflections on the speculative apparatus introduced in Franz Kafka's story "In the Penal Colony" (1919). The second part will appear in early 2025 and will include discussions of the peaceful atom, cyberfeminist imaginaries, utopian conceptions of digital interfaces, and more. To start things off, we here provide an overview of part one of the special issue:

In "Social and Utopian Ideas in the Russian Paper Architecture of the Post-Revolution Decade," Natalia Ershova shows how Russian "paper architecture" in the 1920s not only featured stylistic and formal innovations, but also conveyed philosophical and social visions for a new world and new humanity. Designs for the Palaces of Labour, workers' dwellings, and futuristic cities by architects such as Ladovsky, Golosov, the Vesnin brothers, Melnikov, and Ginsburg reflected ambitious dreams for the technological future. Influenced by avant-garde art and the political ideology of the "cultural revolution," this movement embodied utopian thinking and laid the foundation for future architectural practice and teaching.

In "Fuzzy Objects: Giving the Worldmaking Process a Tangible Dimension," Merle Genc builds on the work of Nelson Goodman in order to make worldmaking into a tangible experience, describing how participants in a public workshop at Berlin Realities engaged with provocative objects as starting points for considering alternative worlds. Drawing together practices from technology assessment, futures studies, and critical design, the workshop process helped participants realize that our descriptions of reality are constructed and subject to change. This article also shows how readers can carry out the same experiments at home, opening passageways to other worldmaking experiences.

In "The House of Futures: Cabinet of Speculative Curiosities," Sadegh Mirzaei (2024), together with Sabine Ammon, Steve Fuller, Merle Genc, Lia Nordmann, Jonathan Tel, and Cheryce von Xylander, observes that, everywhere we look, from technological forecasts to speculative fiction, countless futures are imagined. But which ones warrant our attention? This article examines the Futurium, a museum of speculative futures in Berlin, as a space for grappling with the cognitive and ethical challenges of sorting through proliferating futures. Assessing whether the futures presented in the Futurium are feasible, desirable, or simply nostalgic visions, the authors contemplate the effects such a collection of futures may have on visitors, and they question whether the museum offers an effective platform for utopian thought.

In "The Past in the Light of the Future: A Case Study in Speculative Architecture," Sercan Sever (2024) also considers the Futurium in Berlin – not from the perspective of the present, but from the perspective of the future. Since visions of the future inevitably become part of the past, the creators of the Futurium are already laying the groundwork for a "Preterium." This article – taking seriously the critical affordances of speculative fiction—creatively imagines a speech from the opening of the Preterium in 2100. This fictional speech underscores the intricate connections between future, present, and past, and invites reflection on how scientific and fictional futures are differentially received.

In "Artificial Intelligence as an Old Technology," Daria Bylieva (2024) contends that, although artificial intelligence is often seen as a modern concept rooted in digital technology, the dream of creating it dates back to ancient times, involving biotechnical, mechanical, and mimetic approaches. The biotechnical approach, instantiated by the homunculus, sought to harness natural processes to create intellectually advanced beings. The mechanical approach, represented by the automaton, aimed to produce limited intelligence but was more practically feasible. The mimetic approach, exemplified by statues, golems, and video-game avatars, focused on imitation. Modern AI, inheriting elements of all three approaches, continues to be discussed in the context of classical myths, haunted less by the fear that humanity might create a machine that surpasses itself than by the anxiety that we might never actually do so.

In "AI-Generated Images as a Teaching Tool in Foreign Language Acquisition," Jacopo Vigna-Taglianti (2024) addresses the potential of artificial intelligence for developing innovative teaching tools for foreign language acquisition. The article highlights the value of AI-generated images based on textual prompts for creating textbooks and teaching materials. It reviews a set of AI image generators available in the Russian Federation, comparing their interfaces and outputs, while also discussing challenges. Describing the process of developing an English textbook for landscape architecture students, the article shows that AI-generated images can effectively enhance vocabulary exercises and improve communicative and creative skills in language learning.

In "Textiles, Techniques, Technologies: Exploring Post-Ancestrality and Contemporary Practices (2022-2025)," María José Ríos Araya (2024) explores the intersection of textile weaving and digital coding. Noting the etymology of the word "text" (from Latin *textum*, meaning "woven"), the study investigates how weaving has historically transmitted knowledge and stories across cultures. It focuses on the material and linguistic parallels between weaving and writing, taking a speculative approach that blends analog and digital techniques to create hybrid textile surfaces. The article traces several interdisciplinary projects that fuse tactile materials with coding, reimagining coding as a new language and expanding the work of storytelling in contemporary art.

Finally, we close this first part of our special issue on speculative technologies with a cluster of critical reflections on Franz Kafka's story "In the Penal Colony" (1919). In Kafka's work, the dream of a long-lost language, the perfect fusion of symbol and meaning is executed on an over-sized typewriter and carved into the flesh of ordinary sinners who are to experience revelation in the agony of death. Six short essays written by Hartmut Wickert, Alexander Nesterov, Vera Serkova & Artem Yakimenko, Tatiana

Bernyukevich, Daria Krutko, and Alfred Nordmann highlight different aspects—technical, theatrical, political, experimental, and moral – of Kafka's speculative technology as a profound vision of counter-modern modernity. In recognition of the centennial anniversary of Kafka's death, this capstone to our special issue foregrounds the entanglements of technology and language, and it invites us, once again, to look forwards by looking backwards – in other words, to speculate.

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Статья поступила 7 сентября 2024
одобрена после рецензирования 21 сентября 2024
принята к публикации 25 сентября 2024

Received: 7 September 2024
Revised: 21 September 2024
Accepted: 27 September 2024