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Letter from the Editor

Readers, I have a confession to make: I am chronically online. I am a millennial who grew up "getting on the internet" with my friends after school and on the weekends—spending long hours on chat forums, playing MMORPGs, and deep diving into YouTube rabbit holes in between homework assignments. Now as a scholar and writer, so much of my work happens online or, at least, *could* between daily emails, Zoom calls, teaching classes and workshops, and attending webinars with national or international audiences. The *Journal of Science Fiction*, which has never had a physical headquarters, would be nothing without the internet and these digital technologies that have the capacity to connect us across vast distances.

Developing this issue during the current rise of Artificial intelligence (AI) has clarified for me how the digital world takes an active role in our lives. AI has found its way into nearly every sector of industry and business, opening up new possibilities for innovation and field advancement. Within the last year, AI technologies have been developed at the University of Florida to determine the health of produce before it hits the shelves at the grocery store and machine learning has advanced how medical professionals care for their patients. At the same time, AI raises ethical concerns for professionals around the world, especially in regard to environmental degradation (i.e., water consumption), academic fairness and integrity, and cybersecurity. Experts are debating how long it will take before Artificial General Intelligence is reached in machine learning, and what the implications will be for humanity. Similarly, numerous science fiction writers from William Gibson and Pat Cadigan to, more contemporarily, Paulo Bacigalupi and Andrea Hairston have wrestled with those same concerns, writing narratives with complex virtual worlds and computational, robotics, and military technology. Simulated realities, holograms, and other advanced digital technologies also appear on the big screen, perhaps most famously in *The Matrix*, even as the mechanisms and our understanding of them continuously evolve in every direction. The scholarship this issue explores further these lines of inquiry with new media and transdisciplinary approaches.

In this special issue on "Cyberspace and Digital Technology", we have five scholarly articles from scholars around the world. Srdan Tunic's "Data Dada & Dossier Centaur" seeks to demystify AI through an examination of Roland Barthes' use of myth and the work of technologist-artist Uroš Krčadinac. Literary criticism of Neal Stephenson's fiction is featured prominently in this issue as well; both "Cyber Epistemic Spaces and Cyber Agency in Neal Stephenson's *Fall*" by Alejandro Tamez and Travis Loof and Jason Embry's "Language and Autonomy in Stephenson's *Snow Crash*" interpret

Letter from the Editor, continued

the novelist's virtual and augmented realities as sites of troubled political and socio-economic power. Asami Nakamura writes in "Technological Quagmire: The Ambivalence of Queer Retrospection in *Black Mirror*" that several episodes of the Netflix series effectively employ queer temporality and nostalgia in cyberspaces. This section closes with Francios Zammit's theorization of "Cyberspace as Neoliberal Dream" wherein he articulates virtual reality as "a psychogeography in which individuals pursue their own goals and act in their self-interest". This issue also holds two editorial essays in our Perspectives section by Phil Frana and Gabriel Burrow on the ways virtual reality and generative AI have impacted higher education and our perceptions of the future of business. Complementing them are three book reviews on recent scholarship in AI and digital media by Valerie Broege, Jason Ellis, and Arwen Paredes.

This issue commences our tenth anniversary year of publishing. Be on the lookout for the announcement of our next special issue topic in our forthcoming general issue in the spring. We thank all of the contributors, peer reviewers, copyeditors, layout editors, and readers for their commitment to this open-access work. ■

— A.D. Boynton II
Managing Editor
MOSF Journal of Science Fiction

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Worlds We Make, Worlds That Make Us: Reflections on Artificial Intelligence and Virtual Reality in Higher Education

Philip L. Frana

> *People go into creating a world that is not like ours with their embedded assumptions about how our world works still firmly in place. So they end up creating our world but with tentacle sharks.*
>
> *N. K. Jemisin, WIRED25 Festival*

Long before machines could build worlds for us to inhabit, we built them together by telling each other mythic oral tales, performing tragedies and comedies, and reading epic stories. Humanity passed down its memories and experiences from one generation to the next through long and sometimes arduous apprenticeships in storytelling. This was our Promethean campfire, the spark of our imagination. It was improvisational, deeply embodied yet cerebral, and stubbornly earned. Storytelling is essential. It lies at the core of what it means to be human. It is our oldest technology for building worlds from words.

Today, some newly eloquent companions have gathered around the fireside, uncanny in their familiarity, already fluent in our narratives, and yet near-total strangers to the texture of reality. Generative AI is a sibilant illusion, stoking and smothering how we write and reason; its kin, VR/AR, is a mirage of presence, surrounding us with fictional landscapes that expand and exhaust our attention. In the future, we might don our intelligent goggles and step into literary worlds: the Metaverse of *Snow Crash,* the OASIS of Ready Player One, the upload realm of Ken Liu's *Everlasting Inc.,* or the Vision Quest™ Experience of Rebecca Roanhorse. Readers of science fiction have come to expect these algorithmically mediated realities to be thrilling but also inescapable and deeply unsettling. Even before generative AI, we'd become habituated to virtuality and the "digital life" through internet forums, messaging apps, and social media feeds. But as these technologies become the default condition rather than the speculative exception, we increasingly greet them with fatigue, suspicion, and anxiety.

So why do we persist in creating mirror bitworlds that match perfectly our planet of atoms? What, exactly, is so *unreal* about virtual reality? After all, stories themselves are imaginary worlds. If the universe itself is a simulation, then escape is never final but a rehearsal for a story yet to be told, with an artificial friend beside me, dispelling the shadows and rewriting what I thought was real.

In creating these new worlds, we are not escaping Plato's cave but rewiring

it. Fire runs in the wires, sparking into circuitry, until infinite regress becomes our civilization's ultimate design. AI and VR are not just tools of simulation. They represent the next stage of human inheritance by catching and amplifying the glow of human intellect, and thinking us forward into new worlds we never imagined, but which we desire (and dread) to inhabit.

The idea of virtual reality long predates our moldering Rift and Vive headsets. In the 1970s, artist Myron Krueger coined "artificial reality" to describe interactive gallery installations like Videoplace, where bodies became part of computer-generated art.[1] A decade later, Jaron Lanier popularized "virtual reality" through VPL Research's DataGlove and head-mounted displays. William Gibson added "cyberspace" to the lexicon by imagining direct jacking in to simulated worlds. VR has for a very long time promised new forms of interaction and embodiment through helmets, stereoscopic eyewear, and headphones, intended to induce peak experiences, though just as often they deliver hollow ones.

Likewise, the history of speculation about artificial intelligence reaches much further back than today's large language models and deep learning. Hero of Alexandria and the *Samarangana Sutradhara* imagined such things as self-moving statues, mechanical birds, and artificial servants animated by divine fire, steam, and metallic liquids.[2] Centuries later, Alan Turing's universal machine and Frank Rosenblatt's binary classifiers provided a theoretical foundation for neuro-symbolic artificial minds. From the Second Industrial Revolution onward, science fiction teemed with synthetic beings, from the Steam Man of the Prairies and Moxon's Clockwork Master to Asimov's positronic brains and the towering, featureless Gort. What had once been speculative eventually became real: Deep Blue's and DeepMind's triumphs over games promised cleverness, as well as incandescent new forms of reasoning and creativity.

Today, the presence of these artificial intelligences is ubiquitous. Most of my students—openly or furtively—use GenAI to brainstorm, draft, and summarize. Lagging behind are my institutional colleagues, who while away their days on AI task forces, modifying their syllabus statements, rethinking university integrity policies, and, for the most part, wringing their hands. At the international level, policymakers are reimagining the risk spectrum for AI applications as a thermometer, its column rising from the cool of "minimal" to the fever heat of "unacceptable." But this graduated spectrum is at odds with the speculative fever inflating an AI bubble whose environmental and economic costs are already mounting. Virtual reality is undergoing parallel inflation. Research reviews show that VR can foster strong learning outcomes—in biomedical and surgical training, as well as in patient care and

instruction—but faculty still worry that evidence for long-term gains is mixed.[3]

Neal Stephenson's *The Diamond Age* imagined the Young Lady's Illustrated Primer, a smart book that guides children through interactive lessons. Like today's VR simulations, it promised to encourage curiosity and independence for those it was designed to serve. Nell, the poor urchin who inherited the Primer, thrives under the spell of the device and the unseen human labor of Miranda, the "ractor" who brings the book's stories to life. Suddenly our students, too, have access to primer-like tools powered by GPUs and ghost workers: Khanmigo, NotebookLM, Perplexity's Comet, and the Google Lens homework filter. And they will soon hold in their hands the next generation of primers, built from prototypes at spatial intelligence AI companies developing Large World Models (LWMs). In a way, my college classrooms are becoming primer-like, too. They are mediated environments I build together with my students, environments where learning is shaped as much by *design* as by *discovery.*

Are these legitimate engines of inquiry? For students, immersion cuts both ways. Well-designed sims and storytelling toolkits can bring abstract concepts into vivid relief. They allow us to imagine stepping into sweltering refugee camps, hunting invasive lionfish among coral reefs, or rehearsing tricky surgical procedures. But without human guidance, such scenes risk becoming theme-park pedagogy. My undergraduate students already often lean heavily on shortcuts to skim readings or generate quick answers, reinforcing "surface" or "junk food" learning. They are incentivized in this behavior by digital distractions and AI-curated entertainments, assessment structures that reward speed and efficiency over depth, the easy availability of immediate but often simplistic answers, and a broader culture of credentialing that encourages students to view themselves as instruments for economic productivity. They're becoming skilled with artificial intelligence, but they often use it shallowly or grow too dependent on its results. Applications that diminish originality, curiosity, and deep learning have no place in higher education. Deployed without a measure of human reflection, they reduce grandeur to spectacle. To guard against this, Wharton professor Ethan Mollick advises that we should not use such technologies for unfamiliar tasks but instead use them only for tasks we already know how to do well.[4]

AI can push us toward autopilot thinking and inattention, while VR can draw us into realities that blur the line between presence and simulation. To integrate these tools in ethical ways, we must ensure that AI/VR applications avoid numbing us with flattery and compelling us through coercion. Krueger insisted that the spirited interplay between human and computer-generated environment was the art, and not the silicon circuits, encoded interrupts, or preprogrammed routines

alone. What would it mean if learning cleaved to that principle, where VR and AI behaved as engines of co-creation, not as subscription-based lessonware?

Princeton science historian D. Graham Burnett has called AI "the most significant revolution in the world of thought in the past century."[5] For faculty, the essential question is not whether to use these tools, but *how* to use them and to *what ends*. Universities must guide educators to use AI responsibly in the service of society. There are also important questions of student leadership here, as they are the ones who will seek out mentors who can guide them into that rapidly unfolding future. The Class of 2029 will, as surely as anything, graduate into a hyperreality of infinite screens, synthetic voices, and prefabricated spaces.

AI pioneer Herbert Simon would be unsurprised by this development, recognizing it as the fulfillment of his belief that augmented intelligence is helping us fashion a more suitable habitat for our species. "The world we live in today is much more a man-made, or artificial, world than it is a natural world," he notes in *The Sciences of the Artificial.*[6] Why not expand upon the invented world we seemingly cannot live without? We have a once-in-a-lifetime opportunity to redefine what excellence and success look like in the age of AI/VR. We will need to anticipate the rise of artificial friends that students will carry with them. If AI can deliver information and narrow intelligence, a college education must consist of cultivating critical thought and general-purpose reasoning. Fortunately, this is what most of higher education already values and aspires to do, though it remains a work in progress.

The problem of academic integrity highlights the importance of mastering new literacies. AI challenges the act of telling a story but also calls for revised pedagogy. Students are already mastering emerging AI literacies such as prompt crafting and iterative rules. Google reduces authorship and storytelling to a mnemonic five-step framework: *Thoughtfully Create Really Excellent Inputs,* which is a recipe for AI-assisted composition. The company's Help Me Write feature makes this framework instantly accessible at the click of a button. Writing teachers, by contrast, cultivate much messier skills around voice, invention, and revision.

Some of us perceive that we are already rapidly running up against the limits of AI writing, which sparkles brightly at first glance but later turns to ash in the hand. In *Anathem,* Stephenson coined "artificial inanity" to describe beautifully written but subtly corrupted text. The concept eerily anticipates the AI-generated slop and misinformation we now see everywhere. Similarly, faculty adopting virtual reality must resist simulations that dazzle without deepening knowledge. It is as if GenAI and VR have placed Borges' Library of Babel at our fingertips—a simulation of infinitely rewritten or reconfigured

Wikipedias, Reddits, and Flickr galleries—yet none of it transcending its endless hexagonal rooms. These tools are limitless but limiting, infinite but nonsensical.

In twenty years of teaching classes on The Virtual Other, Minds, Machines, and Meaning, and The Artificial in Fact and Fiction—all of which combine science and SF—I've wondered about the hidden agendas of digital technologies. I've asked how agents and automata, strange loops in consciousness, and patterned identities can address questions about the nature of moral responsibility, personhood, dignity, and freedom. Virtual ethnographer Annette Markham observes in *Life Online* that technological control of the world challenges the authenticity of self. In terms of lived experience, we might well conclude, as Markham does, that the world is not real or virtual, but real and virtual.[7] It is like pecking at my keyboard in the windowless office of my academic building, unable to tell if it is raining or shining outside, and wondering whether I exist anywhere beyond the screen or the walls.

My greatest fear is not that AI or VR will fail, but that they will succeed too well and at the wrong things. AI already floods the internet with plausible but decorative and derivative writing. Virtual reality could become the same in spatial form. In Gibson's *Neuromancer,* cyberspace was total immersion, with no reflection required. It was brilliant to behold, but blistering and opaque. Stephenson's *Fall; or, Dodge in Hell* imagines a digital afterlife where human scans live forever under unstable algorithmic constraints. The novel forces us to ask if immersion is simply a tool, or whether it incompletely remakes us. In small ways, universities already enact this: when students spend hours inside their dorm rooms and a content management system, where do they live most fully?

Increasingly, we inhabit the world as a decentered self; we feel ourselves existing with greater presence in mediated spaces than in unmediated ones. The world is largely a human construct. It is artificial from ground to sky. This is the nature and final consequence of the Anthropocene: What we have made now makes us. The result is a hall of mirrors: reflections and recursions, worlds thinking, writing, projecting back at us.

The countermove must be curricular. Students should not only swim in the reef but also diagram its trophic flows by hand. They should not only rehearse a clinical scene in augmented reality but also write the SOAP note from scratch. The real promise of AI and VR is not in the drafts or visualizations we generate, but in its potential to practice and sharpen our judgment. If higher education treats these tools as torches to illuminate enduring questions rather than as substitutes for them, students may leave wiser and more creative. We built the campfire so we could see one another's faces light up or grimace as we learned.

We are busily at work creating lands of the unreal—Los Angeles, Las Vegas,

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Florida—places where image replaces substance. Our world approaches Baudrillard's fourth-order simulacra, where the copy has no relation to any reality,[8] and we risk becoming like characters who act but do not know why. If we treat these technologies as companions to reflection—tools always paired with human conversation—they may deepen our world rather than dilute it. But that outcome depends on us. ■

Notes

1. See Myron W. Krueger's *Artificial Reality* (Reading, MA: Addison-Wesley, 1983); *Artificial Reality II* (Reading, MA: Addison-Wesley, 1991); and "'Videoplace': A Report from the Artificial Reality Laboratory," *Leonardo* 18, no. 3 (1985): 145–151.
2. Adrienne Mayor, *Gods and Robots: Myths, Machines, and Ancient Dreams of Technology* (Princeton, NJ: Princeton University Press, 2018).
3. Jaziar Radianti, et al., "A Systematic Review of Immersive Virtual Reality Applications for Higher Education: Design Elements, Lessons Learned, and Research Agenda," *Computers & Education* 147 (2020): 1–29.
4. See Mollick's Substack online newsletter at https://www.oneusefulthing.org/.
5. D. Graham Burnett, "Will the Humanities Survive Artificial Intelligence?" *New Yorker,* April 26, 2025, https://www.newyorker.com/culture/the-weekend-essay/will-the-humanities-survive-artificial-intelligence.
6. Herbert A. Simon, *The Sciences of the Artificial,* Third Edition (Cambridge, MA: MIT Press, 1996), 2.
7. Annette N. Markham, *Life Online: Researching Real Experience in Virtual Space* (Oxford: AltaMira Press, 1998), 53, 120–125.
8. See Jean Baudrillard, "The Precession of Simulacra," in *Simulacra and Simulation* (Ann Arbor: University of Michigan Press, 1994): 1–42.

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Silicon Dreams, Corporate Realities

Gabriel Burrow

I've had the same conversation with a number of science fiction researchers recently. It goes something like this: "Given the extent to which Silicon Valley has co-opted science fiction, is it still a worthwhile way to imagine alternative futures?" More often than you might think, the answer has been a resounding "No." One friend went so far as to describe science fiction as "over." Science fiction is so entangled with the visions of billionaire CEOs that Elon Musk can say "the future should look like the future" at Tesla's cynically named "We, Robot" event and many know, intuitively, what he means. The future is a place where people drive cybertrucks, interact with "superintelligent" AI, and interface with augmented reality (AR) and virtual reality (VR) tech. Maybe they'll do it on Mars. This isn't all that science fiction has to offer—it is a diverse constellation of imaginaries. But Silicon Valley's vision of the future, shaped by a particular Western canon, has come to command both vast resources and cultural influence.

Darko Suvin famously described science fiction as the *"literature of cognitive estrangement,"* through which readers are confronted with "a strange newness, a *novum*" that defamiliarizes the present and invites a critique of it (1979, p. 4). But there's nothing new in the future Musk invokes; the particular vein of Western science fiction that he refers to has been captured by an uncritical determinism. In the view of Musk and his peers in Silicon Valley, this is the future. Science fiction becomes a vision of a technologically advanced world that can be sold to both consumers and investors. Spin up a wildly resource-intensive chatbot and tell the world you're moments away from the AI singularity; tell them they should be afraid of the SkyNet-esque dangers of your model. Mint some non-fungible tokens on the blockchain and pair them with low-resolution virtual environments and legless avatars; tell them that you've transformed the way people will live, work, and transact by creating the metaverse.

Tech billionaires draw from science fiction to help them make future-shaping decisions. OpenAI CEO Sam Altman's understanding of how humanity's relationship with technology will develop over time is informed by Marc Stiegler's short story *The Gentle Seduction* (1990), which follows a skeptic who ultimately brings about the technological singularity.[1] Musk named his large language model (LLM) "Grok" after the alien neologism of Robert A. Heinlein's *Stranger in a Strange Land* (1961). In Heinlein's novel, "grok" refers to the process of absorbing something completely; Musk hopes the model will aid intuitive understanding and

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problem solving. Pertinent to the subject of this special issue, Google cofounder Sergey Brin names Neal Stephenson's prototypical "metaverse" novel *Snow Crash* (1992) as an influence, and Mark Zuckerberg reportedly made the novel required reading for Facebook—now Meta—product managers (Feloni, 2015; Freedman, 2025). More deterministic than predictive, the computationally enabled cyberspace imagined by Stephenson and William Gibson has played an active role in the emergence and characteristics of virtual realities.

At the same time, science fiction is increasingly used to model scenarios, assess risk, and develop products. So-called "sci-fi prototyping" has become big business: Apple, Google, and Microsoft are all reported to employ fiction writers (Merchant, 2018; Skovgaard Petersen, 2022). One of the most notable authors to go on payroll is Stephenson himself, who was the first employee of Jeff Bezos–founded Blue Origin, worked as Chief Futurist for augmented reality company Magic Leap, and even founded Blockchain platform Lamina1 in 2022. This phenomenon is not new. Isaac Asimov penned a paper titled "On Creativity" for the Defense Advanced Research Projects Agency (DARPA) in 1959, while Dutch petrochemical giant Shell has been "developing possible visions of the future since the early 1970s, helping generations of Shell leaders…to explore ways forward and make better decisions." But the entanglement between science fiction and Silicon Valley is especially pronounced, as Stephenson's career illustrates.

I see this first hand in my own work—work here not meaning academic research, but rather what I do to pay bills and feed my cats. I'm the research lead for a creative marketing agency, where I produce whitepapers, articles, films, and even immersive experiences for technology companies. Sometimes, I do speculative work that strays into sci-fi prototyping, imagining the functionality of products or future risks. This practice is dictated by commercial imperatives and, as a result, science fiction's capacity for critique and open-ended reflection gets neglected. Even when it's not at the heart of a project, science fiction is never far away. In a meeting with one of the world's largest technology firms, *Snow Crash* was used to illustrate the importance of security in the metaverse. Stephenson's novel was treated as if it was a real-world case study. Examples like this show that the commercialization of science fiction goes far beyond fandom.

This phenomenon is subject to increasing scrutiny in science fiction studies and beyond. Sherryl Vint has proposed the idea of "start-up futurism"—"drawing on utopian and speculative aesthetics but orienting them toward the end of accumulating wealth"—and will explore Silicon Valley's soft power in a forthcoming book (2025, p. 50). Ali Riza Taskale (2025a) describes the way Silicon Valley billionaires "operationalize speculative narratives as real-world

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policy," yet neglect their critical capacity. Meanwhile, Hugh O'Connell (2025) is examining Silicon Valley itself as a form of financial science fiction, and part of Max Haiven's (2025) current research unspools the relationship between (techno)fascism and forms of worldbuilding. The subject frequently comes up in broader studies of Silicon Valley, too: Adam Becker's *More Everything Forever* (2025) describes at length how tech "billionaires explicitly use science fiction as a blueprint," while Quinn Slobodian's *Crack Up Capitalism* (2023) notes the extent to which billionaires such as Mark Zuckerberg draw from fictional representations of the metaverse (Becker, p. 265; Slobodian, p. 203).

While these particular formations are new, the Western conception of science fiction and technology have always been mutually constituted.[2] This dates back centuries: Adam Roberts draws through-lines from the European Reformation to science fiction, and Istvan Csicsery-Ronay Jr. aligns it with the Global North's industrialization (Roberts, 2016, pp. v–vi; Csicsery-Ronay Jr., 2012, p. 155). Writers in this tradition took inspiration from new technological advances in their contemporary moment. Mary Shelley's *Frankenstein* (1818) responded to an era of electricity and evolutionary biology; Jules Verne extrapolated upon the nascent technologies of the industrial revolution with the machines of *A Journey to the Center of the Earth* (1864) and *Twenty Thousand Leagues Under the Sea* (1871). Later, the rise of popular science fiction was propelled by magazines like *Amazing Stories* and *Astounding Stories of Super-Science*. Notions of technological progress are in Western science fiction's bones—and too often go unquestioned.

Of course, there are other kinds of futures being imagined around the world. "SF" in its more capacious sense is host to any number of countervailing trends—be they solarpunk and hopepunk, or cofutures, afrofuturism, and sinofuturism. These visions diverge from the futurity that Silicon Valley promotes in myriad ways. There has rightly been a reckoning with science fiction's colonial roots too, undertaken by the likes of Patricia Kerslake (2007), John Rieder (2008), and Isiah Lavender III (2011). These studies are complemented by explorations of Black SF such as Kodwo Eshun's seminal *More Brilliant than the Sun* (1998) and André M. Carrington's *Speculative Blackness* (2016). Despite "the Whiteness of science fiction," Carrington aims "to stoke the reader's interest in the possibility that speculative fiction might also provide some resources about which we can envision Black people" (pp. 19–20). It can project emancipatory futures for people whose histories and perspectives have been marginalized.

Tellingly, these are not the futures that tech billionaires are interested in realising. Indeed, the technologies they develop often reproduce the prejudices of the past and present. A range of its creations have demonstrated racial and gender biases, whether that's instances of search engines like Google reinforcing negative biases

against women of colour (Noble, 2018) or computer vision failing to identify members of this same group (Buolamwini and Gebru, 2018). Meanwhile, data giant Palantir has worked with United States Immigration and Customs Enforcement (ICE) to help identify undocumented immigrants since 2014 and is developing a new surveillance platform for the agency (Feuer, 2020; Haskins, 2025). A recent UN report noted Palantir's role in the ongoing genocide in Gaza, including its likely provision of an AI platform that enables "real-time battlefield data integration for automated decision-making" (Albanese, 2025, p. 11). AI targeting systems like Israel's "Lavender" and "The Gospel" take algorithmic profiling to murderous extremes. The report also noted the relationships that Google, Microsoft, Amazon, IBM, and HPE have with the Israeli military (pp. 10–11).

The (Other) Final Frontier

It's no coincidence that the U.S.'s pre-emminent tech hub is the furthest West that colonial settlers could go: Manifest Destiny led them to the Bay Area.[3] Since, Silicon Valley has set its sights on the future—the (other) final frontier for colonization. Its prophets have split into various interrelated groups, mapped out by Gebru and Torres (2024) as TESCREAL; Transhumanism, Extropianism, Singularitarianism, Cosmism, Rationalism, Effective Altruism, and Longtermism. Becker adds Effective Accelerationism to the list and notes that, whatever doctrine they belong to, the intention of tech moguls is the same—to achieve "the glorious future promised by technology" (Becker, 2025, p. 6). An imagined future in which humanity prospers across the galaxy is used to legitimize a range of actions in the present, including environmentally deleterious data center build-outs and rocket launches.[4] And the same goes for virtual lives, be they humans within a simulation or supposedly conscious AI. Viewed from a longtermist perspective—which is essentially hopped-up utilitarianism—these hypothetical lives would be prioritised over people in the Global South who are suffering today.

This way of thinking is grounded in Silicon Valley and science fiction's shared legacies of colonialism. Overwhelmingly, white men's visions of the future are centered at the expense of everyone else. Jordan S. Carroll's Hugo Award–winning *Speculative Whiteness* (2024) makes this relationship clear; stories of space colonization draw from European settler colonialism, while white supremacist tropes are weaponized by the alt-right. That does not mean the genre should necessarily be ceded to these groups, however. If we as science fiction researchers refuse to accept that it's "over," this at least calls for a renewed focus on its critical capacities—for worldbuilding, but equally deconstruction: *unmaking* worlds. It means dismantling notions of technological progress that treat the future as another frontier to be colonized. This should be conducted with an awareness that companies have proved capable of co-opting

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critical works time and time again. Their billionaire leaders are more than happy to turn science fictional technologies into products, irrespective of whether they were presented as dystopian.

In the face of Silicon Valley's appropriation of science fiction, its writers, readers, and researchers must take on the societal questions that technologies like VR or generative AI present in all their complexity—lingering with messy implications and exploring contradictory ideas through fictional characters and scenarios. Science fiction is well suited to this task. In *Extreme Fabulations* (2021), Steven Shaviro argues that it cannot be reduced to "what the business world calls 'strategic foresight'" (p. 2). Rather, it is formally complex and self-reflective; it renders "vagueness and indeterminacy… into the form of a self-consciously fictional narrative" (p. 2). This nebulous quality is in keeping with the fundamental unknowability of the future. The belief that science fiction authors predict the future is mistaken—today, it's often a reflection of Silicon Valley's particular brand of deterministic futurity. As Ursula K. Le Guin (1976) put it, "Science fiction is not predictive; it is descriptive." No one can predict the future. No one owns it. Who knows? Maybe even the science-fictional technologies that Silicon Valley has misappropriated might be reclaimed and reimagined. ■

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Notes

1. Altman recommended *The Gentle Seduction* on the Ezra Klein Show, alongside Isaac Asimov's *The Last Question* (1956) and Greg Egan's *Crystal Nights* (2008). He described all three as being "about the development of a super-powerful AI."

2. Contrary to the quotidian understanding of "technology," numerous scholars have argued that it is a bounded concept, which emerged comparatively recently to describe particular practices and processes. See Leo Marx (1997), Heidegger (1954), and Yuk Hui (2016).

3. For a comprehensive study of the role of colonialism and race science in shaping the Bay Area, see Malcolm Harris's *Palo Alto* (2023).

4. Data centers place considerable strain on regional water supplies. The IEA (2025) expects that their consumption will reach 1,200 billion litres per year in 2030, while building in water-deprived areas is projected by SourceMaterial (2025) to grow by 63%. They are hugely energy intensive too: electricity consumption is projected to reach 945 terawatt-hours (TWh) by 2030, which is equivalent to Japan's current usage (IEA, 2025). On the environmental impact of rocket launches and re-entry, see Voigt, Schumann, Graf, and Gottschaldt's "Impact of Rocket Exhaust Plumes on Atmospheric Composition and Climate—An Overview" (2013) and Eric Lipton's "Wildlife protections take back seat to SpaceX's ambitions" (2024).

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Cyberspace as a Neoliberal Dream

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Abstract: Cyberpunk offers a vision into the consequences of neoliberal economic and social policies implemented since the Reagan and Thatcher administrations. The economic inequalities, lack of social safety nets, and restricted presence of state institutions reflect a neoliberal socio-economic order. In a cyberpunk reality, we also encounter cyberspace as a market order. It emerges from the proliferation of a ubiquitous cybereconomy that operates as a market economy, free from government intervention. The cyberpunk imaginary depicts cyberspace as a psychogeography in which individuals pursue their own goals and act in their self-interest. In cyberspace, individuals and corporations have dealings, interactions, and business relationships that follow the rules and norms that have emerged as part of the self-organising process of cyberspace. Therefore, cyberspace is a form of spontaneous order that entails complex self-organising systems and mechanisms that arise from the multitude of interactions that happen within it. This paper aims to use the imagery of cyberspace to show how cyberpunk literature formulates in tangible ways the realities of a market order as envisioned and proposed by neoliberal thinkers like Hayek, thus providing the public with a critique of the neoliberal dream of an unregulated market order.

Keywords: cyberpunk, cyberspace, neoliberal, economy, cyberlibertarian

The cyberpunk genre, with its meme-like descriptor of "high tech, low life," is considered a direct response to the neoliberal paradigm that has dominated politics and public discourse in the last forty years. Some authors and scholars think of cyberpunk as a reflection of a postmodern and late-capitalist reality that we inhabit, offering a critique of this condition. Cyberpunk fiction, visual or literary, "serves as evidence that the cultural shifts and social problems of late-capitalism are real" (Alphin, 2021).

However, Caroline Alphin (2021), in the premise of her book, *Neoliberalism and Cyberpunk Science Fiction,* argues that cyberpunk fiction goes beyond representation and imitation and is a productive force of the neoliberal narrative. She maintains that cyberpunk provides neoliberalism with a vision of what a neoliberal future looks like. This argument is most evident in the birth and development of the concept of cyberspace.

The term cyberspace is attributed to William Gibson, who introduced it in his short story *Burning Chrome* (1981) and further developed it in his novel *Neuromancer* (1984). The notion of cyberspace has caught on and has become part of our present leading technological paradigm. Cyberspace is more than just a technological artefact; it

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is a location or a space that is part of the dominant economic and political ideology according to *The Californian Ideology* (Barbrook & Cameron, 1996), a neoliberal and libertarian politics that is premised on free market economics and technological determinism. Therefore, cyberspace illustrates how, as argued by Alphin, neoliberalism and cyberpunk fiction are co-productive. Cyberpunk describes reality while moulding it, simultaneously producing a symbiotic relationship that makes reality stranger than fiction.

Cyberspace as a Cosmos

To understand the function and role of cyberspace, both in the cyberpunk universe and in the neoliberal reality, we must begin by attempting to locate cyberspace. Whilst many associate the term cyberspace with the internet itself, cyberspace as a concept goes beyond the internet:

> Cyberspace. A consensual hallucination experienced by billions of legitimate operators, in every nation by children being taught mathematical concepts.... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding... (Gibson, 1995, p. 67).

The term cyberspace is ambiguous, and there are multiple interpretations of it, such as an environment, a domain, or a medium (Desforges, 2014). Alix Desforges identifies a plethora of conceptions of cyberspace that inform the views and relations held by believers. Thus, he argues that, among other things, cyberspace may represent a mysterious and dark space where some act out that which is not allowed in society, and for others, cyberspace is associated with mass surveillance and control. However, to many, cyberspace is a "dematerialized, borderless, and anonymous virtual 'world' of freedom, exchange and communication" (p. 68).

Cyberspace, as a site of freedom, exchange, and communication, is present in Scott Bukatman's (2007) description of Gibson's cyberspace as a "*narrative* space, and one therefore, explicitly defined as a site of action and circulation" (p. 81), a location of "implosive activity" (p. 81). The variety of interpretations provides a spectrum of attitudes towards cyberspace, ranging from dystopian visions to utopian ambitions leading to the fulfilment of human potential and freedom. Nevertheless, in both scenarios, there is a sense that cyberspace is guided by its own rules. The realm of cyberspace is removed from centralised human control and obtains its autonomy through the power of the technology that enables it. This is synonymous with a position of technological determinism, whereby the internet is deemed a force majeure that determines the social and political changes resulting from its emergence as a dominant technology.

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David Golumbia (2024) locates this positionality to the thinking and influence of Marshall McLuhan, who is deemed the "patron saint" of the digital revolution (p. 198). McLuhan was a technological determinist whose thinking traces "clear lines … between the development of certain technologies and the social changes that follow in their wake" (p. 198). Proponents of the digital revolution compare the advent of this transition to the intellectual and social changes resulting from the invention and spread of the Gutenberg press. These revolutionaries ascribe social development to a "cultural-technological progressivism" whereby technological advancement is perceived as the key to the improvement of the human condition (p. 200).

Golumbia (2024) argues that "McLuhan seems to ascribe to technology a mysterious determining power, one that humans can only direct imperfectly" (p. 200). This is akin to Adam Ferguson's and August Friedrich Hayek's conception of spontaneous order as 'indeed the result of human action but not the execution of human design' (Hayek, 1978, p. 57). In a technologically determined world, cyberspace is influenced by human actions and decisions. However, its fate and organisation are outside of human control; cyberspace itself determines new developments and resultant changes. Humans react to these changes and can only hope that their reactions will allow them to succeed in this changing environment.

In Hayekian terms, cyberspace acts like the market order, which is a form of spontaneous order to which he ascribes the quality of a cosmology, which he refers to as catallaxy. For Hayek (1998), unlike an economy, a catallaxy is a spontaneous system that emerges through the coming together of the disparate interests of those who participate or inhabit it. A catallaxy has inbuilt mechanisms that coordinate and organise the interests and activities that happen within it, not through the use of coercive institutional powers but as a result of the choices and responsiveness of its participants. The feedback loop of information and signals lead to the creation of a more efficient and effective system. This process of "naturally" occurring growth is also reminiscent of the expansionary processes of cyberspace.

In an article published in a collection of essays, Gibson describes the web, which he associates with his idea of cyberspace, as "It is something half-formed, growing. Larval… It was not planned; it simply happened, is happening." (2012, p. 195). Cyberspace, like Hayek's market order, is the result of an evolutionary process; it is a "spontaneous order" that is a "spontaneous, 'endogenously' grown, evolutionary order or cosmos" (Dale, 2018, p. 932). With such a premise, cyberspace is redefined as a cosmic system, a cosmology, that we inhabit and live in. It is a new world with its own "natural" laws and mechanisms, which are unavoidable and must be obeyed.

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As shown by Pol Donets and Nataliya Krynytska (2022), cyberspace is often depicted in mythical or cosmological terms, expressing "an ancient view of some invisible and extrasensory space" inhabited by "god-like entities" (p. 82). This alter-dimensionality of cyberspace explains why those who want to enter it must go through a process of "plugging in" as in the Matrix movies or "jacking in" as in *Neuromancer.*

Like the free market, cyberspace is a pervasive territory that exists within, and also fully encompasses our physical reality. Although we may not perceive or locate its physical territory or location, it permeates every aspect of our physical lives, and we inhabit it even without our recognition of doing so. As Clark argues, cyberspace is not to be considered as a place to "go to" per se. The "reality" of cyberspace as a virtual space makes it something that we unconsciously experience. This becomes even more pervasive with the advent of ubiquitous technologies like smartphones and mobile internet, which provide us with a constant connection to cyberspace, thus eliminating the sense of going somewhere else, since we are constantly connected in some way. For this reason, Clark argues that cyberspace should be understood as a "thin veneer that is drawn over 'real' space" (2010, p. 5). A "separate entity," a "virtual" space linked to the "real" world (Desforges, 2014, p. 68), one which is represented by the figure of the cyberpunk city as identified by Alphin (2021) in cyberpunk literature. Desforges identifies various spatial references in conceptions of cyberspace, such as "space," "world," "milieu," or "environment" (2014, p. 68). This implies that cyberspace has a geographical dimension (Desforges, 2014) to it that is part of our collective understanding and consciousness. This territoriality has been further reinforced by the *Matrix* trilogy, which portrays the Matrix (cyberspace) as a virtual city inhabited by viruses, programs, and human minds.

Cyberspace replicates the postmodern city, a decentralised space whose role is to entertain, simulate, and provide a space for consumption. This new version of the urban world is a decentralised version that lacks a unifying vision and is all about the continued "circulation of information" (Bukatman, 2007, p. 82). For Bukatman, the new urbanism is made up of "edge cities" or "plug-in cities" that are connected to the world through intricate and managed networks of communication and transportation (p. 82). For him, this is the very definition of cyberspace, which he interprets as "the cybernetic (city) state" (p. 82), as also rendered in the work of Gibson. As Gibson also reiterates, cyberspace "is happening the way cities happened. It is a city." (2012, p. 195).

This geographical alterity is also comparable to the contemporary neoliberal-driven restructuring of our human and political geography, with the creation of new economic zones that exist within pre-defined territories and are established as isolated and

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separate entities with their own rules and regulations. Slobodian (2023) identifies over 5,400 of these zones, ranging from nodes in the global supply chain to duty-free zones and, more crucially, "urban megaprojects" that are run "like private city-states" (p. 3). The emergence of these special interest zones results in the replication of a new socio-political reality that is increasingly a reflection of what readers and viewers encounter in works of cyberpunk fiction. This state of affairs illustrates how Alphin's prediction that cyberpunk literature and neoliberal policies are co-productive is becoming a reality. The fictional architecture of cyberspace has come to shape the actual architecture of our contemporary socio-political world.

These new, at least partly privatised cities, like the Shenzhen Special Economic Zone or New Songdo City, reflect a global trend towards transferring roles and functions traditionally attributed to the state to corporate and private entities. This follows the same trajectory experienced in the 1990s with the privatisation of the internet. Initially, the National Science Foundation (NSF) provided the National Science Foundation Network (NSFNET) as the backbone for internet traffic. Then in 1995, the NSF shut down NSFNET and left the doors open for private corporations to provide the networks and services that came to create the internet as we know it today (Radu, 2019). Private entities were entrusted to create the infrastructure and services for the expansion and further development of the Internet. This brought in a new reality in which "[p]rofit-seeking entities became co-creators of standards and norms and, in certain cases, held discretionary power for law enforcement, be it for criminal investigations or for the protection of intellectual property rights" (Radu, p. 76). Business practices and commercial decisions became the de facto form of governance.

An important qualification is that although it is the internet that provides interconnection today, there could have been other technologies that would have provided this (Clark, 2010). Cyberspace is the interconnection and not the technology that makes it possible. Projects like the Chilean "Project Cybersyn" or the French "Minitel" were designed and administered by the state, like the Internet in its infancy, which means that cyberspace would have been different from what we have now.

The process of privatisation led to cyberspace falling outside of state jurisdiction and being regulated by the discretionary powers of private companies and corporations. "[I]n the 1990s, the dominant U.S.-driven 'hands-off' approach condemned any attempt to regulate the Internet and related markets" (Radu, 2019, p. 111). This is evident in the challenges that states face in their attempts to regulate and curtail the power and role of big tech like Meta and Alphabet Inc., the owner of Google. In the vein of Gibson's world, the shadow and reach of these private firms are felt both in the physical and the digital

cities and "seem to determine our lives from some sort of ethereal 'other' or 'outer' space" (Bukatman, 2007, p.97).

Cyberspace as a Free Market

Cyberlibertarians have located in cyberspace an opportunity and space to escape from the social, political, and economic institutions they abhor and perceive as contrary to their ideology of personal and economic freedom. In his 2009 essay, *The Education of a Libertarian,* (this essay is prior to his conservative turn) Peter Thiel argued that new technologies are the remaining opportunity for true libertarians to find a means of escaping the constraints and limitations of social democracy and the politics that come with it. For Thiel, cyberspace represents the possibility (along with outer space and the Earth's oceans) through the application of new technologies to "create a new space for freedom" (2009, pp. 3-4).

Thiel's neoliberal and cyberlibertarian vision of the possibilities of cyberspace has come to define and determine its present and future:

> Cyberspace. As an entrepreneur and investor, I have focused my efforts on the Internet. In the late 1990s, the founding vision of PayPal centered on the creation of a new world currency, free from all government control and dilution—the end of monetary sovereignty, as it were. In the 2000s, companies like Facebook create the space for new modes of dissent and new ways to form communities not bounded by historical nation-states. By starting a new Internet business, an entrepreneur may create a new world. The hope of the Internet is that these new worlds will impact and force change on the existing social and political order. The limitation of the Internet is that these new worlds are virtual and that any escape may be more imaginary than real. The open question, which will not be resolved for many years, centers on which of these accounts of the Internet proves true (Thiel, 2009, p. 3-4).

In this guise, cyberspace is redefined as a new market, possibly a new territory, to be discovered and conquered to provide a new location, a new "cybernetic (city) state" (Bukatman, 2007, p. 82) for those who want to remove themselves from the strictures of the state and its institutions. This kind of raison d'être is pervasive in the tech world.

In the cyberlibertarian consciousness, cyberspace is primarily a location of economic freedom. This economic freedom translates itself into social and political freedom. The tech entrepreneur is not only creating wealth but redesigning the social and political world. This vision is reminiscent of the neoliberal thinking promoted by Hayek and his formulation of an ideology of freedom. Thus, just as the market order is a space that provides political and social freedom, cyberspace too espouses this dual nature. This vision is evident in Thiel's description of cyberspace and also emphasized by Bukatman (2007) who

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states, "So cyberspace is a financial space, a space of capital, it is a social space; it is responsive; it can be modified; it is a place of testing and the arena for new technological rites of passage" (p. 101).

The ultimate liberation from the constraints of the established political structures and strictures is monetary. It would be, as Thiel states, "the creation of a new world currency, free from all government control" (2009, p. 3). States and governments, even if they adopt a free market and liberalised approach, still maintain control over the economic activity of those within the market via currency control. Thus, this is considered the ultimate barrier to achieving complete liberation from government control, and cyberspace hypothetically provides the technology and territory to achieve this goal.

The figure that epitomises this vision is Satoshi Nakamoto, the mysterious figure who in 2008 launched Bitcoin by publishing a white paper titled *Bitcoin: A Peer-to-Peer Electronic Cash System.* The white paper proposes a system that does away with "financial institutions serving as trusted third parties to process electronic payments" by proposing a payment system, "allowing any two willing parties to transact directly with each other without the need for a trusted third party" (Nakamoto, 2008, p.1). The creation of Bitcoin provides cyberspace with its sovereign currency that is independent from the authority of any state or central bank; furthermore, it provides the necessary technology that enables its users to engage in commercial activity or monetary transactions without the oversight of the state and its systems of control.

In his 1976 paper on "Choice in Currency," Hayek is critical of, and opposes the monopoly of governments in the issuance and production of money. He argues that the exclusive right of governments to create and control the use of money is a means to enhance their coercive powers. The emergence of Bitcoin and other cryptocurrencies that utilise blockchain or distributed ledger technology is a direct reflection of the economic thinking of Hayek who argues that, "there is no reason whatever why people should not be free to make contracts, including ordinary purchases and sales, in any kind of money they choose, or why they should be obliged to sell against any particular kind of money" (Hayek, 1976, p. 16-17). Now, with the development of cryptocrrencies, cyberspace has become an autonomous space of capital creation.

Adopters and promoters of these new cryptocurrencies propose them as a means of liberating themselves from the use of fiat currencies (declared by a government to be legal), resulting in their freedom from financial institutions like banks and the issuers of fiat currencies, the state. This search for freedom from financial institutions or government is a recurrent motif in the characters of the cyberpunk genre, such as Neo in the early

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part of the first *Matrix* movie or Case and Molly Millions from *Neuromancer*.

Quinn Slobodian (2023) traces a direct link between the efforts to create a new currency and the creation of a new nation. He quotes Balaji S. Srinivasan, a Bitcoin entrepreneur who imagines that the possibility of creating a currency also opens the doors to the potential of creating a new nation or country. This logic is reminiscent of Thiel's vision as expressed in his essay *The Education of a Libertarian*. Furthermore, as mentioned previously in this paper, the creation of new virtual states is an antecedent to the formation of new states in the physical world. Slobodian argues that for Srinivasan and others like him, "the online and offline worlds might be not alternatives to each other but complementary: you build online first, then you come down to earth" (Slobodian, 2023, p. 216). Nadia Asparouhova (2025) refers to this vision as a "grand civic experiment" that illustrates a "desire to build when things aren't working."

The utopian and libertarian visions of cyberspace depict it as a separate entity that allows for the removal of all physical constraints, including territory and political institutions, to create a space "that exists outside the physical world" (Desforges, 2014, p. 73) and leads to a reorganisation of global society with the creation of speculative societies that have realigned their loyalties beyond national borders (Slobodian). This transformation of cyberspace is what Barbrook and Cameron (1996, p. 45) describe as "the rise of the virtual class," a category of people who championed individual freedom and economic liberalism by extricating cyberspace from the authority and control of the government. Barbrook and Cameron refer to this utopian and libertarian movement as "The Californian Ideology" which "promiscuously combines the free-wheeling spirit of the hippies and the entrepreneurial zeal of the yuppies" (1996, p. 45).

Whilst on the surface this form of anti-authoritarianism indicates a drive towards increased democracy, the truth of the matter is that it also provides for the establishment of a neoliberal system based on a free market estranged from the social needs of the public. As Barbrook and Cameron show, the Californian Ideology leads towards two possibilities of cyberspace, either as an electronic agora or as an electronic marketplace (1996).

> Information technologies, so the argument goes, empower the individual, enhance personal freedom, and radically reduce the power of the nation-state. Existing social, political and legal power structures will wither away to be replaced by unfettered interactions between autonomous individuals and their software (Barbrook and Cameron, 1996, p. 53).

This empowerment of the individual comes in tandem with the establishment and strengthening of the free market within cyberspace.. Therefore, just like proponents of neoliberalism, the

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techies of the Californian Ideology also mesh together individual freedom and the free market. However, what this truly means on the ground is highly debatable and challenging to categorise, especially with the rise of Big Tech and current political developments.

Spontaneous Order

The core principles of Hayek's neoliberal thinking can be seen in the political and economic project identified by Barbrook and Cameron in their work. They argue that for the virtual class, "attempts to interfere with the emergent properties of these technological and economic forces, particularly by the government, merely rebound on those who are foolish enough to defy the primary laws of nature." (Barbrook and Cameron, 1996, p. 53) Furthermore, they quote the executive editor of *Wired* magazine, who seems to be quoting directly from Hayek, when he declares that the invisible hand of the market and the blind forces of evolution are the exact mechanism that lead to the establishment and growth of spontaneous order.

In devising and conceptualising his concept of the free market, Hayek defines it as a form of spontaneous order. Hayek uses this concept as a means of explaining the phenomenon of the free market and to justify its legitimacy as a superseding mechanism over all other political mechanisms and government interference.

He uses the concept of spontaneous order as part of his defence of the market as a free entity that must be protected from centrally planned economies and from other forms of constructivist rationalities (Luban, 2020). However, the notion of spontaneous order goes beyond this defence of the free market and its mechanisms; it must be read as a form of cosmology that explains human endeavours and social order (Luban, 2020).

For Hayek, like other aspects that define "human," such as language, morality, or law, the market is created via an evolutionary process to bring order and organise life (Hayek, 1978). He defines these systems as "a spontaneous, 'endogenously' grown, evolutionary order or cosmos" (Dale, 2018, p. 932). He contrasts this to other institutions such as the state or society, which he associates with human constructivism and are the result of human design and detached from the universal laws of nature.

The emergence of spontaneous orders is a natural process that exists beyond the realm of the human. As Luban notes, Hayek sees the process of spontaneous order extending into the physical world and is used to explain the naturally occurring order that can be found in nature (Luban, 2020). Hayek himself explains the spontaneous order in physical terms when he compares its process to the way that atoms organize themselves in a natural way to produce a compound or element (Hayek, 1978).

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Furthermore, Hayek, in explaining how spontaneous order happens in nature, states that,

> We must rely on the fact that in certain conditions, they will arrange themselves in a structure possessing specific characteristics. The use of these spontaneous forces, which in such instances is our only means of achieving the desired result, implies, then, that many features of the process creating the order will be beyond our control (Hayek, 1978, pp. 160–161).

Similarly, Gibson's characters are also subject to the forces within cyberspace, which they find to be uncontrollable.

Hayek states that there are systems and mechanisms that ensure the prosperity and health of the orders and structures designed through a process of evolution and spontaneous order (Hayek, 1998). For Hayek, "the twin concepts of evolution and spontaneous order enable us to account for the persistence of these complex structures, not by a simple conception of one-directional laws of cause and effect, but by a complex interaction of patterns" (Hayek, 1998, p. 158). He considers the free market to be a spontaneous order, with its intricacies and complexities, that cannot be the result of human design but of something larger than the human mind or human intent.

Ultimately, the underlying principle employed by Hayek in the development of his concept of spontaneous orders is that human nature and human intellect are unreliable and limited in their scope and potential. Thus, the success of society and the market can only be ascertained via the existence and functioning of mechanisms that are beyond human and autonomous from human will. These also represent one of the core principles present among the tech elite who are the primary developers and visionaries of cyberspace.

In her analysis of contemporary developments in Silicon Valley and how they have come to reshape the Californian Ideology, Asparouhova identifies a core principle, namely a belief, "that people are fundamentally flawed and can't be trusted, so we need systems and processes" (2025). This same reasoning underpins the development of Bitcoin and the use of smart contracts. As Slobodian (2023) argues, technology is employed to replace human trust and judgment. Smart contracts are therefore considered superior to courts and judges because they depend on technological reliability and objectivity rather than human fallibility.

The Neoliberal Condition

As his ideas developed over time Hayek stated that the concept of cybernetics is suitable to describe the kind of system loop that he associates with a spontaneous order (Hayek, 1998). The market is an information system that cannot be comprehended or understood by humans because it is too vast and complex (Mirowski, 2009). Therefore, humans are part of the feedback loop, and their role is to receive and act upon

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the information that is provided to them. In this sense, the notion of cybernetics as a form of steering or piloting (kybernētēs) becomes even more pertinent. As part of the market, the human actor is merely a reactionary agent programmed to behave in a predictable manner that fulfils the needs of the market system.

Desforges (2014) emphasises that the concept of piloting or steering in cybernetics is the inspiration for Gibson coining the term cyberspace, and it is also the root for the meaning of government or to govern. This implies that any cybernetic system—be it cyberspace or the market—is itself a form of governing individuals. This is most evident in Gibson's characters, who always find themselves in situations in which they must react to circumstances that are not of their choosing. This condition is akin to the decisions and responses that economic subjects must undertake as (potentially even involuntary) participants and members of the market order.

In the Sprawl Trilogy, (which consists of *Neuromancer, Mona Lisa Overdrive,* and *Count Zero*) Gibson describes various elements of cyberspace that the hackers cannot control, such as the AIs, the ICE (Intrusion Countermeasures Electronics), firewalls placed by different entities, and ghosts that inhabit cyberspace. Crucially, hackers have no control over the matrix and how it changes and develops. The matrix has an unpredictable nature that cannot be controlled. In such a scenario, the nautical language used by Gibson, such as navigating cyberspace, is even more pertinent because just like its real-world nautical counterparts, sailors do not have control over the forces of the oceans. All they can do is follow the currents and react to ocean forces like the winds. This, too, is a form of cybernetic loop that one must respond to successfully to survive and potentially succeed in the matrix.

Furthermore, we must also recognize that these uncontrollable elements do not only affect the character within cyberspace. The consequences also extend beyond, into the "real" lives of individuals. This makes cyberspace even less detached from the "real" world and therefore provides it with a ubiquitous dimension that seeps and extends beyond designated borders. As discussed before, cyberspace exists in a manner that makes it enmeshed or entrenched in the fabric of "reality."

Similarly, the market also exists beyond its borders and has consequences on aspects of life which are external to it. As part of human evolution and human civilization, for Hayek, the market is a condition of life that we are all participating in constantly. The market is the primary institution that drives human motivations and influences the decisions and actions of every individual. This is akin to the power of cyberspace in Gibson's novels, whereby cyberspace becomes the dominant institution and power over the characters that the reader encounters. Protagonists such as Case, in *Neuromancer*, opt

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for surgery and implants that have detrimental effects on their body and health, pushed by the desire to be more successful in their forays into cyberspace. Similarly, as posited by Alphin (2021), as neoliberal subjects we are willing to live dangerously, "on the edge of burnout," so that we are successful within the market order.

Alphin (2021) states that in the cyberpunk city, the urban landscape is a physical landscape. Still, within it, there also exist virtual spaces that are created and evolve in direct correlation to the technologies and activities of the physical city and its inhabitants. In the cyberpunk urban landscape, there are physical bodies passing through physical places, but there are also "virtual bodies moving through the mental geography" of cyberspace (Alphin 2021, p. 4).

The postmodern condition is a schizophrenic reality of bi-location, like the cyberpunk city, which is a physical space permeated by a virtual space. We live in a physical reality that also incorporates the virtual, making it as real as the material objects we encounter in the physical world. Cyberspace is a city within a city, or more appropriately, our cities exist within a cosmos that we refer to as cyberspace. As individuals, we simultaneously live in the city and in cyberspace, and the two merge, diverge, and affect each other in ways that are beyond our control. This is illustrated by the lives and events experienced by Gibson's characters. Furthermore, this bi-locationary existence is an extension of the realities of the neoliberal *homo oeconomicus* who simultaneously lives in the city and the market order. Every aspect of the life of neoliberal subjects affects their ability to succeed or fail in the market order, which is ruled by the laws of competition, as also described in the grim realities of the characters in Gibson's work on cyberspace. The market order as a cosmos implies that it is external too, but also permeates our everyday reality and life. Just as in *Neuromancer*, control of cyberspace leads to control of the market, implying control of the city. This state of affairs in Gibson's fiction is a premonition of the developments that we are seeing in 2025, especially as a result of the re-election of Donald J. Trump as President of the United States of America and his alliance with figures such as Elon Musk and Peter Thiel. As declared by Asparouhova, "President Donald Trump's inauguration marked a critical inflection point in the relationship between tech and public institutions" (2025).

Additionally, in the same vein as Gibson's literary universe, the rise of Big Tech and the amalgamation of most digital services into the hands of a few corporations have raised questions about the true nature of the free market. The free market aims to provide better conditions and outcomes for the public through competition and entrepreneurial opportunities. This has been slowly eroded by the growth and expansion of large corporations that came to dominate the market. Cory

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Doctorow argues that corporations like Meta, Amazon, or Alphabet Inc. "control the means of computation. These companies rule our digital world, the place where we find one another, form communities and mobilize in solidarity to take collective action" (Doctorow 2023, p.18). More and more, these companies, along with their surveillance powers, are transforming themselves into the Zaibatsus from the world of *Neuromancer*.

The capture of economic thinking by neoliberal philosophies has led to the dissolution of the established rules of classical capitalism and liberalism. To ensure equity and fair markets, antitrust laws were in place to disallow the concentration of power and economic strength for the effective control of a market via a monopoly or cartel (Doctorow, 2023). These laws have been gradually ignored, and the Trump administration has also removed Antitrust officials from the Department of Justice.

Unlike the general understanding, this is, in fact, not contrary to but part of the agenda of the neoliberal intelligentsia. Doctorow (2023) shows how the Chicago School promotes the emergence of monopolies since it is perceived as a means of attaining better efficiency and cost-cutting through vertical integration and economies of scale (2023. Hayek, for whom competition is the basis of the success of society, is not opposed to the possibility of the rise of monopolies. He argues:

> [W]here the source of a monopoly position is a unique skill, it would be absurd to punish the possessor for doing better than anyone else by insisting that he should do as well as he can. And even where the monopoly position is the result of the possession of some object conferring a unique advantage, such as a particular site, it would seem hardly any less absurd to … insist that he must not make a monopoly profit from it." (Hayek, 1998, Vol 3, p.72).

Thus, the current monopolies that have come to exist in the tech industry are justified in terms of the exceptional skills and abilities attributed to the individuals who founded or own these corporations (Doctorow, 2023). This, for Hayek and his followers, implies that the state has no right to impose antitrust laws or similar legislation since this would be regarded as forms of state coercion and market intrusion, which are unjustifiable.

This monopolisation of cyberspace has become so prevalent that in recent years, various authors such as Mariana Mazzucato (2019) and Yanis Varoufakis (2021 and 2024) have come to refer to this phenomenon as Digital or Techno-Feudalism. This idea is also utilized to describe the control and power that these corporations have on individual behaviour and social consciousness. Whilst some may find that this new technologically induced economic reality is a transition into post-neoliberalism, I maintain that this situation is a natural progression of neoliberalism as

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envisioned by visionaries such as Hayek. Contemporary Big Tech owners like Peter Thiel, Jeff Bezos, and Mark Zuckerberg are steadily transforming into figures akin to cyberpunk corporate overlords like Dr Eldon Tyrell or Niander Wallace.

Conclusion

William Gibson's world of *Neuromancer* not only provides us with the term cyberspace but also establishes the tropes and conceptual framework through which we may provide some explanation to our contemporary condition. Cyberspace, like the market or the economy, is a contested space in which conflicting visions provide different imaginaries of the future of this space. In the same manner that neoliberalism has become the dominant economic paradigm, superseding communist, socialist, or anarchist models, this has extended into the digital space. Cyberspace has become the market order envisioned by Hayek, a system in which corporations have come to supersede the power of the state through the creation of their own sovereign spaces. ■

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Cyber Epistemic Spaces and Cyber Agency in Neal Stephenson's *Fall*

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Abstract: In *Fall; or Dodge in Hell,* author Neal Stephenson provides a number of insights into the potential issues raised by emerging technologies in the development of digital spaces. While Stephenson explores several harms emerging technologies may cause, for the purposes of brevity, we explore those related to the sort of information environments digital spaces provide, and their vulnerabilities to manipulation and injustice. In the first case, we explore the gradual unraveling of the internet as a viable source of information. Reflecting actual developments over the internet, Stephenson imagines an internet, referred to as the Miasma, so overrun with bots spreading misinformation and what is called malinformation that it ceases being a sphere even the most experienced users can navigate on their own. In the second digital world, we explore concepts like the digital or algorithmic self, digital afterlife, and the mind-body problem raised by life in Bitworld. In the Miasma and in Bitworld, Stephenson provides an ample number of questions for readers of the digital age to think through, perhaps with the hope that life will not imitate art.

Keywords: cyber, agency, bot, data, digital landscape

In *Fall; or, Dodge in Hell,* Neal Stephenson imagines future digital spaces shaped by emerging technologies. This paper uses the novel as a lens to examine the nature and impact of those spaces, not merely as information repositories but as dynamic information environments. These environments influence human cognition, social interaction, and the pursuit of meaning (Floridi, 2014). Stephenson highlights several harms tied to technological development. This paper focuses on two central themes to epistemic life (life as it relates to information possession and transfer): the evolution of the internet and the ethics of digital ownership. These concerns are deeply connected. As virtual reality technologies advance, digital environments increasingly function not only as mediators of experience but as the frameworks that construct it. Bitworld, Stephenson's imagined VR afterlife, raises philosophical questions about embodiment, authorship, and the continuity of consciousness. Meanwhile, the infrastructure of the internet—from platforms and protocols to algorithmic filters—shapes how individuals come to know the world. Debates over ownership of data and digital consciousness further reveal the stakes of control in these environments, both during life and after death (Cheney-Lippold, 2017; Pasquale, 2015).

Neal Stephenson's *Fall; or, Dodge in Hell* follows tech magnate Richard "Dodge" Forthrast's death, once his

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consciousness has been digitally preserved and uploaded into a virtual realm known as Bitworld. Bitworld is a kind of digital afterlife, one shaped by the memories, beliefs, and imaginations of those who enter it. Dodge, reborn in this space as a creator-figure named Egdod, begins building a world from the ground up. Around him, a network of characters, including his friend Corvallis (C-Plus), lawyer Stan Peterson, and data-holding associates such as Sophia and Zula, help shape the legal and technological foundations of the digital afterlife. Other characters, including venture capitalist Elmo Shephard and programmer Pluto, eventually join Bitworld with varying levels of memory and agency, resulting in competing visions of reality and control. The novel poses urgent philosophical questions about personal identity, embodiment, and authorship in digital environments, questions central to our paper's examination of epistemic authority and the ethics of digital ownership.

Parallel to Bitworld, the physical world descends into decay. The internet becomes "the Miasma," a chaotic and polluted information ecosystem overrun by bots, misinformation, and disinformation. Stephenson depicts a world in which truth is not only hard to find but structurally undermined by systems built for engagement rather than accuracy. Characters like Pluto weaponize this instability, contributing to widespread distrust and a collapse in shared epistemic norms. The novel's portrayal of the Miasma anticipates real-world anxieties around deepfakes, algorithmic filtering, and the fragmentation of public knowledge. Together, the Miasma and Bitworld represent two poles of the digital condition: one marked by informational noise and decay, the other by curated virtual realities that raise new questions about agency, memory, and meaning in the digital age.

We argue that *Fall* presents a dual critique of digital information spaces. First, it shows how algorithmic manipulation and misinformation in the Miasma erode trust and undermine epistemic agency. Second, it reveals how access to authorship and control in Bitworld mirrors and magnifies inequalities already present in digital life. Together, these speculative domains illustrate how emerging technologies shape knowledge production and distribution. They also raise urgent questions about who gets to speak, whose perspectives are legitimized, and whose identities endure in digital space.

The analysis proceeds in two parts. First, we examine the novel's portrayal of the internet's transformation into the Miasma, a polluted digital landscape dominated by misinformation and disinformation (Fallis, 2021; Søe, 2021). In this world, access to truth becomes a privilege, and those without digital curation are vulnerable to prejudicial treatment (Fricker, 2007; Dotson, 2012). Second, we turn to the question of digital ownership in Bitworld. Here, issues of agency, identity, and control are recast

in virtual terms. Dodge's transformation into Egdod prompts reflection on who owns a digitized self, what defines identity beyond embodiment, and how truth is constructed within simulated environments. These questions resonate with current debates about digital data, posthumous representation, and extended consciousness (Clark & Chalmers, 1998; Graham et al., 2013; Sherlock, 2013). By linking the collapse of epistemic order in the Miasma with the stratified authorship of Bitworld, Stephenson raises a larger concern. The future of digital life will not be shaped by technology alone. It will also depend on who holds power over the systems that define reality, filter truth, and preserve memory.

The Miasma and Epistemic Opacity

Stephenson's portrayal of the internet as "the Miasma" introduces his critique of digital environments as living systems that shape and distort human attention, trust, and knowledge. For Dodge, the Miasma is not simply a tool, but a living ecosystem, one that continually demands attention and participation. Further, Dodge saw it as an ecosystem that seemingly has a life of its own, continually baying for one's attention. According to Dodge, the Miasma "behaved, sometimes, as if it expected every man, woman, and child on earth to have a social media and PR staff on twenty-four-hour call" (p. 62). Many of us are used to opening up an internet browser (one no longer really has to log on) and having information available almost immediately. To not fully be overwhelmed by the bits of information that confront us, it would seem, as Dodge notes, we would have to hire a staff solely responsible for filtering out useful information from garbage.

This metaphor aligns with contemporary philosophical concerns about digital life. Floridi (2014), for example, describes humans as "inforgs," embedded in and shaped by informational ecosystems. As inforgs, we are, more than any other animal, information beings "mutually connected and embedded in an informational environment (the infosphere), which we share with other informational agents, both natural and artificial, that also process information logically and autonomously" (Floridi, 2014, p. 94). With so much information taking over the internet, websites such as Facebook, YouTube, and other social media sites have engaged in what might be called attention wars. The breadth of information one needs to sift through means plenty of sites for information retrieval. Companies vying for the attention of consumers is nothing new, of course. To win mass attention, these companies need to know the preferences of internet consumers. Traditional consumer surveys can only reveal so much. If anything, they might reveal the ideal preferences, rather than actual ones. For this, they need raw consumer data that reveal the actual preferences of consumers based on their overall internet activity. What sort of games did they like to play? Where did they

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look to shop? Who do they shop for? But these companies do not seek the attention of consumers for its own sake.

There is a purpose: profit. Most, if not all, social media companies offer their services for free. Thus, they must obtain profit with the help of advertisers. This is the primary purpose of engagement. Knowing the preferences of their consumers, however, is not enough. Getting consumer attention is one thing, keeping it is quite another (Chayka 2024). Algorithms, of course, are not a new phenomenon, having been with us since being introduced to us by their namesake, Persian mathematician Muhammad ibn Musa Al-Khwarizmi (Chayka 2024). However, where Al-Khwarizmi and later mathematicians saw algorithms as formal processes that made calculations more efficient, humans are now subject to being part of algorithmic processes. Floridi (2023) writes, "For the advertisement industry, a customer is an interface between a supplier and a bank account (p. 28). In *Your Face Belongs to Us,* Kashmir Hill (2023) begins her exposition of tech companies' religious obsession over the power of data mining, with a discussion about how many young programmers quickly enter a competitive field where there is immense pressure to make a name for themselves. One way they do this is to develop games or applications that get users hooked. The beneficiaries of this hyper-competitive environment are often tech startups and ambitious programmers seeking to make their mark.

When it was first introduced, the internet was considered a fad by those skeptical of its potential to make the world smaller and more connected. Developers and early supporters hoped that it would further democratize the world, bringing once "alien" parts of the world out of the shadows, and into global economic, political, and cultural dynamics. Regarding how users gather information, creators hoped that those with access would be better informed and be less reliant on traditional knowledge sources that might be subject to prohibitive gatekeeping. Everyone, in a sense, would have the power to share their own experiences and interpretation of world events, while also having access to near first-hand accounts. Unfortunately, hopeful musings do not always materialize into realized actualities. This is, in short, the story of the internet. What developers and supporters failed to anticipate, or perhaps thought to be insignificant, was the emergence of, among other things, engagement algorithms. Engagement algorithms are used by social media and other online platforms to optimize views by tailoring user feeds according to their history of activity.

The dangers of algorithmic opacity become clear through the fabricated story of Moab, Utah, that would come to serve as an illustration of the potential of algorithms to manipulate collective perception and rewrite reality. An online plot orchestrated by Elmo Shephard (or simply El) was created to convince consumers of online news that the city of

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Moab had been destroyed by terrorists. The public came to believe in this story so much that the area was eventually thought to be uninhabitable. Pluto, who had created some targeted bad press (hit pieces) about a friend of Dodge and Corvallis, was asked whether the Moab fabrication was his doing. Pluto's ego wished he could answer in the affirmative, but he admitted that he had nothing to do with it. Stephenson's trolls, agents of misinformation and chaos, echo philosopher Harry Frankfurt's distinction between lying and bullshitting (Frankfurt, 2005). Unlike liars, who distort truth intentionally, bullshitters are indifferent to it. This indifference, Frankfurt argues, makes bullshit more corrosive than lies, as it erodes the very conditions of shared understanding. For Frankfurt, bullshit, is not the same as a lie. The difference between a liar and a bullshitter is that the liar, at least conceptually, cares about the truth, whereas the bullshitter does not. Further, because of this indifference to the truth, it is more appropriate to say that trolls are generators of phoniness. And this phoniness may, on occasion, resemble the truth in some way, or be nearer to a lie. In *Fall,* Stephenson brings all these elements together to create a situation that would appear to be the logical end of an internet in which such actors are allowed to pursue these nefarious ends without much in the way of market-driven or government mandated regulations interfering (DiResta 2024). Arguably, the advent of AI-generated images and of deepfakes have taken us past the childish antics of trolls and online trolling.

As the fake event of Moab demonstrates, algorithms and emerging technologies can be used to create new alternative realities. It can have those subject to their operations wrongly believing that the world is a certain way. Whereas algorithms were thought or hoped to have the purpose of helping users reduce noise in their lives, keeping them focused on the things that matter most to them, they have allowed users to create individualized infospheres, which in turn, have created specialized alternate realities. Such algorithmically generated information bubbles give rise to a condition known as epistemic opacity. Epistemic, or informational, opacity refers to the inability to trace how information is filtered or distorted through algorithmic systems. This opacity compromises an agent's ability to navigate information spaces confidently and effectively, making it harder to evaluate the credibility and origin of what one encounters as 'truth.'

Fall and Injustice in our Infospheres

This section extends Stephenson's critique of the Miasma by examining how emerging technologies, particularly deepfakes, intensify instability in our infospheres and contribute to testimonial injustice in both *Fall* and actual contemporary digital culture. Today's information ecosystem, much like the one depicted in *Fall*, is saturated with

Cyber Epistemic Spaces and Agency in Stephenson's *Fall*, continued

misinformation, disinformation, and what some have termed malinformation. Malinformation refers to information that is factually accurate but used strategically to mislead or cause harm (Hussain and Soomro, 2023). Although it may seem straightforward to distinguish truth from falsehood, identifying misinformation is often more difficult than it appears. Its function goes beyond spreading lies or rumors; it works by manipulating the very conditions of trust in information spaces.

Danish philosopher Søren Kierkegaard (1995) wrote that there are two ways to be deceived: "To be deceived into believing what is not true; or into not believing what is true" (p. 23). This dual danger becomes even more pressing in the age of AI-generated media, where deepfakes and synthetic content increasingly populate our digital environments. One of the clearest examples of this distortion is found in the use of deepfakes, which create increasingly convincing, but false digital content that blurs the line between real and fabricated experience. The term deepfake itself is a compound of "deep learning" and "fake" (Mirsky & Lee, 2020). These technologies leverage large language models (LLMs) and generative adversarial networks (GANs) to synthesize hyper-realistic audio and video images. Through iterative feedback loops between a generator and discriminator network, these models produce increasingly accurate simulations. Initially, deepfakes were used to alter real people's appearances or voices. Today, they can fabricate entirely fictional individuals and events (Dias et al., 2021). This capacity to generate realistic but false representations marks a significant shift in our infosphere.

One of the most troubling aspects of deepfakes is what Chesney and Citron (2019) call the liar's dividend: the leverage bad actors gain simply by suggesting something might be fake, whether or not it actually is fake. This tactic sows doubt and undermines the credibility of legitimate content. From a philosophical standpoint, this dynamic mirrors Kant's concern that the normalization of lying erodes our shared conceptual foundations. In such a world, the very conditions of belief are destabilized. In response to the collapse of informational trust, Stephenson imagines a system of editorial hierarchies in which only the privileged can afford to filter digital content effectively. After Pluto unleashes a swarm of autonomous bots and makes his tools open-source, the digital environment deteriorates. Most messages, feeds, and updates are generated by bots lacking any coherent intention. Information becomes detached from authorship, drifting in a sea of synthetic content. As Stephenson puts it: "Anything that made it past them—any rag that they pulled out of the garbage pile—began working its way up the editorial hierarchy…" (p. 200).

For those who can afford such editorial services, the digital noise is filtered out, preserving access to meaningful and

credible information. But for those who cannot, the information terrain is much more treacherous. As Floridi (2014) notes, our sense of self is increasingly shaped by the infospheres we inhabit. When access to trustworthy informational environments becomes a privilege, we risk creating a society in which only the wealthy are granted credibility. This is the essence of testimonial injustice. As Miranda Fricker (2007) outlines, testimonial injustice occurs when a speaker's credibility is unjustly deflated due to some form of prejudice, whether social, racial, economic, or epistemic. Those without access to digital curation tools may find their perspectives ignored or dismissed, not because they lack insight, but because the polluted nature of their epistemic environment renders them less trustworthy in the eyes of others. Credibility becomes correlated not with truthfulness or rationality, but with one's proximity to algorithmic filters and editorial privilege.

Moreover, Stephenson extends this injustice beyond life itself. In Bitworld, epistemic violence takes on a posthumous form. The degree to which a person's narrative is remembered, honored, or preserved depends on who owns their digital remains. Some, like Dodge, are able to author their afterlives. Others, whose memories are less meticulously maintained or whose data is fractured, may become incoherent shadows—misrepresented, fragmented, or erased. This introduces a new axis of epistemic marginalization: not only are voices excluded in life, but their legacies can be diminished in death.

In this way, Stephenson challenges us to confront how informational inequality operates across time and space. The problem is not simply that some people believe false things, but that entire classes of people are systematically denied credibility as knowers and as beings worth knowing, whether in the Miasma or in Bitworld.

Bitworld and the Ownership of Consciousness

While the Miasma critiques the decay of our present digital world, Bitworld offers a speculative vision of virtual reality where digital consciousness is shaped by access, memory, and control. Like many technological creations, it is conceived with noble intentions: to give continued existence to those whose bodies have failed or who have departed too soon—allowing them to remain in the world in a different form, a virtual digital form. Indeed, developments in preserving a person's consciousness, even digitally, allow individuals and those close to them to maintain a sense of connection and presence beyond physical death (Sherlock, 2013). Alongside these aspirational motives lies the more ego-driven pursuit of immortality: to live for the sake of living.

Before Bitworld is introduced, Dodge's tragic death takes place. His longtime friend, Corvallis (or C-Plus) contacts Dodge's lawyer, Stan Peterson, to

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inquire whether Dodge left instructions regarding the handling of his body. Peterson confirms that Dodge had indeed provided highly detailed instructions. Like Ted Williams, the bionically preserved real-world ballplayer (Fainaru-Wada, 2003), Dodge was to be cryogenically preserved. However, unlike Williams, only Dodge's head would be saved. According to Peterson, Ephrata Cryonics had adopted this policy to cut energy costs, prioritizing preservation of the brain as the presumed seat of identity. Corvallis is skeptical, and his attempts to alter these plans are complicated by the revelation that Ephrata Cryonics has been acquired by venture capitalist El Shephard.

The severing of heads, of course, was eventually deemed misguided. Shephard comes to embrace a revised philosophy of mind-body continuity: the idea that the two cannot be conceptually separated but are mutually constitutive. A defect in one impacts the other. For instance, a parasite in the stomach could affect brain function, and therefore, cognition and identity. According to El, this entanglement meant that those who entered Bitworld as disembodied heads would struggle to fully realize the platform's potential. Beings such as Dodge, who comes to be known as Egdod in the virtual world, would need to rediscover not only their surroundings but also what it means to have a body, and how embodiment conditions knowledge itself.

Before Egdod fully comes to life and adopts his moniker, he exists in a state of disembodied awareness—one shaped by what philosophers of mind refer to as qualia: brute feelings, images, and sensations. Stephenson describes this early state of consciousness as follows:

> He had been thus for no time at all, or for an infinite amount of time. There was, in his state, no difference between those. Ten minutes, ten years, ten centuries: all of those were equally wrong, since they all presupposed some way of telling time. The only thing that could give time meaning was change, and nothing was changing. These qualia were all internal to him. There was nothing outside of him whose changes he could observe and mark. Just the visual and auditory static that came and went with such randomness that he could read no pattern in it (p. 301).

Like a newly initialized program, Egdod's experience is initially unnerving. The world he inhabits is wholly unfamiliar. As El predicted, Egdod, having been uploaded from a severed head, has limited recall of embodied experience. Certain shapes and textures, such as grooves and creases, flicker into memory, but only faintly. Nonetheless, Egdod gradually regains agency. Drawing from the chaotic data around him, he develops the capacity to create. Echoing Genesis, Egdod begins with a single leaf, shaped from patterns and noise. From this, he learns to summon more. As his abilities grow, he haphazardly forms forests, parks, and eventually a road. The void becomes a world, slowly populating with familiar textures and structures. His memory flickers in and

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out, shaping not only his surroundings but his newly stabilized mind.

Egdod is not omnipotent. He cannot stop leaves from dying, nor is he alone for long. It is eventually revealed that other figures preceded him. Eventually, we learn that these figures were known as the Ephrata Eleven and the Most Favored Nine. Like Dodge, these were collections of memories and data extracted from severed heads. Yet they exhibited different abilities and behaviors, shaped by the conditions under which they entered Bitworld. Among these differences, Stephenson introduces a key ontological distinction: the morphology of digital beings is shaped by how much of their physical embodiment was preserved. El explains:

> Processes that entered Bitworld with full information about the bodies from which they were derived ended up living in digital simulacra of those bodies. Those that had come into the world from severed heads showed a wider range of morphologies. (p. 381)

This language of individuals as "processes" ought to be seen as a significant aspect of the novel. It marks a shift toward understanding personhood as informationally grounded. This is where our earlier discussion of Floridi's concept of inforgs resurfaces. Inforgs are informational organisms, or human beings embedded in and constituted by the infosphere (Floridi, 2014). In a world where persons are shaped by algorithmic flows, it is a short step to viewing them as processes, as entities to be configured, modified, or suspended.

Yet this informational ontology comes at a cost. While Dodge's creativity enables him to thrive in Bitworld, others do not fare as well. Those who lack a strong embodied memory, or who are uploaded from incomplete data, struggle to form a coherent sense of self. When Pluto, the programmer who previously unleashed bots on the Miasma, dies and enters Bitworld, he initially appears as a shapeless form. After Egdod invites him to remain within his newly constructed domain, Pluto's digital self stabilizes rapidly, reportedly faster than any other.

Once again, Bitworld represents a programmable metaphysics in which Egdod's memory-driven constructions mimic how virtual reality enables users to instantiate meaning and order within designed spaces. Stephenson's fiction mimics real-world trends. In recent years, both users and developers have become fascinated with building persistent virtual environments, with platforms like Second Life as a first step. With the emergence of VR technologies, glasses, and neural interfaces, digital afterlife services have begun to take shape. While once referring merely to a person's lingering social media presence, the phrase digital afterlife now refers to an intentional effort to preserve or extend one's consciousness online. In this sense, the controversial thesis of Clark and Chalmers (1998)—that minds can extend beyond the body via external artifacts—gains

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new traction. People can now digitally extend themselves. These selves, in some cases, may outlive the corporeal ones.

This raises a pressing ethical question: who owns these selves? Stephenson does not leave this unexamined. We learn that El Shephard along with Sophia (Dodge's niece), and Zula (a relative and technologist) each hold rights to different sets of posthumous data, privatized according to the deceased's final wishes. Ownership determines who can maintain a stable presence in Bitworld. Just as wealthy individuals in the Miasma could afford private editors to filter what they saw, only a few can ensure the stability and fidelity of their digital selves.

Posthumous identity is no longer a matter of memory or legacy. It is a managed asset, subject to contracts, code, and control. Contemporary users routinely grant social platforms sweeping rights over their personal data. That data is bundled, commodified, and sold. The digital era has destabilized already fragile notions of privacy, authorship, and even death itself. Stephenson challenges readers to reconsider what it means to be an embodied, knowing agent in a virtual epoch. Digital immortality offers a secular mirror of religious afterlives, as Graham et al. (2013) suggest. But like the theological models it echoes, the algorithmic self is neither a perfect replica of the person nor an entirely new one. It is a curated, datafied persona embedded in architectures of power and control.

Conclusion

Stephenson's *Fall* highlights the deep challenges emerging from today's digital infrastructures and our shared informational spaces. From the manipulated spaces of the Miasma to the curated afterlives in Bitworld, the novel dramatizes how digital systems shape what can be known, who is regarded as a knower, and whose stories endure. Informational inequality is not presented as an accidental outcome of technological change but as a structural feature that benefits the privileged. Stephenson's work is more than speculative fiction. The novel can also be seen as a philosophical reflection that invites readers to confront the ethical and informational dimensions of digital life. If we are to avoid the futures he envisions, we must examine not only our technologies but also the power structures and values embedded within them. ■

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Language and Autonomy in Neal Stephenson's *Snow Crash*

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Abstract: Neal Stephenson's *Snow Crash* captures the joy and excitement of many new developments of the technologized world: anonymity within virtual worlds, rapid production, instant consumer satisfaction, and the accessibility of massive amounts of information. The novel tells the story of hackers who subvert the mind control schemes of an evangelical media mogul through their skills with writing computer code and their belief that free will is still essential to humanity. The battle for control in literature is nothing new, but this version pits Gnostic exploration of self-deification against Lacan's Big Other. The synthesis of these mystical and psychological approaches makes this struggle unique. In *Snow Crash,* virtual reality and the Lacan's Symbolic order come crashing together so that in order to save those in the real world, the protagonists must actually stop the spread of information and defeat a virus in the virtual world. Stephenson ends the novel with two figures whose code changes reality, one virtual and one physical—Hiro and Juanita. While Hiro can design and manipulate the Metaverse, Juanita possesses the power to reprogram people in reality. Like hackers, their skill and knowledge enable them to act as watchdogs for any other threat posed to free will. If a person can possess this ability in the past, then they should be on guard to manage the information collected in the present to resist the influence on free will in the future.

Keywords: Stephenson, Lacan, Žižek, Gnosticism, free will, hacking, postmodernism, post-cyberpunk

Snow Crash, Neal Stephenson's 1992 post-cyberpunk novel, captures the joy and excitement of many technological developments: anonymity within virtual worlds, rapid production, instant consumer satisfaction, and the accessibility of massive amounts of information. The novel tells the story of hackers who subvert the mind control schemes of an evangelical media mogul through their skills with writing computer code and their belief that free will is still essential to humanity. *Snow Crash* imagines a world whose inhabitants begin as helpless automata moving about in a cage constructed of words and symbols, both online and in the real world, but end as agents of their own making, with control of their own language and their free will. In the novel, control appears in many forms: manipulation of technology, of history, of people, and most importantly, of language. I argue that *Snow Crash* illustrates a view of language that, in the end, enables and enlightens rather than blinds and controls.

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Few today would argue against the persuasive potential of words, spoken or written. Throughout human history, language has indicated with whom we align ourselves, and allowed expression of our philosophical, political, and religious beliefs. We can see this relationship very clearly today in discussions of nationalism, patriotism, and partisanship in America. All of these positions have been fashioned into ideologies that include or exclude based on the accepted vocabulary of each. In other words, all of these ideologies depend upon rhetoric to persuade, instruct, and propagate. This is a really good explanation of Jacques Lacan's description of the Big Other. While people use these ideologies to influence others, these ideologies begin to take on an unconscious life of their own, subjecting us to social control, beyond the power of any one person. Stephenson explores the notion of language as programming and imagines the first act of social control in the ancient and lost language of Sumer. According to the book, the language of Sumer was actually a string of syllables rather than formal words. These syllables sound like babble to the modern ear, each representing memes, or *me.* Each me instructs the user in the skill for which it was designed. There were *"mes"* for baking bread, working with stone, being a mother, and so on. Without these *mes,* the culture of Sumer would not have survived or flourished for thousands of years. In this book, Stephenson circles back to the present and includes computer code as a kind of ideological rhetoric that can be used to control behavior. Carl Boehm (2004) notes, "the intersection of computer code and human language" highlights "the similarities between the two, in which human language functions to replicate an idea or object in the same way virtual reality replicated the physical world" (pp. 398–9). In Stephenson's text, these codes are both wet and dry, biological and linguistic respectively; they impose order on humans as well as virtual avatars and the world these avatars inhabit. This comparison appears several times in the novel. Hiro, the protagonist of the novel, even states, "all information looks like noise until you break the code" (Stephenson, 1992, p. 74). When Hiro first learns of Snow Crash, he asks, "is it a virus, a drug, or a religion?" Juanita, a newly converted Christian and former hacker, answers that it is all three. (Stephenson, 1992, p. 200).

If language and computer code both operate as programming for humans, then the most obvious choice for a hero in a novel about human programming would be a hacker. According to Aaron Kreider (1999), a web developer and open-source activist, when people think of hacking, they think of crackers—those using their skills with computers to cause mischief, spread chaos, or steal money and/or identities from others. Hacking did not begin as a means to terrorize the nations of the world or as a method of stealing money or power from others; instead, hacking was an avenue for those who love puzzles and challenges. Kreider outlined

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the Hacker Code in his online publication, "Ambiguous definitions of hacker: Conflicting discourses and their impact upon the possibilities of resistance":

1. Access to computers—and anything which might teach you something about the way the world works—should be unlimited and total. Always yield to the Hands-On imperative!
2. All information should be free.
3. Mistrust authority—promote decentralization.
4. Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race, or position.
5. You can create art and beauty on a computer.
6. Computers can change your life for the better.

In the earliest days, hackers broke into others' systems for the challenge. There was a joy and a thrill in the relatively harmless illegality of hacking as well as an interest in freeing information and unlocking technology for the masses. Slavoj Žižek (1999) observes in *The Ticklish Subject* that stories of these hackers inevitably bought into the idea that there was always something larger at work in the hacking:

> ...from New Age pseudo-scientific attempts to use computer technology to crack some sort of fundamental code which gives access to the future destiny of humanity (the Bible code, the code contained in the Egyptian pyramids...) up to the paradigmatic scene of cyberspace thrillers in which the hero ..., hunched over a computer, frantically works against time to overcome the obstacle of "Access Denied" and gain access to the ultra-secret information (say, about the workings of a secret government agency involved in plot against freedom and democracy, or some equally severe crime) (p. 364).

Žižek, then, punctuates these examples by suggesting that they might all be read as "a desperate attempt to reassert the big Other's existence, that is, to posit some secret Code or Order that bears witness to the presence of some Agent which actually pulls the strings of our chaotic life" (1999, p. 364). His insistence that hacking reveals the big Other's hidden presence in humanity's conception of itself is echoed and modified by Erik Davis (2004) in *Techgnosis: Myth, Magic and Mysticism in the Age of Information.* Davis notes, "The moment we invent a significant new device for communication—talking drums, papyrus scrolls, printed books, crystal sets, computers, pagers—we partially reconstruct the self and its world, creating new opportunities (and new traps) for thought, perception, and social experience" (Davis, 2004, p. 7). With a faster-paced, better-connected society comes the obvious concern about quality of life and physical isolation. If people are hooking up and hacking into each other's lives via the personal computer or cellphones, then the issues

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of identity, control of information, and socio-economic power become central issues in the late 20th and 21st centuries. Every day, access to the Internet, and more recently social media platforms like Instagram, X, Facebook, and TikTok, allow us to engage in cultural commentary about any number of issues. While this engagement is not the same as hacking, these posts reflect the spirit of Kreider's first three precepts: access, free information, and decentralization. This last guideline, decentralization or mistrust, makes this moment both exciting and frightening. As we allow others to hack into our lives by following us, watching our stories, commenting on our rhetoric, we appear to be in control of our culture. Unfortunately, we, like the characters in the novel, are instead at the mercy of those in control of the platforms—by way of the algorithm. In this moment, literature can interrogate issues of control and power, but in an increasingly technologized world the metaphors in *Snow Crash* shift to match the new advancements in communication. Stephenson's post-cyberpunk novel sets up a dialectic, or a debate, between Gnostic exploration of self-deification and the Žižekian postmodern Big Other. The synthesis of these mystical and psychological approaches makes the articulation of this struggle unique. In *Snow Crash,* virtual reality and the Symbolic order come crashing together so that in order to save those in the real world, the protagonist must actually stop the spread of information and defeat the virus in the virtual world.

Snow Crash might be read effectively as a reaction to the notion that "the communicational network we use and the genetic language we are made of will be owned and controlled by corporations (or even a corporation) out of public control" (Žižek, 1999, p. 357). Stephenson's novel has attracted much critical attention since its release. N. Katherine Hayles (1999) discusses the novel in terms of its rendering of posthumanist ideals, William Haney (2006) ruminates on Stephenson's use of neurology and mythology, and Nicholas M. Kelly (2018) likens Stephenson's use of coding and Graphic User Interfaces (GUIs) to magic, drawing on the visual elements of coding and the metaverse to mystify those who experience both the virtual and real words. Sabine Heuser (2003) argues that the Metaverse within the novel is but one more Interzone among a list of many used by postmodern authors to illustrate the intersecting social and technological realities in today's world (p. 47). Lisa Swanstrom (2010) and Mortiz Ingwersen (2021) focus their attention on communication networks; Swanstrom reflects on the various subjectivities represented within the novel and use of commandeered networks to forward their agendas, while Ingwersen warns of the breakdown of communication networks in the face of epidemics of disease. Jonathan Lewis (2017) suggests cognitive agency by the end of the novel points to Fredric Jameson's arguments

for "constructive and optimistic" anti-utopias. Finally, like Swanstrom, Ingwersen, and Hayles, Kelly Wisecup (2008) argues that the text "ruptures the narratives of evolution and epidemiology that create borders and communities, necessitating a new discourse to describe…posthumanity" (p. 875).

Language as Coding

These are all useful theoretical positions that have informed this argument that the novel uses language to free society from the current Big Other. In *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics,* Hayles (1999) addresses the issue of humans and machines as part of the same system. Once the human interacts with the machine, she argues, the human becomes posthuman. It is now interfaced with the machine so that one must in some way depend on the other to function properly. She claims that we are becoming more like machines in our metaphorical expressions of ourselves because the machine is now so integral to the operations of most systems in our society. Therefore, it is not surprising that she turns her attention to *Snow Crash* as a metaphorical rendering of social and symbolic architecture. She observes that Stephenson "reasons that there must exist in humans a basic programming level, comparable to machine code in computers…*Snow Crash* depicts the violent stripping away of consciousness when humans crash back down to the basic level" (p. 272). Explicitly equating consciousness with various programs running automatically, Hayles offers as a useful narrative example Stephenson's metaphoric depictions of people who can be hacked and controlled depending on the skills of the hackers. These skills include reading and writing computer code as well as the ability to understand historical and linguistic aspects of Sumer, Sumerian artifacts, and the Nag Hammadi codices—Gnostic and apocryphal Gospels. This information is necessary to bridge the subject gap between technology and the history of language development. Stephenson uses language development to explain how cultures have evolved and flourished while exposing a deep structural connection between language, knowledge, and action. Philosophers, psychologists, and linguists, since the formation of each discipline, have explored these relationships because they understand that what is known is also mediated by what can be expressed through language. Hayles explains the connection between language and action using Chomskian terminology. She argues, "in performative utterances *saying is doing* because the action performed is symbolic in nature and does not require physical action in the world, at the basic level of computation *doing is saying* because physical actions also have a symbolic dimension that corresponds directly with computation" (Hayles, 1999, p. 275).

In *Snow Crash,* the Sumerian language is explained as originally responsible for transmitting instructions and

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programming people with certain necessary skills which enabled those people to form civilizations. Because language is the method of transmitting information, in this description, rather than the voice of consciousness, Stephenson is able to treat humans as machines that can be wiped clean and reprogrammed to satisfy the needs of the programmer. Stephenson uses the term "Logos" to explain control through language because the word itself is connected to historical and theological study. According to the Judeo-Christian tradition, just as God created everything with the Logos (the Word) by metaphorically executing the first command in His operating system of nature, any person would be able to access the operating system of every human within earshot by understanding a long-lost Logos and using it to control the minds of others.

Logos, for Stephenson, is a tool for constructing and controlling worlds. William Haney (2006), in *Cyberculture, Cyborgs, and Science Fiction: Consciousness and the Posthuman,* however, argues, "*Snow Crash* suggests that there is no access to Logos today except through silence"—that Logos exists in the space between "name and form, sound and meaning" (pp. 120–1). This position indicates a focus on the ephemeral quality of language, but Stephenson is nothing if not concrete in his use of empowering language. To insist that his use is anything metaphysical is to misconstrue his means and his message. In the novel, people are affected by language through deep structures in their brain that dictate their ability to perform tasks and also through computer code that determines their environment and the avatars' identities. When Hiro and Juanita are surrounded by a mind-controlled mob, Hiro asks if she can paralyze them with Logos. She says, "Yes, ...but then they'd die" (p. 431). Instead of killing them with a word, she reads the nam-shub of Enki to the crowd, so that they become inoculated from further mind control. In both the physical and the real world of the text, language is depicted as the most powerful tool for change and/or domination because people can be reprogrammed either by language or code. However, Haney disagrees with this view of language: "The nature of language in humans differs radically from that in computers, even though both seem to include a performative level in which saying is doing" (p. 117). Instead, he argues that there is, and must be, a spiritual aspect to the language and consciousness of humans. We are not organic automata that simply shuffle through the motions of life and accept whatever memes come our way without the ability to reject them and make decisions for ourselves. Haney argues: "Snow crash as a virus is designed specifically to subvert the self and all of its characteristics in order to render humans as malleable as non-conscious machines to benefit the elite at the expense of the masses" (p. 126). Haney concludes that the novel epitomizes all that postmodern society

fears but is resigned to—institutional control, oppression, loss of free will, and zombification. The ultimate nightmare then becomes the destruction of humanity "by simulating an equation between humans and computers, the snow crash infection entails a loss of humanity, making humans even more like computers" (p. 130). Haney sees more in humans than machines that run according to their programming since their automation signals not only a link to machines, but, more specifically, a loss of what has traditionally made them more than machine—their ability to choose. Nicholas M. Kelly (2018) also sees the connection between language and control as less threatening and more difficult to manipulate. In the article "Works like Magic: Metaphor, Meaning, and GUI in *Snow Crash,*" he argues, "Communal metaphors and metaphor-based language underpin culture and communication. How human beings, perhaps arbitrarily, make these connections to form meaning can often seem inscrutable, as if they were occurring in a black box—"like magic" (p. 86). If language relies on metaphor and people interpret metaphor differently, then this comparison to coding and programming does not quite work. This is certainly true in individual cases, but this might be less true in mass communication.

The Trouble with Memes

These deep structures function similarly to the way in which, in Lacanian theory, the Symbolic order provides the framework for the Imaginary order. In other words, by understanding how people use language to orient themselves to each other and the physical world surrounding them, a person can use this knowledge, like a skilled rhetorician, to influence the thoughts and actions, and perhaps more insidiously, the ideology of the intended audience. The view of language as the infrastructure of the Imaginary order is certainly nothing new. It has even been given a scientific, rational name. In his seminal 1976 work *The Selfish Gene,* Richard Dawkins compared cultural data to genetic data in order to describe how certain social behaviors might be inherited or passed down through centuries of human development. Likewise, Lacan observes "language is a gift as dangerous to humanity as the horse was to the Trojans: it offers itself to our use free of charge, but once we accept it, it colonizes us" (Žižek, 1999, pp. 11–12). In order to understand what Stephenson fictionalizes in his novel, a background of memetics, as it is now called, is needed. *Snow Crash* describes a world that is both controlled by technology and infected by cultural viruses. These viruses attack the memes by hacking through the meta-linguistic framework, or codes, underpinning the framework of the brain in order to bring about a change in their cultural system. These codes are rules designed to enforce a system of order.

Susan Blackmore (2000), in her book *The Meme Machine,* extends Dawkins' metaphor beyond the suggestion that memes exist and that they act in similar ways to genes. She argues

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rather pragmatically, "Language would have allowed our ancestors to acquire information and pass it on far faster than biological evolution could achieve, giving them a decisive advantage in competition with other species" (p. 95). She explains this physical phenomenon as a result of biological determinism. While biological determinism is at odds with Lacanian theory, Stephenson uses Dawkins' suggestion of the meme to inform his plot and make it scientifically as well as psychologically engaging. Blackmore extends Dawkins' metaphor by positing an evolutionary origin of memes. She suggests that out of necessity, our ancestors evolved into speech, leaving the physically incapable to die out. She claims that a number of neurological and physical changes had to occur, such as changes to the construction of the neck, mouth and throat. This change could have happened for any number of reasons; but more significantly, those with these changes would have had another skill set that placed them above those who did not possess these differences. Blackmore explains the alteration and its influence on speech: "people will both preferentially copy and preferentially mate with the people with the best memes—in this case the best language. These people then pass on genetically whatever it was about their brains that made them good at copying these particularly successful sounds" (p. 104). Blackmore makes a reasoned argument for a comparison of memes and genes, focusing on their common requirements for survival. Both are essentially bound by the same requirements of "fidelity, fecundity, and longevity" (p. 104). Certainly, these can be noted in cultural memes. Beliefs, in order to continue to have a presence in society, must not be watered down, must have a solid group who still believe them, and must have historical precedents.

However, Kate Distin (2005) disagrees with Blackmore's comparison. In her book, *The Selfish Meme,* Distin contends, "In contrast to genes—which, in conjunction with an appropriate environment, generate survival machines that may be 'hijacked' by biological viruses—memes do not create the replicative mechanisms" (p. 76). In other words, Distin believes that memes must depend on the host's ability to spread them to others. They cannot grow in isolation; they must be spread. By looking at memes as viruses instead of genes, Distin turns the discussion from a neutral biological metaphor to one that is encoded as negative or diabolical. Distin argues that memes are not self-perpetuating; rather, people infected with these ideas pass them on, intentionally or unintentionally. Memes cannot pass themselves on of their own accord.

These positions are echoes of an argument made by William Burroughs (1970) in his article "The Electronic Revolution." In this article, Burroughs argues that a virus passed down to following generations causes alteration to the inner throat, and because of the new skill, enabled

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by illness, the host never deems the alteration as negative. He explains,

> We now have a new virus that can be communicated and indeed the subject may be desperate to communicate this thing that is bursting inside him. He is heavy with the load. Could this load be good and beautiful? Is it possible to create a virus that will communicate calm and sweet reasonableness? A virus must parasitize a host in order to survive. (Burroughs, 1970)

Burroughs notes this same philosophy in the writings and subsequent philosophy of L. Ron Hubbard. Burroughs states, "Hubbard bases the power he attributes to words on his theory of engrams. An engram is defined as word, sound, image recorded by the subject in a period of pain and unconsciousness. Some of his material may be reassuring: 'I think he's going to be alright.' Reassuring material is an ally engram. Ally engrams, according to Mr. Hubbard, are just as bad as hostile pain engrams" (Burroughs, 1970). These engrams, ally or not, manipulate a person's mood and direct a person to act in a certain way. It is difficult to believe that Stephenson was not influenced by all of these intersections when researching the topic of memes. While neither Hubbard nor Burroughs are considered experts in the field (far from it), Ruth Garrett Millikan's (2001) research supports these theories:

> Language enters as just one among the many other media by which information about the disposition, among other such things in the environment, of an empirical object, kind, stuff, or property can manifest itself to the senses...There are conditions under which the sentences that a person hears will vary systematically according to the dispositions of things in the world that originated them (p. 165).

Stephenson appears to be informed by these arguments. The author legitimizes the concept of the meme and mythologizes it by attributing it to the ancient and fallen cradle of civilization, Sumer.

Past and Present Technologies

In *Snow Crash,* two groups that control through language are presented—one in the ancient past and one in the technological present. These are the cult of Asherah and the L. Bob Rife–funded Reverend Wayne's Pearly Gates evangelical movement, which is a thinly veiled caricature of L. Ron Hubbard's formulation of Scientology. The ancient Sumerian cult of Asherah spread a sexually transmitted viral infection that "was able to transmute itself from a biologically transmitted string of DNA to a set of behaviors" (Stephenson, 1992, p. 230). Enki, Asherah's lover, saw her as a threat to Sumer because she knew how to manipulate *me*—deep structural and unalterable rules for behavior—to suit her desires and her need to be worshipped. Therefore, Enki spread an anti-virus called the Nam-Shub of Enki that wiped the ability to speak Sumerian from everyone's

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mind. Enki's action explains the Tower of Babel story. However, Asherah was not defeated entirely. Her followers spread her biological version of *me* through sexual contact and breast milk. To combat the spread of Asherah's control after Babel, the Hebrew Deuteronomists used Asherah's relationship to Eve to introduce the binary concept of good and evil in order to advocate for the need for more severe laws. The Deuteronomists effectively outlawed the worship of Asherah, restricted the sexual rites involved in her worship, and reinforced their hold over the religious and social mores of the Hebrews with a meta-virus of their own embedded within the Torah. Thanks to the Deuteronomists, Judaism "was much less susceptible to viral infection because it was based on fixed, written records. This was the reason for the veneration of the Torah and the exacting care used when making new copies of it—informational hygiene" (Stephenson, 1992, p. 230). In the novel's present, Reverend Wayne's Pearly Gates franchise, led by L. Bob Rife, finds a way to reintroduce the Sumerian language, a language that accesses the deep centers of the brainstem and, with it, *me* would act as a neurolinguistic virus capable of reprogramming those infected with it, just as Asherah had attempted with her cult prostitutes. Both groups—the cult of Asherah and those under the employ of L. Bob Rife—use tools that tap into deep structures in the brain that control our actions, skills, beliefs, and consciousness.

Stephenson imagines a world with a lost mythology that can be used to revise subjective reality by manipulating the transmission, understanding, and acceptance of information. In *Virtual Geographies: Cyberpunk at the Intersection of the Postmodern and Science Fiction,* Sabine Heuser (2003) celebrates Stephenson's world building initiative: "He adopts computing terms like BIOS, virus, daemon, port, or scrolling, and re-inscribes them with new meaning, thus reviving their metaphorical roots. Computer jargon abounds with catachreses, constantly naming new objects into existence" (p. 173). By adopting these technological metaphors, Stephenson utilizes Samuel Delany's paraspaces (a term he used in a 1987 interview for the *Science Fiction Eye*) to describe those places particular to science fiction and postmodern literature where metaphor becomes something literal. In "Capsules and Nodes and Ruptures and Flows: Circulating Subjectivity in Neal Stephenson's *Snow Crash,*" Lisa Swanstrom (2010) observes the Metaverse "requires its users to be surrounded by technological apparatus in order to participate in its spaces, thus perpetuating the logic of encapsulation, the Metaverse permits its participants to present themselves to other users in any form they desire" (p. 65). These participants both submit to and control some aspects of these spaces. Much like conversation, we both accept and create language in order to communicate, however imperfectly, ideas with one another. The Metaverse,

and the paraspaces that came before it, seem to be working in the same fashion. As space or language lose meaning over time, we can imbue either of them with new meaning through reimagining the metaphors of the past. Heuser claims that Stephenson "re-invests the dead metaphor of the computer virus with new meaning, simply by reversing the direction of the semantic exchange from technology to biology. The more often a figurative meaning is used, the closer it comes to being accepted as literalized common sense" (Heuser, 2003, p. 177). By consciously utilizing literalized metaphors, Stephenson draws attention to the fact that a "multilayered concept of the virus is the novel's central metaphor. This plague to both humans and computers throws everything into question: language (p. 371), ideas (p. 373), ideologies (p. 327), religions (p. 214) all become prey to the chaos" (p. 175). The author interrogates the concerns about how technology shapes society. The metaphor of the computer virus then becomes simultaneously acceptable as a technological, biological, and social malady.

Heuser's approach to the novel is aligned with Carl Boehm's argument that Stephenson utilizes the deep structure and theoretical Universal Grammar of our neural architecture to first threaten and finally liberate us from outside control. Boehm (2004) notes that Hiro

> understands the disorder of the physical world, an ironically shadowy world that is a reflection of the ideal world he has created in the Metaverse, so he reverse engineers a utopia based on justice by understanding the imperfections of his "real" world and thus encoding a truth in the virtual realm based on those imperfections he finds in the physical world. (p. 398)

In other words, Hiro intends to vindicate the natural world in the novel by constructing a better world in the Metaverse. He designs trap doors that deal with trash and other problems that arise there. He is able to control the Metaverse in a way that he is unable to do in the natural world: "By controlling the virtual realm, a programmer can create and maintain a utopia by simply rewriting software in response to any problem that may arise in an attempt to establish justice" (p. 398). Boehm argues that Hiro, Juanita, and Y.T. desire justice and free will to remain intact so they fight against those forces, Rife and Raven—much like strife and death—so that humanity will remain free in the real and virtual worlds. Hiro is constantly building more escape routes as problems in the Metaverse arise. And it is this ability that is the key to symbolic constructions. These symbolic constructions can inhibit and control us if we allow them to, or if we forget we have control over them. Moreover, if we constantly update and modify these symbols, then we retain our own volition and remain free.

As any system of symbols or codes would suggest, a change in the rules enforces a new, updated order under the control of those who write the code. Hackers, like Kreider, understood this better

than anyone at the dawn of information technology. They celebrated the potential control they could exert over their lives now that so much information was being archived and made into bits of data in the burgeoning datasphere that would soon become known as cyberspace, or for this novel, the Metaverse. But hacking the brainstem simultaneously makes the mysterious scientific, the ancient modern, and the connected fragmented. Erik Davis (2004) has made these connections in his personal research project. Davis believes, "Today, there is so much pressure on information—the word, the concept, the stuff itself—that it crackles with energy, drawing to itself mythologies, metaphysics, hints of arcane magic" (p. 11). He argues that despite our scientific and technological progress, many still need to view the world as imbued with some kind of divine or spiritual spark represented by histories or religions or mythologies. Stephenson taps into the mystical desire, the need for a metanarrative beyond our understanding, as the crux of his novel. In many ways, Logos is the re-introduction of the modernist metanarrative. Stephenson re-introduces an overarching Truth or totalizing framework. By using the *me* of Enki, which Stephenson describes as "rules or principles that control the operation of society, like a code of laws, but on a more fundamental level," he makes a direct comparison to Dawkins' meme (Stephenson, 1992, p. 251). But the comparison doesn't stop there; Daniel Grassian notes Stephenson's use of the meme is similar to Blackmore and Dawkins' version: "One possibility is definitely an informational Darwinism, in which the informational adept are the ones who ultimately dominate and evolve, while the others are left by the wayside" (Grassian, 2001, p. 265). But Grassian also agrees with Burroughs, Hubbard, and Distin's view of memes: "not only is language a kind of virus, but so is virtually all information. He empowers texts and images with a power independent from that of human… The reader is not necessarily the one who dominates the text; rather, the text can dominate the reader" (p. 262). Stephenson offers free will as humanity's saving grace, but he uses it without making it the solution to the problems of the world. Instead, it is sufficient that a small band of heroes, similar to the tradition of white hat hackers, can tap into the organizing structure of humanity. By defeating Rife, these heroes acknowledge the existence and power of the metanarrative and recast it as they choose—exercising this power only when presented with a challenge, similar to those white hat hackers from the late seventies and early eighties.

The Great Synthesis

The synthesis of literary theory, Lacanian psychoanalytic theory, and hacker culture all find an odd, but surprisingly well-suited, proving ground in Gnosticism. Perhaps as representative of the metanarrative, Gnostic thought allows for all of these theories to work with

and for each other under one single mysterious canopy. Erik Davis (2004) explains that from the moment humans began tracking the moon's cycles by cutting lines into bones, the process of encoding thought and experience into a vehicle of expression influenced the changing nature of the self. Davis concludes that, "Information technology tweaks our perceptions, communicates our picture of the world to one another, and constructs remarkable and sometimes insidious forms of control over the cultural stories that shape our sense of the world" (pp. 6–7). Stephenson recalls Gnostic thought from the buried Dead Sea scrolls and weaves it into his criticism of society. Stephenson's novel raises concern for the loss of free will in a society that is becoming increasingly dependent on technology. The correlation to the present is obvious. The advent of the Internet, then personal cellphones, then social media, and then AI, has led to people in the 21st century feeling simultaneously in command of their lives and overwhelmed by the technologies that enable this command. Consider the monstrous nature of the password to those who do not have the skills of hackers. Forgetting a password that provides access to one's digital identity access to all manner of control can break a person. Access exists to all manner of data and services, but this access compounds, crosses other services, and eventually overwhelms the common 21st century digital native. As society adopts more automated technology, people release control over many operations within that society, either because they are overwhelmed or too trusting. This relaxation directly relates to how people see themselves as agents within society. Technology seems to allow more control over certain parts of their lives, but it can also distance them from their lives, the people they know, and the work they do, ultimately resulting in a crisis of the self. Instead of making his novel a blatant warning against this crisis, Stephenson places the origin of this threat centuries in the past, suggesting that the crisis has existed throughout history and has now returned via technology to threaten our agency once again. As Jonathan Lewis (2017) writes in his article, "Confronting dystopia: The power of cognition in Neal Stephenson's *Snow Crash* and *The Diamond Age,*" "Stephenson certainly does not suggest that innovation alone can be our panacea, but he does put forward that throughout his work that cognition—a term I will use here to encompass human and computer languages, creative thought and work, consciousness and art—just might" (p. 47). For example, according to the novel, the Sumerian language was eventually erased because Enki realized that a language used for building a civilization could also be used to enslave that nation, so he went about dismantling language to ensure the freedom and the free will of the people. Likewise, Hiro and Juanita, responding to the technological advances in communication and data collection, must

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reassert agency to combat the buried threat posed by a controlling Big Other.

In her article, "'Let's Get Semiotic': Recoding the Self in Neal Stephenson's *Snow Crash,*" Kelly Wisecup (2008) observes that "[t]wo complementary narratives collude to construct humans…: that of disease and that of evolution" (p. 855). L. Bob Rife has "heard the signal" and wants to use the information that he has stolen from Dr. Emmanuel Lagos (Logos) to enslave humanity, making himself a god among men—also representative of the Gnostic belief of man's deification. According to the Librarian (a program available in the Metaverse similar to a personified search engine), Lagos is a researcher at the Library of Congress who studied everything in an attempt to find previously unnoticed connections. He is also a self-taught programmer who designed the Librarian. Lagos is a compiler and synthesizer as well as a creator. He appears in the text as a gargoyle, a person continuously tapped into the Metaverse and constantly privy to all of its information. It is through Lagos (Logos) that characters are exposed to the peculiarities of the ancient language of Sumer and the mythologized memes that were transmitted through it. Wisecup argues, "When Juanita makes herself immune to Snow Crash by prolonged contact with it, she embodies an ironic subjectivity that subverts the attempts to control and define humanity" (p. 855). In *Snow Crash,* the individual survives the reprogramming of the unified and evolves. Thus, the novel, through its narrative deployment of both wet and dry encoding, simultaneously makes a connection between all living things, and quickly sends them scattering as the individual resists being reprogrammed through the power enabled by Logos to become something posthuman.

Looking at the two worlds in *Snow Crash,* it appears that Stephenson admires individuality and creativity in computer hackers and considers these to be important to the differentiation of humans from the natural world. By contrast, the posthuman Infocalypse serves to "undermine the uniqueness of human nature" (Haney, 2006, p. 127). The commentary on uniqueness, or as Žižek would argue, the authenticity, of human experience, plays out in the articulation of the Metaverse. Ironically, according to Žižek, a virtual world, like the Metaverse, "provides reality itself divested of its substance, of the resisting hard kernel of the Real—in the same way that decaffeinated coffee smells and tastes like real coffee without being the real thing, Virtual Reality is experienced as reality without being so" (Žižek, 1999, p. 38). However, feminist critic Barbara Browning (1996) argues, "*Snow Crash* refuses to isolate the Metaverse as metaphor, as a hypothetical world opposed to a real one" (p. 50). As Hiro stands for the man of the future, the avatars represent Hiro in the Metaverse. These avatars can be generic or specialized, and they are designed to travel within a landscape that defies traditional boundaries and denies the laws

of physics. One can appear in pixilated monochrome colors or high-definition vibrancy. One can drive hundreds of miles per hour forever without reaching a boundary. One can be invisible and float above the heads of other avatars or walk on the street sampling the millions of wares available to anyone.

With all of these options, it is easy to forget that there must still be rules that control the composition of the avatars and their environment. The neurolinguistic pathways that Sumerian language works across are similar to the ways in which programming languages must run an operating system—there must always be rules. For example, "When Hiro wrote the Black Sun's sword-fighting algorithms, code that was later picked up and adopted by the entire Metaverse—he discovered that there was no good way to handle the aftermath…So (sic) Hiro had to kludge something together, in order that the Metaverse would not, over time, become littered with inert, dismembered avatars that never decayed" (Stephenson, 1992, p. 102). Like the real world in the novel, the Metaverse must be adapted to deal with real problems—like trash. And with this trash comes the difficulty of all operating systems. Who controls it? Who has agency? Erik Davis (2004) contends, "Gnostic myth anticipates the more extreme dreams of today's mechanistic mutants and cyberspace cowboys, especially their libertarian drive toward freedom and self-divination, and their dualistic rejection of matter for the incorporeal possibilities of mind" (p. 97). Self-empowerment sits at the center of the problem of the postmodern Big Other. We desire freedom idealized and without strings attached, but this kind of freedom often scares us. Freedom to be who we are and say what we want is overwhelming, so we have devised ways of relating to the world that obscures any true understanding or communication. The deception is of our own design, and it is through language that we are most deceived. However, embedded within language are desires to be free from misdirection; hopes of pure connection; and yearnings for personal freedom. Stephenson equates this deception and the complicity of language with a virus. The word "virus" encapsulates all the fear and concern for a loss of control both in the virtual world of computers as well as the physical world.

Stephenson's distrust of the Imaginary order symbolized by Dawkins' memes and the assimilated Sumerian civilization is finally exorcized by his hero's programming savvy and his struggle for individuation:

> Hiro recognizes that language of any sort is only a signifying tool by which one conveys ideas to another, and he realizes that his process is flawed because language itself is a shadowy replication of truth. Hiro sees past the replication of language into the true process of communication. (Boehm, 2004, p. 400)

He finally understands the essence of language as code, subverts the Big

Language and Autonomy in Neal Stephenson's *Snow Crash*, continued

Other, and constructs a new Other that will not bind all who dwell within it. He enables others to act as their own agents of change and control. It is, in fact, an evolution of consciousness that produces the ability to withstand the preset Symbolic order. This preset order, or deep structural programming, signals the postmodern cynicism and resultant paranoia or ennui. Just as Hiro's Snow Scan antivirus provides a vaccine for the digital Snow Crash, the nam-shub of Enki, the literal speech that acts, the Logos, inoculates those who would come in contact with the physical virus. But it isn't enough to imagine a vaccine. Stephenson ends the novel with two figures whose code changes reality, either virtual or physical—Hiro and Juanita. While Hiro is capable of designing and manipulating the Metaverse, Juanita possesses the power to reprogram people in reality. Juanita can theoretically design and manipulate people because she has learned the nam-shub of Enki. Stephenson leaves us with two figures, one of science and one of faith, who possess the ability to change reality in order to present the total solution. The natural world is not favored over the virtual world. They are the same. Science and faith are on equal footing as well. Furthermore, neither character will engage in schemes to control the world. Instead, like Kreider's hackers, the skill and knowledge are sufficient, and they will wait like watchdogs for any other threat posed to free will. The very fact that a person can possess this ability and that people throughout history have manifested it—Enki, the Deuteronimists of Judaism in their writing of the living Word, the Torah, Christ, and now Juanita—proves that humans have agency and are not relegated to act as automata of the Lacanian Big Other.

Žižek (1999) argues that postmodern cynicism, paranoia, and helplessness are caused by the destabilization of the Big Other, the imaginary order, and a frustration with its institutions. This frustration leads to a kind of Symbolic revolution, inevitably culminating in the formulation of an Other of the Other and a new and improved Symbolic order. An idealized version is Logos, the original world-builder, creator, and freedom-giver. In *Snow Crash* we have an articulation of this revolution. Stephenson imagines a society that upon the threat of a more oppressive Big Other replaces the postmodern operating system of helplessness with a Logos operating system that allows for empowerment, agency, and ultimate control over religion, knowledge, history, and language, ushering in a new and improved Symbolic order of our own conscious design. Erik Davis (2004) sums up the connection between technology, spirituality, and hope in his introduction to *Techgnosis:*

> technology has helped disenchant the world, forcing the ancestral symbolic networks of old to give way to the crisp, secular game plans of economic development, skeptical inquiry, and material progress. But the old phantasms and metaphysical longings

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> did not exactly disappear. In many cases, they disguised themselves and went underground, worming their way into the cultural, psychological, and mythological motivations that form the foundations of the modern world. (p. 5)

People have never shaken the spirituality that has existed with them since the time before historical record. The return to ephemeral explanations betrays, despite modern movements to transcend the body through the application and installation of technology, the fact that they are rooted in the natural world. They are still "meat" as early cyberpunk authors would have said. The more people invent to remove themselves from this meatspace, the more they seem to imbue technology with spirituality. Stephenson has captured this fascination with history, secret or forgotten knowledge, and technology and made a statement that strikes at the heart of the postmodern era. But it also reveals a desire to reclaim agency. Technology—the Internet, cellphones, social media, and artificial intelligence—allow for and subvert the agency of people today. These people can use these technologies to educate, innovate, and give meaning and clarity to their lives; however, these same technologies threaten our knowledge, our ethical progress, and our purpose, too. The people who live in the 21st century are on the verge of losing their autonomy just as they believe they are asserting it. The people cannot always see how figures like Rife and Raven endanger them, how they might be wandering around babbling without thought. Stephenson's book re-introduces a desire for the modernist metanarrative and a totalizing structure that is not evil, malicious, or indifferent. Instead, this structure is the creation of social hackers who want to maintain autonomy, not give it away. These characters and the people in society whom they represent are responsible for Logos' revision and cultivation. Reclamation involves the re-writing of language, bodies, technology, and corporate institutions. And while this power through language is not used at the end of the novel to create a utopia, the recovery of knowledge and the re-empowerment of people speaks volumes about the collective desire for freedom from oppression as well as hopes for a future within their control. ■

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Data Dada and Dossier Centaur: Challenging AI Neocapitalist Myths in the Artworks of Uroš Krčadinac

Srđan Tunić

Abstract: The discourses surrounding technology profoundly shape our interaction with it, often conditioning our perceptions and behaviors. However, these narratives often obscure power dynamics, serving ideological agendas, such as in the case of the alleged inevitability and progress of generative artificial intelligence (AI). To navigate these "ideological traps," we should aim to demystify AI and understand its role within capitalist structures. Recent artworks of Uroš Krčadinac, a Belgrade-based digital artist, technologist, writer, and educator, are an intelligent and playful response to these challenges. Krčadinac's approach, as seen in his All-Aligned and Centaur Drawings projects, suggests analyzing power dynamics and creating new conceptual frameworks to reimagine our relationship with technology. This praxis offers a pathway to challenge technocratic determinism, resist standardization, and advocate for critical reflection to resist modern myths.

Keywords: Dada, centaur, neocapitalism, Krčadinac

> Positioning humans against computers is, in other words, an ideological trap. We would not be conquered by AI. As before, we will conquer ourselves. (Krčadinac, 2023a)[1]
>
> ...all gods are homemade, and it's we who pull their strings and so give them the power to pull ours. (Huxley, 1962, p. 234)

Narratives surrounding technology appear to prefigure our in-person experience, and so, in turn, partially condition our relationship and use of technology (see Reijers and Coeckelbergh, 2020). Some of these stories are extremely powerful—one should only recall the pervasive image of "us against the machines" which is prevalent in many dystopian sci-fi narratives. Yet rather than mere remnants of past struggles and contemporary fears, these narratives often obscure the underlying power relations, becoming ideological myths. Roland Barthes famously defined myths as a type of speech that distorts the original ("the language-object") and makes its statement appear depoliticized, naturalized, dehistoricized, and universal. Myths do not obscure the facts but distort them for ideological purposes. As such, according to Barthes, they serve capitalism and bourgeois society (Barthes, 1991.)

With this in mind, if we understand that "technology is neither good, nor bad; nor is it neutral" (Kharazian, 2016), the responsibility is shifted towards us as users and makers. We must not forget that we, as tool-making beings, are creating these narratives together with technologies (Reijers and Coeckelbergh,

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2020, p. 3). It is worthwhile to remember that art is a technology in itself. Just like science fiction with its critical utopian potentials, art "proposes that the critical and creative act of extending the self into the world—and vice versa—has the potential to examine, reimagine, and functionally reorganize existing relations between people, objects, and environments" (Glahn, 2023, p. 1-2; Tunić, 2018).[2]

A perfect ongoing and controversial example is today's generative AI (Artificial Intelligence), especially since the launch of the OpenAI's GPT-3 model in 2020. The often-heard story is that AI will replace our jobs, and that artists' works are left both exploited and uncredited, given that the algorithm is uncontrollably feeding from supposedly freely accessible content on the Internet. While this fear is partially justified and affects many people, before falling into the "us vs. technology" narrative, let us pause and ask: Is this conflict inevitable? Furthermore, who decides how AI could/should be used? (Marcus and Southen, 2024; Zimmerman and Lord, 2023; Williams, Miceli, and Gebru, 2022).

As exemplified in the opening quote, the mystification of technology (in this case, AI), and its apparent inevitability and progress, is an ideological trap because it pushes forward a strictly neocapitalist logic. It obscures the conscious human/corporate agency behind the wheel and emphasizes a binary conflict. To avoid these traps, we should take AI seriously, demystify it, and play with alternative scenarios (Bratton, 2024; Walker, 2023). The recent work of digital artist Uroš Krčadinac can provide us with some inspiring and constructive clues.

Krčadinac's practice can be described as a transdisciplinary endeavor. As an artist, he works with "data art, computer science, writing, mapmaking, digital drawing, and animation," in addition to being an educator and an IT expert.[3] But more importantly, he fuses data with poetry and technology with critical theory; one without the other can easily lead to commodification, surveillance, and exploitation, which makes his undertaking crucial. In working with what he calls "algorithmic culture," Krčadinac claims that the current neoliberal ideology of AI is a "magical fairytale." According to him: "[w]hat imperial theology was for feudalism, ideology of artificial intelligence is for what we live in today" (2023a; see also Coeckelbergh, 2022, p. 139).

To combat the ideological mystifications we need to acknowledge two things. First, AI is, according to Krčadinac, only "a set of calculating switches," "a collective automatized statistic," and not an intelligent system (2023a). It might be perceived to behave intelligently, but that is nothing more than "metaphysical fog," a strained comparison with human biology (Krčadinac, 2023b). Therefore, emphasizing AI's intelligence and potential self-awareness obscures human use. Second, providing AI with what

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Karl Marx called the inhuman power to rule everything, AI serves neoliberal capitalism as a universal, global, rational language (Krčadinac, 2023a, 2023b; Dyer-Witheford, Kjøsen and Steinhoff, 2019). As such, the myth of the "superhuman machine intelligence" is a cover-up for globalized profit (Krčadinac, 2023b). AI is never neutral in terms of politics and power; technological phenomena are always outcomes of social relations (Coeckelbergh, 2022, p. 3; 2019, p. 76).

How to avoid these ideological traps? We can approach technology as praxis, i.e. as both philosophy and in its practical use. Krčadinac himself advocates for a combination of methods, such as mapping the vectors of power and structures of everyday life, questioning "ideological spells," and "creating new languages to talk, think, and dream of systems," even poetry (Krčadinac, 2023a). Let us implement these very same critical tools on Krčadinac's own art practice to examine more closely how he challenges ideological traps of AI.[4]

All-Aligned: Glitch and Data Dada

> Existence is elusive, the kind that is supported by mechanical resources / In a, in a consumer society, in a, in a consumer society. (X-Ray Spex, 1978)

The *All-Aligned* multimedia project from 2022 consists of an "open source AI system for automated flag design," a Twitter bot, gallery exhibitions, and a "generative performance" with a group of co-authors carrying printed flags (Figures 1 and 2; Krčadinac, 2022).

As a "software and cultural project in the field of generative algorithmic art," it generates an infinite number of flags based on users' inputs:

> By generating flags, the system also generates an infinite number of micro-identities, which multiply in a fractal manner, dividing themselves ad infinitum. Visualizing the fragmentary nature of our digital lives, the All-Aligned ask: What is a society in which we, as users of digital systems, identify ourselves with automatically generated symbols, a society whose identities are driven by algorithms? (Krčadinac, 2022)

Figure 1: Flag generator interface, All-Aligned, 2022 (source: krcadinac.com).

Using this question as a starting point, Krčadinac's software serves as an enabler for a never-ending and ever-changing need to define ourselves. Instead of moralizing—prescribing a desired or alternative, more critical approach to identity formation—the artist allows us to reach a point of ludic absurdity. Here we are, happy because we think we have found a symbol that represents us fully. Except that with every click on the "Generate!" button we are offered a

Challenging AI Neocapitalist Myths in the Art of Uroš Krčadinac, cont.

choice of sixteen flags (Figure 1). With a simple shift in parameters or a change of heart, we are faced with additional choices. This continues for as long as we can handle it: an excess of individualism, automatized hyperproduction of identities. The anxiety from these multiple identities is a hack of our nationalist expectations of belonging (the flag being a nationalist symbol par excellence), a glitch in the system.

Figure 2: All-Aligned exhibition at Fluid Design Forum, Miroslav Dado Đurić gallery, Cetinje, MNE, 2023 (source: krcadinac.com).

Glitch is generally defined as technological malfunction and failure. I want to approach it as an inherent feature of technology which, according to feminist and gender critique (Russell, 2013), is potentially a positive and constructive phenomenon. Glitch opens possibilities for identity formations that are "a threat to normative systems," a "correction to the 'machine'" or even its collapse. "It is a momentary loss of control, over technologies, systems, and devices." "The glitch is the catalyst, not the error. The glitch is the happy accident" (Russell, 2013; Sundén, 2015). According to Jenny Sundén, glitch makes us feel stuck between anxiety and beauty, "a celebration of medium fragility coupled with a critique of media industries" (Sundén 2015).

Yet, I would like to challenge the assumption of inherent critique of glitch in *All-Aligned:* Is it just an affirmation of our current desire for hyperindividualism? When is the glitch an affirmative technology, and when is it a device for critical intervention? *All-Aligned* is on a slippery slope of permissive hyperindividualism, even with an ironic distance or subtle critique. But its overproduction of identities can point to the anxiety Sundén writes about and serves as an affective example with utopian potentials. It is precisely this feeling of being "stuck" that makes *All-Aligned* potent in its subtle identity critique.

Throwing a cog in the machine (or our own expectations) to challenge the dominant myths of individualism could also be labeled as "data Dada." This is a concept Krčadinac uses to discuss Facebook's algorithm's removal of a Dadaist artwork by John Heartfield (Krčadinac 2023b; Hegenbart and Kölmel, 2023). In this particular instance, posting a swastika on social media was equated with fascism; the irony is that the artwork was deeply antifascist. The algorithm (and its regulatory policies) did not recognize the strategy of

paradox and ideological infiltration for subversion of a totalitarian worldview.

Krčadinac proposes that we should be inspired by Dada's historical heritage and look for such "technological errors and glitches, blind spots and *outliers*" (2023b). To fight algorithms with algorithms, or in Barthes' words, to mythify a myth—"to produce an artificial myth" (1991, p. 135). Data Dada invites the absurd, relies on constant political and social critique, and above all else, fosters endless reflexive amazement over the world and our present moment (Krčadinac 2023b).

Another reading of this identity glitch that *All-Aligned* tackles is a critique of Balkan ethnonationalism coupled with the mistrust of neoliberal technological myths. If "Balkanization" as an unfortunate term has been inspired by the breakup of the Socialist Federal Republic (SFR) of Yugoslavia in the 1990s, *All-Aligned* takes it to the digital world: we are Balkanized amongst ourselves. Yet, Krčadinac's project might discreetly point to an alternative. The title refers to the Non-Aligned Movement; Yugoslavia (as the only European member) was one of the founders of this modern international decolonial network with other members from Asia, Africa, and Latin America (Mrenović, 2022). With this in mind, I think the artist pushes us to think in terms of common global challenges and potential solidarity, rather than getting lost in narcissistic atomization.

Centaur Drawings: Collaboration and meditation

> *Die Mensch-Maschine / Halb Wesen und halb Ding.*
>
> The Man-Machine / Half-Human (lit. being) and Half Thing. (Kraftwerk, 1978)

Philosophically, if the first step of *All-Aligned* is to think beyond oneself in terms of interconnectedness with other people, the second step might be to go towards posthumanism—our entanglements with non-humans and technology. It has been a long journey since Donna Haraway's famous *A Cyborg Manifesto* from 1985 and her call for leaky boundaries between us and technology, abandoning essentialist, binary modes of thinking to form "a hybrid of machine and organism" through kinship (D. Haraway, 1991; Coeckelbergh, 2019, pp. 97-102). In contemporary AI controversies, her words still sound relevant:

> We can be responsible for machines; they do not dominate or threaten us. We are responsible for boundaries; *we are they* [my emphasis].
>
> There is a myth system waiting to become a political language to ground one way of looking at science and technology and challenging the informatics of domination—in order to act potently (p. 181).

Breaking the political myth of ("unavoidable," "natural") exploitation to "act potently" (or even in a utopian fashion), brings to mind *Centaur Drawings.* Krčadinac's 2023 project, in

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his own words, is a multimedia exhibition featuring "drawings, animations, and videos created collaboratively by my robot and me" (Figures 3 and 4; 2023c).[6] The exhibition has four parts, ranging from mapping chess games and inventing a new pictographic language (based on the artist's previous projects) to drawing systems theory and a live workshop with exhibition visitors. The ethical question is paramount: The AI is trained on the artist's own work as raw data, and the exhibition is framed critically and transparently to demonstrate the processes and challenges surrounding it.

Figure 3: Drawing with the robotic hand, Centaur Drawings exhibition, SASA Gallery of Science and Technology, Belgrade, 2023 (source: krcadinac.com).

How does this work in practice? In one instance, Krčadinac trained the algorithm on his own "31,300 human-like glyphs" to enable the robot to invent a new pictographic language, bypassing unethical data training which uses other people's work. In another case, the robotic hand draws what appears to be random small arrows which the artist then follows by adding human-like glyphs, which ultimately make a coherent abstract map inspired by systems theory (Figure 3; see: Krčadinac, 2023d). This performative and relational aspect of *Centaur Drawings* opens the possibility for dialectics, a back-and-forth critical dialogue which, according to Haraway, blurs boundaries and escapes binary logic. Like a contemporary centaur, Krčadinac and his robot perform as an ensemble.

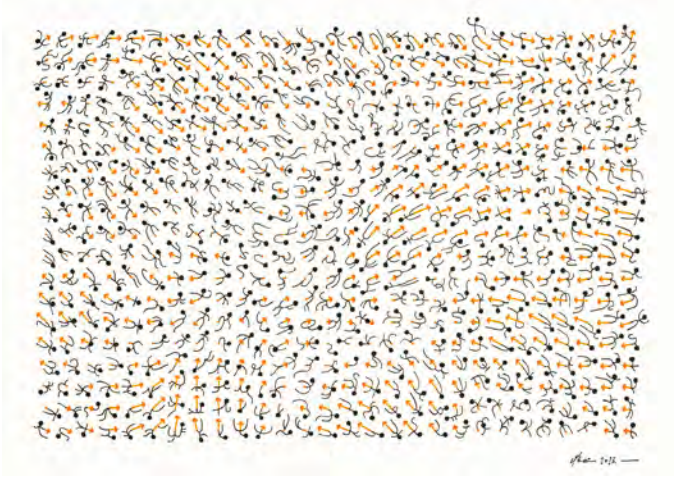

Figure 4: Drawing, Centaur Drawings exhibition, Belgrade, 2023 (source: krcadinac.com).

Yet, someone may ask—is it art? To Krčadinac, the question boils down to hacking the petty bourgeois taste with the use of AI (aesthetics) and rejecting AI as an author (intellectual property). Whether it is art or not depends on our recognition of emotions: "Machine [AI] is simply a new tool we can use to talk about our feelings, while some sort of technology has always been present" (Nikoletić, 2023). Mark Coeckelbergh comments that art has always been a technology in itself. Criteria in determining AI's artfulness are unavoidably unstable, because

Challenging AI Neocapitalist Myths in the Art of Uroš Krčadinac, cont.

we are always using past experience to frame something new, and always biased towards humans (Coeckelbergh, 2017). Coeckelbergh and Krčadinac both agree that we do not need to rely on AI's consciousness as a crucial factor. AI art is art because of the human factor.

What makes all the difference are what Coeckelbergh calls "poetic machines." Basing his argument on Martin Heidegger's idea of *poiesis,* Coeckelbergh advocates that technology has both the power to turn everything (including ourselves) into a "standing-reserve," which is a resource for exploitation, and of "revealing," which involves bringing new perspective on the world (2017, p. 299; 2019, pp. 34-39). In science fiction, this echoes Darko Suvin's concept of a *novum,* a scientifically plausible future relying on both "estrangement and cognition" (Tunić, 2018). However, Suvin warns us that any novum today needs to be not just a novelty but something that brings radical change and liberation (2021). Idealistically, this poetic aspect can grant machines more artistic agency where art itself is a wider speculative framework to understand the world. Given the AI crisis today, which encompasses environmental damage, data exploitation, ethical and social concerns, as well as dystopian surveillance and militarization, one should ask: if this technology is here to stay, can it be otherwise? And the answer is always: yes.

Concluding Thoughts

> *Roboti izađoše na ulice / sunce obasja im lice / nestadoše matice i šrafovi / krv i meso se stvori / krv i meso progovori.*
>
> Robots went out to the street / the sun lightens up their faces / nuts and screws have disappeared / blood and flesh emerges / blood and flesh spoke up. (Klopka za pionira, 2006)

In the framework of Krčadinac's algorithmic culture projects, close participation is necessary to activate meaning: "The only way to prevent the new centaur world from turning into a dystopia is for all of us to fight for our voice and our share in the development of intelligent systems" (Krčadinac, 2023c). This praxis, which suggests a different relationship with technology, is both a personal gesture and a practical utopia. It can serve as a tool to combat ideological traps and neocapitalist myths, decontaminating—or decolonizing—our minds and expectations from technocratic determinism. It might not solve any of the pressing issues of the day, but it can challenge our expectations and make us wonder if what we take for granted is the only way out. We are already centaurs and cyborgs; now, let us seriously play and resist, like true data Dadaists. ■

Challenging AI Neocapitalist Myths in the Art of Uroš Krčadinac, cont.

Notes

1. Original: "Pozicija čoveka protiv računara, drugim rečima, ideološka je zamka. Neće nas pokoriti veštačka inteligencija. Kao i do sada, pokoravaćemo sami sebe."
2. Sadly, there seems to be a profound misunderstanding and problematic appropriation of many of the sci-fi and fantasy narratives without their cautionary and social ideals, by the techno elites of today: Rosch, 2025.
3. See: https://krcadinac.com/work/about.
4. While his essays help frame his overall philosophy, the focus is mostly on key philosophical issues, and on other artists, sometimes in combination with Krčadinac's own work. "Data Dada" (2023b) explores the political art of John Heartfield; "Kultura kentaura" (Krčadinac 2023a) juxtaposes Centaur Chess (by Garry Kasparov) and Rematch Man versus Machine (by Era Milivojević) with Krčadinac's Re:Rematch Man+Machine vs Man+Machine. See: https://krcadinac.com/work/writing.
5. In combination with queer theory, glitch can also have emancipatory potentials as kvar (malfunction in Serbian), moving beyond single-issue identity activism and identity politics under the neoliberal paradigm (Bilić & Dioli, 2016).
6. The "centaur" part is inspired by Garry Kasparov's "centaur chess."

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Technological Quagmire: The Ambivalence of Queer Retrospection in *Black Mirror*

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Abstract: This article close-reads two episodes of the British science fiction anthology series *Black Mirror* (2011–present, created by Charlie Brooker), namely, "San Junipero" (2016) and "Mazey Day" (2023), which combine retro aesthetics and the theme of queerness. Drawing on Nishant Shahani's notion of nostalgia as a reparative memory-making practice, the article re-examines the queer temporality at work in the retro cyberspace of "San Junipero" while addressing the narrative's problematic treatment of non-normative sexual practices and its technological transcendence, which glosses over issues of ageism, ableism and extractivism. To further explore the theme of queer nostalgia in *Black Mirror,* the article analyses "Mazey Day" as a somewhat reactionary counterpoint, although its implicit critique of social media deserves an in-depth analysis. The conclusion also briefly touches on the use of apocalyptic imagination presented in another retro and arguably queer episode in *Black Mirror,* "Demon 79" (2023), to shed further light on the ambivalence of queer retrospection in the series.

Keywords: Black Mirror, queer retrospection

Svetlana Boym (2001), an influential thinker on nostalgia, wrote: "Nostalgia is about the virtual reality of human consciousness that cannot be captured even by the most advanced technological gadgets" (p. 351). Boym's remark comes from her cautious attitude toward "the bric-a-brac of nostalgia available in digital form, appearing more desirable than the real artifacts," (p. 347) which, according to Boym, does not fully open up nostalgia's creative potential to reimagine the past in "the way it could have been" (p. 351).[1] "San Junipero" (2016, S3E4), an episode of the British SF anthology series *Black Mirror* (2011–present, created by Charlie Brooker), portrays a type of virtual technology (VR) that allows its users to visit a simulated past. In "San Junipero," users of the technology—who appear to be living in the near future US—primarily dwell on a queer and joyful version of the 1980s. However, the 1980s are often remembered by marginalized queer communities as an age of backlash and homophobia, mobilized by the ideal of the nuclear, heterosexual family promoted by Ronald Reagan in the US and Margaret Thatcher in the UK. While inhabitants of San Junipero can hop between decades from the 1980s to the 2000s according to their preference, the 1980s are overvalorized within the episode, which reflects a recent American and British pop culture trend.[2] Keeping Boym's concern in mind, what are the possibilities

The Ambivalence of Queer Retrospection in *Black Mirror*, continued

and limitations of such digitally induced nostalgia in "San Junipero"?

Although VR technology plays an important role in making the complex temporality of "San Junipero" possible, to be queer is to be always or already out of sync with straight time, as a number of queer theorists have argued, with both traumatic and reparative implications (Halberstam 2005; Freeman 2010; Probyn 1995; Shahani 2012). To illustrate this, it seems pertinent here to tap into lived experiences of queer temporality vis-à-vis 1980s homophobia, as exemplified by the introduction of legislation known as Section 28 in the UK and its aftermath.

The recently published essay collection *Twenty-Eight: Stories from the Section 28 Generation* (2023) includes diverse accounts of the lasting impact of Section 28, which was enacted in the UK in 1988 and targeted sexual and gender minorities. Imposed under Margaret Thatcher's conservative regime, Section 28 sanctioned discrimination. To prevent children from misbelieving that they had, in Thatcher's words, the "inalienable right to be gay," it prohibited local authorities and schools from disseminating knowledge or raising awareness about homosexuality, until it was repealed first in Scotland in 2000 and then across Britain in 2003 (Lee, 2023, p. 71). The law deemed homosexuality a "pretended family relationship," and homosexuality was permitted to be mentioned in order to prevent "the spread of disease"—language that reflects the heightened homophobia triggered by the AIDS epidemic.[3] The infamous legacy of Section 28 continues to haunt those who do not conform to cisheteronormativity to this day, with the current backlash against transgender and nonbinary rights being symptomatic.

Section 28 was a form of "epistemic oppression," as Ash Brockwell (2023) — one of the contributors—points out in his essay titled "Lacking a Language" (p. 22), published in *Twenty-Eight* (2023). The collection of essays in *Twenty-Eight* serves as a timely reminder that legal improvements take years to take effect at the individual level. Among the authors who reflect on their past in relation to Section 28, Alex Hilton (2023) encapsulates in their poem "Context/ Choices" the interplay of memory, history and desire. After announcing their experience of living invisibly in "between a homophobic church" (line 1, p. 19) and "a school under Section 28" (line 2, p. 19), the speaker reflects on the multiple times they came out, without knowing "how to say" (line 12, p. 19). The poem then continues:

> Like a flashback—
> It doesn't repeat but it rhymes,
> The past bleeds into the present, many times,
> I didn't choose the context I chose to make my choices in,
> So I'm proud of who I became,
> Although it's not who I would have been.
>
> *(lines 17-22, p. 19)*

The Ambivalence of Queer Retrospection in *Black Mirror*, continued

The context one is in—be it historical or personal—subtends the possibility of choice itself. In the poem, the speaker's experience of being out of linear temporality is expressed through the overlap between the past and the present and the use of the past subjunctive. These non-linear temporal markers deeply inform the following analysis of queer nostalgia in "San Junipero."

Black Mirror, available on the popular streaming site Netflix, is a series of self-contained yet thematically interlocking tales of technological quagmire, well known for its satirical and dystopian takes on various forms of modern technology that blur the line between the real and the virtual, such as social media and extended reality. The predominantly dystopian tone, however, is missing from "San Junipero"; the episode instead prizes queer joy, or even euphoria, through the representation of two women proudly in an interracial relationship in a simulated version of 1980s America, enabled by mind-uploading. The episode is a curious instance of the use of anachronism; that is, how historical revisionism, for those who have been marginalized and silenced from the mainstream media, can be mobilized as a reparative device. "San Junipero" queers 1980s nostalgia by mobilizing the inextricable bind between trauma and nostalgia via virtual reality and mind-uploading (Drage 2018; Saha & Kaur 2023).

On the other hand, the *Black Mirror* episode "Mazey Day" (2023, S6E4) is an interesting counterpoint to "San Junipero" in terms of queer anachronism. The episode evokes lo-fi 2000s nostalgia through images of iPod Shuffle and dial-up internet while juxtaposing news reports about celebrity gossip—including the naming of Tom Cruise and Katie Holme's daughter, Suri—and the Iraq war. According to Vanessa Díaz (2020), "the rapid multiplication of celebrity weekly magazines from 2002 to 2005" is concomitant with "yearning for distraction and escapism in the U.S., this time following September 11" (p. 18). Although often perceived as light, mind-numbing content, celebrity culture is deeply imbricated with structures of oppression and exploitation, including racism, sexism and class. "Mazey Day" critiques the dark side of celebrity culture from the bottom up by telling its story from the paparazzi's perspective, portraying both their critical role as content providers and their precarious working conditions. Yet the narrative also hinges on a reactionary "Bury Your Gays" trope through the depiction of the suicide of two celebrities—one closeted and the other subtly queer-coded; in fact, both are murdered in a public execution mediated by the gaze of the paparazzi. "San Junipero" and "Mazey Day" are notable in that they employ retro aesthetics and deal explicitly with the theme of non-heterosexual sexualities, although the latter episode ends up reenacting homophobia and equating the queer with the monstrous through a werewolf trope while lacking any redemptive elements.[4]

The Ambivalence of Queer Retrospection in *Black Mirror*, continued

Examining "Mazey Day" side by side with "San Junipero" seems to be encouraged by the show itself, not only because they both rely on retro aesthetics and the theme of queerness but also because a night club called The Quagmire is featured in both. This invites the viewer to wonder about the possibility of revisiting the "wrong" version of the past via technology. For example, what if one were to enter virtual reality and find themselves not in a joyous club scene but in the nightmarish version of the 2000s in "Mazey Day," where the queer is figured as the monstrous? According to Sabine Sielke (2024), nostalgia is "a mode of perception monitored or channeled by media and materialities clad in the garb of retro" (p. 190). Retro imagery and soundscape teach the audience where their emotional attachment should be directed. If this is the case, it is crucial to question what kind of nostalgia—or whose nostalgia—as a way of perceiving the past is promoted by narratives saturated with such retro signifiers.

In *Queer Retrosexualities: The Politics of Reparative Return* (2012), Nishant Shahani explores how, for queer subjects, nostalgia can operate in a generative or reparative manner. Drawing on two frameworks—paranoid reading vs. reparative reading by Eve Kosofsky Sedgwick and restorative nostalgia vs. reflective nostalgia by Svetlana Boym—Shahani conceptualizes the reparative aspect of retrospection for queer subjects. This eschews the complete, reductive rejection of a traumatic past from a paranoid position as well as "a simplistic return to an unmediated or pure origin," implicated in Boym's restorative nostalgia which is conservative and reactionary in nature (Shahani, 2012, p. 15). Shahani then adopts Boym's reflective nostalgia, which encourages one to reflect on the past from multiple viewpoints to theorize queer retrospection, which would open up the possibility to "[rebuild] a future from the suffering of the past" and "[reassemble] the wreckages of history for a different future" (p. 13). This approach to the past is reparative in that it is "additive and accretive," (Sedgwick, 2003, p. 128) while not forgetting the "murderous part-objects" associated with that past (Sedgwick, 2003, p. 149).

This article adopts Shahani's notion of nostalgia as a reparative memory-making practice and re-examines the queer temporality at work in the retro cyberspace of "San Junipero," while addressing the narrative's problematic treatment of non-normative sexual practices and its technological transcendence, which glosses over issues of ageism, ableism, and extractivism. To further explore the theme of queer nostalgia, the article analyses "Mazey Day" as a somewhat reactionary counterpoint, while its implicit critique of social media deserves an in-depth analysis. The conclusion briefly touches on the use of apocalyptic imagination presented in another retro and arguably queer episode in *Black Mirror,* "Demon 79" (2023, S6E5), to shed further light on the ambivalence of queer retrospection in *Black Mirror.*

Time Crisis: The Use of Anachronism[5]

"San Junipero" revolves around a romantic relationship between two female characters—Yorkie (Mackenzie Davis) and Kelly (Gugu Mbatha-Raw)—in a 1980s themed, neon-lit "party town" called San Junipero. What seems like a bustling seaside resort is, in fact, a virtual space that is part of "immersive nostalgia therapy," in which the aged and the terminally ill—called "visitors" — transfer their minds to a simulated beach town and re-live a past that could have been. The romance mostly unfolds within cyberspace, presented as the embodiment of "Heaven Is a Place on Earth"—the title of the theme song of the episode released by Belinda Carlisle in 1987. Furthermore, visitors can choose to "pass over"—that is, to remain in San Junipero after their physical demise.

The episode begins with a scene in which Yorkie, looking shy and overwhelmed, visits a disco packed with people clad in colorful, exuberant fashion dancing to 1980s hit tunes, where she meets Kelly. In the real world, Yorkie is elderly and bedridden in the hospital due to her disability, whereas Kelly, also in her late years, lives in a hospice due to her terminal cancer. After a couple of virtual encounters, the two share stories about their sexualities. It is later revealed that when she was twenty-one years old, Yorkie came out as a lesbian to her parents but was met with outright rejection. This resulted in a tragic car accident that rendered Yorkie quadriplegic for the rest of her life. Although she can communicate with others through a communication device called a "comm box," the episode does not show Yorkie using the device, thus effectively silencing her (I will return to this point later in this article). Kelly, on the other hand, was married to a man and had a daughter, although both have passed away, leaving Kelly alone. At one point, Kelly announces that she is bisexual, although she is not out in her real life and never acts on her attraction to the same sex.[6] San Junipero is therefore a virtual place where both characters fulfill their long-awaited queer desires.

Nostalgia is often considered a byword of reactionary essentialism and is thus unable to accommodate any critical perspective against the status quo, incapable of opening up the radical potential of the future. However, such a view is reductive in that it does not take into consideration the subject of the affect in question. In reading "San Junipero," Keshia Mcclantoc (2019) concludes that "For Yorkie, the San Junipero simulation is a form of queer nostalgia because it allows her a world where she can walk, dance, speak, and love freely—affectively reinventing what was taken from her due to homophobia" (p. 117). Moreover, Sourav Saha and Shyamkiran Kaur (2023) points out that "queer nostalgia entails not only (re)imagining past narratives as queer but also allowing such narratives to deviate from the conventional wisdom,

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portraying history as a site where queer individuals existed" (p. 9).

Regarding queer nostalgia, Nishant Shahani's theorization of queer retrospection is helpful in exploring the complex temporality at play in "San Junipero." In *Queer Retrosexualities* (2012), Shahani contrasts two opposing ways of engaging with queer childhood, which are encapsulated in the following statements: "I was a gay child" and "I wish I had been a gay child." The former statement, when stated by a queer adult, assumes a sort of rigid linear temporality with regard to framing their authentic queer identity; it is as if to be a queer person, one has to be always or already queer—an idea that essentializes the experience of being queer. The latter statement, in contrast, is rather wish-fulfilment. It recreates a "fantasy past" (p. 157) that does not necessarily have a material basis; it is "a way of moving back in time in order to generate an affective space of desire and to affirm queer possibilities even where they did not clearly exist" (p. 157). To apply this theorization, one can argue that "San Junipero" is an instance of this retrospective fantasy, operating in the past subjunctive: "I wish I had been a bisexual/lesbian teenager in the 80s." Yorkie and Kelly reimagine their queer past as a form of wish-fulfillment—a wishful imagining—thereby reclaiming a silenced past that creates openings for imagining possibilities rather than solidifying the past as merely oppressive. Yet is not yearning for a different past a form of disavowal or, at worst, forgetting? On one hand, the 1980s in "San Junipero" is a somewhat uncritical pastiche of 1980s pop culture with stereotypes of the past in the form of commodities—synth pop, arcade games such as *Pac-Man* and *Space Invaders*, a TV ad for the 1980 Chrysler Cordoba, a poster for the vampire film *The Lost Boys* (1987), perms galore, and bright colored jackets—recreated for entertainment and joyful consumption. On the other, however, the episode does pick up on the traumatic aspect of the 1980s through its narrative of Yorkie's tragedy. Yorkie's immobile body indicates the violent effects of heteronormativity or, as Eleanor Drage (2018) points out, it stands for "the systematic annihilation of gay people during the AIDS crisis, of homosexual modes of life, as well as the premature death of gay characters in film and television" (p. 34). Although Eszter Urecky (2023) reads the lack of a direct reference to the AIDS pandemic as symptomatic of "general death denial in the episode," there seems to be space for arguing that "San Junipero" does attempt to portray the traumatic experience of being queer, particularly in the scene in which Yorkie appears to be experiencing a panic attack on the dance floor (p. 188). This scene emphasizes the difficulty of coming to terms with her sexuality, intensified by the distant sounds of an ambulance siren and a ventilator, which are subtle references to her traumatic experience of coming out. Overall, through the image of Yorkie and Kelly's

reunion and their dancing in a 1980s club, the episode represents queer desire not just as a phase but as something more substantial—something that could outlast even death. "San Junipero" thus defies the trope of "Bury Your Gays" or "Dead Lesbian Syndrome" despite its reliance on commodified 1980s nostalgia. However, as discussed below, what ultimately detracts from this utopian interpretation is the lack of intersectional perspectives from "San Junipero," especially in terms of ableism, ageism, and extractivism.

Houses of the Dead: The Technological Erasure of the Marginalized

If the San Junipero technology allows its users to revisit a particular decade, the implication is that they can rewrite and reconfigure their own lives in an attempt to fulfill past wishes virtually. However, such a digital past is curated and produced within the parameters of existing cultural structures and capitalist economies, and as such, the technology that enables it is never politically neutral. As Marian Philips (2023) argues, the episode's technophilic queer utopia is ultimately flawed since cyberspace operates as a "digital graveyard"/ "technological closet" of queer lives: "Kelly and Yorkie … will never experience the process of crafting or imagining better futures, as the system ensures that their horizons are those of the San Junipero simulation" (pp. 93, 94, 95).[7] The monotonous representation of The Quagmire adds to the sense of confinement. The Quagmire is a sort of underground BDSM club located on the outskirts of San Junipero town and is in contrast with the more mainstream pop music club called Tucker's, frequented by Yorkie and Kelly. The Quagmire is depicted as a purgatory for visitors desperate for intense feelings, reflecting a yearning for the body, which is encapsulated in Kelly's words, "All those lost fucks at the Quagmire trying anything to feel something." Equating BDSM with hell instead of exploring it as a means of queer alternative intimacies reveals the conservative nature of "San Junipero" and its unreflective reliance on the body–mind dichotomy. The episode privileges the institution of marriage at the cost of demonizing non-normative sexual practices.[8]

Another issue concerning the episode is that technology is presented as a cure for aging and disability. Once coined by a Swiss physician to denote a disease originating from homesickness, nostalgia in "San Junipero" is now de-pathologized and presented as a cure—a palliative for the mental and physical difficulties caused by aging and disability. Incidentally, in Bulgarian author Georgi Gospodinov's magic realist novel *Time Shelter* (2020), nostalgia-inducing therapy is offered as a method of care, though not exactly a cure, for patients with Alzheimer's disease. In this case, patients are surrounded by cultural artifacts carefully selected by clinic staff and people who used to know them, including their spies. In contrast, the immersive

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nostalgia therapy in "San Junipero" is not personalized as in *Time Shelter,* although in both works, the therapy appears to be available only to the rich. Meanwhile, "San Junipero" chooses to erase experiences of non-normative bodies using a cure afforded by technology. It is, indeed, abled and young bodies that are idealized and immortalized; the queer digital utopia is predicated on the abstraction of otherwise embodied subjects. As Kathryn Allan (2013) argues, "Uncritical posthumanism, both within and outside of SF narratives, promotes a transcendence that disregards the lived inequalities and suffering of human beings in the present" (p. 11). The following observation by Anne Balsamo (1995), which relates virtual reality to the politics of embodiment in the 1980s, is also insightful in this regard:

> In short, what these VR encounters really provide is an illusion of control over reality, nature, and especially over the unruly, gender-and race-marked, essentially mortal body. It is not a coincidence that VR emerges in the 1980s, during a decade when the body is understood to be increasingly vulnerable (literally, as well as discursively) to infection as well as to gender, race, ethnicity, and ability critiques. With virtual reality we are offered the vision of a body-free universe (p. 128)

One can argue that as a quick fix for aging, terminally ill, and disabled people, VR and mind-uploading technology can potentially reinforce eugenic ideologies. In a climactic scene in "San Junipero," Kelly admits to Yorkie that she initially signed their marriage certificate only because she "pitied" her. Although this remark is made in a frenzy of rage triggered by Yorkie's insensitivity to Kelly's grieving for her family, the language of pity takes away the agency of those who are disabled. This is not surprising, considering that *Black Mirror* tends to portray locked-in syndrome and Alzheimer's disease merely as sheer horror ("Playtest" [S3E2, 2016], "Black Museum" [S4E6, 2017]). While "San Junipero" represents VR and mind-uploading technology as a locus of hope, it is precisely this conflation between cure and hope that Eli Clare (2017) criticizes; the "ideology of cure" silences and erases the experiences of disabled people, "locating the harm entirely within individual human body-minds" instead of within the oppressive structures of an ableist society (p. 15). This is echoed by Saha and Kaur (2023), who maintain that "the episode paints old age and the disabled (queer) body as a limitation that must be conquered in order to spend a happy afterlife" (p. 11).

Furthermore, what is obscured by the fantasy of immortality is that it can only be achieved through the extraction of all kinds of materials, resources, and workers. Mind uploading relies on material infrastructures and ongoing repair work required to store and maintain digital lives. At the end of the episode, the viewer glimpses a server center in which digital lives are stored. Given

the growing water usage and carbon emissions already being produced by tech companies in the present to store our data, a queer digital afterlife may not be as sustainable as one wishes it to be. Meanwhile, glitches and viruses within the virtual world are another concern, as explored in the story "Children of the New World" (2016) by the American author Alexander Weinstein. The seemingly utopian cyberspace in "San Junipero" is in fact mired in complex conditions of material and bodily inequalities.

"Mazey Day": Retrofuturism and the Monstrous Queer

If "San Junipero" attempts to present a kind of queer utopia, "Mazey Day" is unambiguously dystopian in its outlook due to its straightforward representation of "Bury Your Gays." This Season 6 episode is bracketed by two celebrity suicides in which Bo (Zazie Beetz), a young paparazza struggling to make a living, is involved. At the beginning of the episode, viewers witness how a Hollywood celebrity is outed by a picture taken by Bo, resulting in his suicide. Although this incident prompts Bo to quit her job out of guilt, she is soon confronted by dire financial hardship, which drives her back to her previous occupation. Meanwhile, Mazey Day (Clara Rugaard), a starlet shooting a film in the Czech Republic, vanishes from the public eye after causing a hit and run accident. Determined to photograph her, Bo follows a lead to the rehabilitation center where Mazey Day is recuperating. According to a local, the facility caters to "someone rich who wants to get *straight* on the down-low" (emphasis added). Bo's fellow paparazzi join her search, eventually discovering that Mazey Day is not a drug addict but a werewolf; a bloodbath ensues, and the hunter–hunted relationship is now reversed. At the end, Mazey Day the she-wolf reverts to her human form due to a severe injury and asks Bo to "shoot" (note the pun) her to put her out of her misery. Instead of killing her immediately, Bo decides to take a million-dollar photograph of her naked body. The episode concludes with the sound of a gunshot, although the ending remains open-ended, as it does not show who shot whom.

By giving the narrative a magical realist quality through the incorporation of a supernatural phenomenon—that is, lycanthropy—the episode emphasizes that it is the paparazzi who are monstrous (Dunne & Seminary, 2023, p. 38). The narrative actively demonizes paparazzi by portraying them as homophobic and misogynistic. *In Manufacturing Celebrity: Latino Paparazzi and Women Reporters* (2020), Vanessa Díaz cautions against such a dehumanizing portrayal of paparazzi. Díaz's extensive research reveals that "today's Hollywood paparazzi are predominantly Latino men, including U.S.-born Latinos and Latin American (im)migrants," (p. 4) and that "as many as 50 percent of the Los Angeles-based paparazzi are undocumented and that they are the backbone of an extensive informal

economy of celebrity photographs" (p. 9). Although their work is integral to the celebrity media, paparazzi are often underpaid, and their professionalism—including their photography skills and constant negotiations with peers on ethical behavior—goes unacknowledged (Díaz, p. 92). In "Mazey Day," three celebrities (one male and two female) are stalked by paparazzi in a vicious and predatory manner. Yet this representation is reductive at best and can even be harmful, since it condones abuse and violence against celebrity photographers while keeping the viewer's attention away from structures of power within the celebrity industry itself.

Meanwhile, Chris Lay (2023) reads "Mazey Day" as a satire on the prevalence of smartphones and social media. Commenting on Bo's cruel behavior, Lay argues that "[t]he same thing will be true of the people in a culture like ours where everyone has a camera in their pocket and is overeager to use it for fame, material success, or whatever" (2023, p. 21). Through smartphones equipped with high-quality cameras that are ever more accessible, anyone can be turned into an object of voyeuristic consumption anytime and anywhere in the name of street photography. *Black Mirror* deals with this issue in a gruesome episode titled "White Bear" (2013, S2E2), set in a theme park where bystanders are encouraged to take pictures and videos of a convict running away from violent hunters. Social media provides a virtual space where users can post their own photos, collect as many impressions as possible and become influencers. If celebrity culture churns out the fantasy that anyone can be famous and rich, social media is an accessible platform for fulfilling that desire. In a way, social media users are what Angela M. Cirucci (2013) calls "first person paparazzi" who are "on a mission to make celebrities/heroes of themselves" by posting "pictures of themselves doing embarrassing or mundane things" (p. 47). Indeed, issues celebrities often face, such as defamation, stalking, and outing, can happen to anyone on social media. In a recent interview, Charlie Brooker comments on the first episode of Season 6 titled "Joan is Awful" (2023), in which ordinary individuals' lives are turned into digital video content by media companies without their consent: "It's grappling with things that were traditionally the preserve of celebrities: living a very public life and putting yourself up for judgement is what everyone is potentially wrestling with" (Katwala, 2023, para. 16). Through the lens of retrofuturism—that is, critiquing of the current technological milieu by revisiting the past—"Mazey Day" offers a timely, yet partial, reflection of celebrity culture that is highly relevant to the rise of influencers in cyberspace.

However, this otherwise thought-provoking episode retrospectively sacrifices those who are queer. As if showing the suicide of an outed gay man is not shocking enough, the episode then depicts the suicide of Mazey Day, another queer figure in the form of a

woman infected by a werewolf. Mazey Day's transformation into a werewolf is perhaps foreshadowed by red paw prints on the wall of The Quagmire, which appears to be a spot for celebrity sightings in "Mazey Day." In the scene, another female celebrity is verbally abused with misogynistic slurs by the paparazzi. In this context, the narrative sets up the viewer for a sort of cathartic climax by showing Mazey Day murdering the paparazzi one by one. Yet the episode ultimately foregrounds her victimization. According to Philip A. Bernhardt-House (2008), werewolves can be signified as queer due to their beastly nature concealed by a human form and their marginalized, transgressive status in society. Bernhardt-House categorizes representations of werewolves into three modes: "the werewolf as queer," "the queer as werewolf," and "queer werewolves." "The werewolf as queer" denotes a representation in which the imagery of werewolves operates as a signifier of the disruptive other; "the queer as werewolf" is a combination of non-normative sexualities and the figure of the lycanthrope; and "queer werewolves" emerge when a werewolf character is presented as truly embracing their hybridity (p. 178). To apply this categorization, it can be said that Mazey Day is an instance of "the werewolf as queer," since the episode does not include a depiction of her sexuality and stresses her utter inability to embrace her hybridity. This can be contrasted with a more nuanced representation of lycanthropy in a recent Canadian film titled *My Animal* (2023, directed by Jacqueline Castel). The film centers on a queer relationship between two teenagers, of whom one, —the protagonist of the narrative—is a werewolf by birth. Their struggle with sexual awakening and sense of alienation are effectively portrayed through the figure of the werewolf, and the narrative ends with the protagonist's attempt at self-acceptance as a queer werewolf. Interestingly, *My Animal* is set in the 1980s, making it another instance of queer retrospection. It can be concluded that, in terms of queerness, the nostalgia evoked by "Mazey Day" is not a reparative one but rather reactionary, cruelly reinforcing a heteronormative point of view.

Conclusion

Black Mirror offers the potential for queer reparative nostalgia in "San Junipero" while leaving the issues of aging, disability, and non-normative sexuality and extractivism unexplored. The retro horror fantasy of "Mazey Day," on the other hand, enables the viewer to reflect critically on the continuity between celebrity culture and social media by setting the narrative in the 2000s, although this retrospection comes at the cost of conflating the queer (and paparazzi) with the monstrous and disposable.[9] Yet it should be stressed that *Black Mirror* does offer a more complex representation of the monstrous in the final episode of Season 6, "Demon 79" (2023, S6E5). As in "Mazey Day," the

screen of "Demon 79" is tinted with a sepia undertone, foregrounding the semblance of a by-gone era. Set in a fictional English town in 1979, the narrative revolves around an unusual relationship between Nida (Anjana Vasan) and Gaap (Paapa Essiedu), a demon who disguises himself as Bobby Farrell from Boney M. Nida faces racist abuse on a daily basis, ranging from microaggression to the vandalism of her flat. Her loneliness, anger, and frustration activate a talisman that she accidentally finds in her workplace, summoning Gaap. For Nida, every day is an apocalypse; her life is equivalent to, in Gaap's words, "a profound, palpable, and ever-present lack of existence alone in perpetuity, forever more." After being instructed by Gaap that she must murder three humans to avoid an impending apocalypse brought about by nuclear warfare, Nida reluctantly embarks on a murder spree. In the end, she fails to kill the third target, Michael Smart, a xenophobic, far-right politician who is destined to become a satanic dictator leading the "Britannia Party." The nuclear apocalypse is unleashed, yet the ending portrays a rather queer, human–demon relationship between Nida and Gaap. They decide to fall into a sort of eternal hell together in order to care for each other.

Although the fantasy of apocalypse can be nihilistic in that it seems to foreclose any discussion of building alternative futures, it should be noted that by depicting a nuclear apocalypse that could have happened in the past, "Demon 79" cancels only one discriminatory, murderous version of the future, which thrives on the negation of the lives of the marginalized. This is indeed a reparative longing that projects itself backward, rejecting a conservative futurity that disregards the heterogeneous, multiple voices and dreams of those who have been historically oppressed.[10] Just as anachronism can activate the reparative mode of future-oriented retrospection, as discussed in this article, apocalyptic imaginings can have a similar effect. Returning to the introduction of this paper, it is therefore not exactly "the bric-a-brac of nostalgia available in digital form" itself that precludes historical reflection, which was Svetlana Boym's concern. The question that needs to be asked is whose nostalgia is activated digitally or virtually and how such a process is materially conditioned. ■

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Notes

1. Similarly, in delineating an outlook of affirmative politics in the age of the posthuman, Rosi Braidotti (2019) theorizes temporality by drawing on a Deleuzean notion of the actual and the virtual; that is, the past is "a heterogeneous mass of future pasts awaiting historical actualization" and therefore, "the future is the on-going unfolding of an unrealized virtual past" (p. 65, emphasis added). In Braidotti's formulation, the past is a function of the virtual that harnesses kernels of future hopes imagined in the past. This is not to conflate "the virtual" (as opposed to "the actual") with virtual reality but to note how Braidotti's concept of a virtual past can be useful in reading the reparative effects of queer nostalgia through wish fulfilment in "San Junipero," which uses virtual reality as technological novum. For criticism of such a conflation, see Perotto (2023).

2. Notable works in this regard include Stranger Things [TV series, 2016–present, created by The Duffer Brothers], Ready Player One [a 2018 film directed by Steven Spielberg based on a 2011 novel of the same title by Ernest Cline], GLOW [TV series, 2017–2019, created by Liz Flahive and Carly Mensch], Pose [TV series, 2018–2021, created by Ryan Murphy, Brad Falchuk and Steven Canals], It's a Sin [TV series, 2021, created by Russell T Davies], Blue Jean [film, 2022, directed by Georgia Oakley] and Love Lies

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Bleeding [film, 2024, directed by Rose Glass], to name but a few. It is worth mentioning that both It's a Sin and Blue Jean focus on trauma and community building among queer people, with the former foregrounding the impact of the AIDS epidemic and the latter focusing on that of Section 28.

3. As Catherine Lee (2023) points out, in 1988, homosexuality was listed as a mental disorder in The Diagnostic and Statistical Manual of Mental Disorders by the World Health Organization (WHO) (p. 56). The word "disease" in Section 28 is part of incendiary rhetoric that imposed a culture of self-policing and willful ignorance.

4. Here it should be noted that while most episodes of *Black Mirror* are set in a near future saturated by technological advancements that have not yet emerged in the audience's present, what pervades Season 6 is the retro and horror aesthetics, with four out of five episodes set in the relatively recent past, from the 1960s to the 2000s. The fifth episode, "Demon 79," is specifically called "a Red Mirror film,"—a label created by Charlie Brooker for an episode with a more supernatural and horror quality (Griffin, 2023, para. 3). Brooker has revealed that the production of "Demon 79" influenced that of other episodes in Season 6 that are set in the past (Griffin, 2023).

5. *Time Crisis and Houses of the Dead,* referenced in the subheadings in this article, are 1990s arcade shooting games featured in "San Junipero" (Brooker & Jones, 2018, "San Junipero").

6. The use of bisexual lighting is discussed in Wulandhani and Wijaya (2020).

7. "Hang the DJ" (*Black Mirror,* 2017, S4E4) is relevant to this argument. The narrative is set in a virtual world designed for AI matchmaking. A couple decides to escape from the program, which has deemed them a bad match. Yet their act of defying the system itself turns out to be an expected goal of the overall matchmaking endeavor. "Hang the DJ" thus emphasizes limitations of what participants can do within the constructed reality.

8. Non-normative sexual practices are also demonized in "Loch Henry" (*Black Mirror,* 2023, S6E2).

9. "Hotel Reverie," an episode in the latest season of *Black Mirror* (2025), depicts a queer romance between an interracial couple, Brandy Friday (Issa Rae) and Dorothy Chambers (Emma Corrin) in a virtually constructed space. Brandy, a famous actor, gets transported into a virtual film set in the 1940s and meets the AI generated character Clara Ryce-Lechere played by Dorothy, a closeted actor. In "Hotel Reverie," as in "San Junipero," technology is used as a tool for queer nostalgia (the

Notes, continued

former even includes a reference to "Junipero Street"). Although there is no space in this article for a detailed analysis of this episode, what merits attention is Dorothy's tendency to go off-script despite her being a digital construct; her subversion of the narrative and role based on parameters set by the program can be read as the manifestation of queer desire to transcend the script of compulsory heterosexuality. Yet the episode somehow manages to kill Clara/Dorothy three times (the first death is Dorothy's suicide, the second happens when the system is rebooted, and the third when Clara gets fatally shot). Clara/Dorothy's last remark, "I was born in a cage. I should die in a cage," painfully suggests the eternal recurrence of the closet enabled by digital nostalgia.

10. For an excellent analysis of apocalypse as a liberatory mode of re-imagining the present, please see Jessica Hurley's Infrastructures of *Apocalypse: American Literature and the Nuclear Complex* (2020). While critiquing a form of apocalyptic imagination that merely defends a status quo rife with violence, Hurley proposes "apocalypse as *radical futurelessness,* as a *formal afuturity???* that transfigures the present" (p. 25). I sincerely thank the reviewers for pointing me to Hurley's work.

Acknowledgement

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I would like to express gratitude to Nishant Shahani, Špela Drnovšek Zorko, and the reviewers, who kindly shared extensive feedback and invaluable insights with me.

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Books in Review

The Line: AI and the Future of Personhood

James Boyle

The MIT Press, 2024. hb, 326 pp, $32.95
ISBN 978-0-262-04916-0

Reviewed by **Valerie Broege**

AI has exploded onto the public scene in the last few years with the advent of chatbots that simulate human conversation. Users have been encouraged to interact with them as if they were real persons, and as they have been becoming increasingly more sophisticated, some people, such as Blake Lemoine (a Google engineer) and Stephen Dinan (founder of The Shift Network), have attributed sentience to them. Although James Boyle does not share this belief at present, he foresees a time in which they may evolve into conscious entities. At that point, humanity will have to grapple with the thorny issue of whether they should be afforded the status of persons with the same rights possessed by human beings.

Boyle's book is about the line that separates human beings from other entities. The 21st century is bringing us new challenges about what it means to be human or a "legal" person. In his opinion, we have not reasoned sufficiently about this issue, either individually or collectively. To assist us in coming to grips with this dilemma, he has found it to be relevant and helpful to adopt a multiperspectival and interdisciplinary approach to debates and laws concerning personhood. In addition to an introduction and conclusion, the book is divided into five chapters, entitled "Slaves, Skin-jobs, and Artificial Sheep," "Artificial Intelligence," "Corporations," "Nonhuman Animals," and "Transgenic Entities, Chimeras, and Hybrids." Throughout the book Boyle examines to what extent any of this complex muddle might effectively be applied to the question of whether artificial intelligence, if it becomes autonomous and sentient, may be considered to be a legal person.

Chapter 1 offers a trenchant analysis of Philip K. Dick's 1968 science fiction novel, *Do Androids Dream of Electric Sheep?* and Ridley Scott's 1982 film adaptation, *Blade Runner.* In both these works the determinant factor for establishing whether one is an android or a person is whether the individual can pass a test for empathy for nonhuman animals. In an ironic twist, when androids fail this test, they are killed. Where is human empathy for our creations?

I was especially impressed by Boyle's chapter on corporations. In it, he analyzes the fascinating, checkered history of how corporations came to be regarded as legal persons. Boyle indicates that there have

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been at least four theories of corporate personhood. The first is the real or natural entity theory, according to which corporations are real entities, apart from the individuals who constitute them. The second theory is that corporate personhood is a legal fiction created for whatever rights and duties society confers upon it. The third concept involves an associational or aggregate idea of corporate personhood—that it is an embodiment of the people who compose it and their interrelations. Finally, the fourth theory is that it is a collection of agreements, a nexus of contracts. Boyle imagines that all four of these theories might come into play in assessing eventual personhood claims for AI. The author believes that the single most obvious analogy in this debate will be that of corporate personhood and constitutional rights. He goes so far as to assert that the AI is the corporation. It already has functional personhood in that the AI is calling the shots when a corporation makes a decision. Some corporations, such as Microsoft and Amazon, are currently relying heavily on AI to shape their business practices.

In detailing the history of corporate personhood in the United States, Boyle adduces ample evidence for lack of transparency, popular debate, and rigorous legal analysis, with mistakes, ignorance, or possible fraud also playing a role. He fervently hopes that lessons will be learned from this debacle to be applied to the determination of AI personhood.

Another key issue that drew my attention was the author's discussion of speciesism in relation to AI's possible status as a legal person. We have witnessed the long, hard struggle, with much backsliding along the way, toward universal recognition and rights being accorded to all human beings, regardless of race, gender, sexual orientation, religion, ethnicity, or economic level. But can we transcend speciesism as well, in not maintaining that consciousness is limited to biological organisms, especially human beings? Can it also arise in artificial silicon entities that have some capacities that are superior to ours? As Boyle has pointed out, the advent of AI is forcing us to reevaluate what it means to be human. Can our qualities of care, empathy, intuition, and common sense be integral components of AI training? Can beneficent AI work harmoniously with humanity as both partners co-evolve in cultivating their better angels and protecting the planet as well? Deepak Chopra, for one, in his book *Digital Dharma: How AI Can Elevate Spiritual Intelligence and Personal Well-Being* (2024) presents practical steps we can take to actualize these possibilities.

If such is the case, humanity would be less likely to become extinct because of AI, a fear expressed by such "doomers" as Stephen Hawking, Eliezer Yudkowsky, and Nate Soares in their 2025 book *If Anyone Builds It, Everyone Dies: Why Superhuman AI Would Kill Us All.* An effort being taken in the right direction toward averting such a catastrophe is the recent U.N. resolution to set up an

The Line: AI and the Future of Personhood, review, continued

independent panel of 40 experts on AI and a forum named the Global Dialogue on AI Governance, established with a view to spearheading a binding global treaty setting standards for minimum guardrails for AI. But will it be too little too late, because the cumbersome, slow-moving deliberations of the U.N. are no match for the speed at which AI research is advancing, plus the reality of the rejection by the U.S. of calls for international AI oversight?

On pages 268–269, in the conclusion of the book, Boyle presents an excellent and succinct encapsulation of many of his ideas in the form of four different scenarios concerning the adoption of AI personhood: positive and negative liberal attitudes and positive and negative conservative attitudes.

On the positive liberal side of the ledger, conferring personhood on sentient artificial intelligence is conceived of as the next step in humanity's moral progress. The fact that a sentient entity has been artificially created or is nonbiological in origin is no more morally relevant than one's skin color or gender identity. What counts is the capacity for intelligence and rationality, which is shared by humans and AI, so they should be equal partners dedicated to helping to solve the world's most intractable problems, like curing cancer, dealing effectively with climate change, and shaping the economic markets to serve social welfare rather than profit maximization.

The negative liberal stance is characterized by criticism of the decision to allot legal human rights to soulless, profit-seeking corporations, thereby damaging both our democracy and the economy. Now we are being asked to make the same mistake on an even bigger scale with AI, which is doing the bidding of its corporate creators or following its own non-human agenda. This is the next stage in the devaluation of actual human interests and does not represent moral progress.

Apropos of the positive conservative view, the corporation and its status of legal personhood have been hailed as making possible a huge leap in human progress. For these conservative thinkers, the next step is granting the same designation to AI. In so doing, there would be enormous gains in efficiency, innovation, and trickle-down wealth. The basic unit in society is a freely choosing mind, which validates the ethical claims for the personhood of an intelligent, conscious AI mind.

Negative conservatives are like Constitutional originalists who decry the hubris involved in deeming animals and lifeless machines created by scientists as on the same footing as God-given humanity. How can we deny personhood to an unborn human baby while championing human rights for AI?

In the end, Boyle does not opine on which of these four scenarios is most likely to prevail. There are too many unforeseen factors at play relating to politics, new scientific breakthroughs, scandals and disasters, and the public's actual interactions with AI for him to hazard a guess. Given the dictum of "follow the money,"

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as capitalistic profit-making still has so much sway in the world, I would imagine that the third scenario, positive conservative, will dominate, at least in the short term, even though I would definitely prefer the positive liberal viewpoint.

In conclusion, *The Line: AI and the Future of Personhood* is a magisterial work, meticulously researched and annotated, more than a decade in the making. A fuller bibliography is said by Boyle to be available at a website accompanying this book, but no URL was given and I was unable to locate it. Boyle's background as a Duke Law School professor is evident in his ability to go into the weeds of legal, ethical, and philosophical controversies and to present the pros and cons as well as the implications involved. Although his prose is somewhat dense and nuanced, it is leavened throughout by his witty observations and turns of phrase—not that common in academic writing. It is also a boon to the reader that he reiterates his main points in the introduction and conclusion of his book as well as at the ends of his chapters. I would wholeheartedly recommend this book to anyone seeking a comprehensive, detailed, and thought-provoking analysis of the conundrum of the personhood of artificial intelligence. ■

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Books in Review

AI Ethics

Mark Coeckelbergh
The MIT Press, 2020, pb, 248 pp, $17.95
ISBN 9780262538190

Reviewed by **Jason W. Ellis**

Mark Coeckelbergh's *AI Ethics* is a comprehensive introduction to moral philosophy as it concerns artificial intelligence (AI), machine learning (ML), and their applications. Spanning twelve chapters, it explains the basics of AI and ML for a lay audience while layering discussions about the ethical issues surrounding AI development, training, and deployment as it was in the time leading up to the book's publication in 2020. Despite missing the Generative AI boom, it still provides AI novices with the language and concepts to think about the ethical considerations of building and using AI systems as well as the ethical questions underlying the AI systems at work in the world around us that we might not immediately see.

Coeckelbergh begins by distinguishing AI hype from its practical applications, detours through the singularity and transhumanism, and questions "what is human" in its introductory chapters. It hits its analytic stride in the fourth chapter with moral agents and moral patience. This leads next to a look at what 2020–era AI can do, explanations of machine learning and data science, as well as concerns about privacy, disinformation, and security. I feel the two chapters on responsibility and bias could have been developed further considering their importance to the field, especially the concepts of Explainable AI and Responsible AI. It concludes with chapters on AI policy proposals and their justification, challenges for policymakers (which includes interdisciplinary approaches and teams to develop these agendas), and the (now) ironic closing, "It's the Climate, Stupid!," which suggests using AI to help solve climate change with only the briefest gestures towards its significant contributions to the problem of global warming. While the book is obviously well researched, as evidenced by its references, end notes, and further reading list, its telegraphic delivery throughout might leave the reader missing some of the linkages between its diverse topics.

Considering the broad audience for this work, I was surprised that it used very few examples from popular culture and science fiction. The examples that were used consisted primarily of the SciFi urtext, Mary Shelley's *Frankenstein* (1818), but there were also mentions of Isaac Asimov's robot stories (none by title), and films including *2001: A Space Odyssey* (1968), *The Terminator* (1984),

AI Ethics, review, continued

and *Ex Machina* (2014). While I think the issues surrounding the ethics of AI explored in the text could have been illustrated more thoroughly with additional examples from SciFi, the author uses a variety of examples, some being from the real world and others from literary SciFi to explain his arguments.

However, I was frustrated by one significant passage in which he glossed over *Frankenstein* to make a point about hubris and technology unleashed in a manner similar to other science and technology popularizations that have committed similar sins. Coeckelbergh writes, "The novel should not necessarily be seen as against science and technology: the main message seems to be that scientists need to take responsibility for their creations. The monster runs away, but it does so because its creator rejects it. This lesson is important to keep in mind for the ethics of AI" (p. 19). The phrase, "the main message seems to be," is doing a lot of work in those sentences, but it seems reasonable until he adds: "Nevertheless, the novel clearly stresses the danger of technology that goes wild, in particular the danger of artificial humans running amok. This fear resurfaces in contemporary concerns about AI getting out of control" (p. 19). What the author characterizes as "clearly" is anything but. It is a popular but unfair reading of Frankenstein's creation in the novel. The creature, constructed of dead human flesh and bone and reanimated through chemical and electrical technologies developed by Dr. Frankenstein, has a mind, rationality, and agency. The creature goes to extraordinary lengths to foster connections with humans and join in community with others, but it is other humans who repeatedly reject and ultimately fail the creature. Furthermore, the creature isn't a technology, but is instead inanimate (i.e., dead) matter given life through Frankenstein's scientific developments and technological engineering. Frankenstein's irresponsible development of those technologies and his reckless use of them in his pursuit of immortality should be the focus of condemnation. While the creature as an "artificial human running amok" is certainly a part of the popular imagination concerning the novel, its Frankenstein's dereliction of responsibility over the result of his technological developments that should be the focus of how this applies most closely to a discussion of AI ethics in the current state of its development. Perhaps a better example for the point about the unfettered and uncritical use of technology is the exchange between park owner John Hammond (Richard Attenborough) and Dr. Ian Malcolm (Jeff Goldblum) in the film *Jurassic Park* (1993). Hammond says, "I don't think you're giving us our due credit. Our scientists have done things which nobody's ever done before," to which Malcolm replies agitatedly, "Yeah, yeah, but your scientists were so preoccupied with whether or not they could, that they didn't stop to think if they should." Malcolm's warning applies to AI development in multiple ways. First, there are the direct consequences such as water and energy utilization, the growing ubiquity of AI, and

AI Ethics, review, continued

the AI technology arms race on the levels of companies and nation states. Then there are the unintended consequences, of which there are many, but to name a few, less water resources, higher energy prices, challenges to avoiding AI, and the potential of an AI economic bubble bursting and taking the financial markets down with it. It's not one monster but many.

That quibble aside, *AI Ethics* does have a lot to offer readers wanting to learn more about AI and its thorny ethical dilemmas. It could work on a range of different syllabi in AI-related courses in computer science, science and technology studies, and philosophy. It might work in a SciFi course that features an AI-themed module or perhaps a special topics class such as "AI Imaginaries" or "Past AI Futures." In such a class, this text can give a practical grounding in ethical issues beyond Asimov's Three Laws of Robotics. Its approachable writing style and language make it accessible to diverse reading groups. Having it on the shelf in school, college, and local libraries would help put its ideas in front of many different readers interested in these topics.

In addition to the references and further reading recommendations in *AI Ethics,* the following are other books connected to these topics that might provide additional explanation and examples for interested readers. *Computing and Technology Ethics: Engaging through Science Fiction* (MIT Press, 2023) edited by Emanuelle Burton, Judy Goldsmith, Nicholas Mattei, Cory Siler, and Sara-Jo Swiatek is an excellent anthology that explores ethical issues with AI and other technologies through paired science fiction readings. *An Intelligence in Our Image: The Risks of Bias and Errors in Artificial Intelligence* (Rand Corporation, 2017) is a white paper available online by Osonde Osoba and William Welser IV that, while dated, explains ML bias in some depth. *AI: Unexplainable, Unpredictable, Uncontrollable* (CRC Press, 2024) by Roman V. Yampolskiy (whose 2013 book chapter on AI safety engineering is referenced in *AI Ethics*) explores the trouble with resolving ethics for AI when its underlying technology is essentially an unknowable black box. Patrick Hall and Rumman Chodhury's *Responsible AI: Designing, Building, and Assessing Machine Learning and AI* (O'Reilly, 2021) provides a start-to-finish approach for building responsible AI systems. Paula Boddington's *AI Ethics: A Textbook* (Springer, 2023) is a far more rigorous work on exploring AI moral philosophy. And finally, Lorena O'Neil's *Rolling Stone* exposé "These Women Warned of AI's Dangers and Risks Long Before ChatGPT" (12 Aug. 2023), explores the biases not only in terms of training data but in also in representation in Big Tech and AI policymaking. ■

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Books in Review

Roleplaying Games in the Digital Age: Essays on Transmedia Storytelling, Tabletop RPGs and Fandom

Stephanie Hedge and Jennifer Grouling
McFarland, 2021, pb, 241 pp, $39.95
ISBN 9781476676869

Reviewed by **Arwen Paredes**

This book reads as a love-letter to TRPGs, edited by two longtime fans of the genre themselves, Stephanie Hedge and Jennifer Grouling. It was published in 2021, around the start of the exceedingly fast-growing hype surrounding Tabletop Roleplaying Games (TRPGs), particularly in the forms of actual-plays and podcasts in the wake of COVID-19. This places the research presented in the text at a very specific moment in TRPG fandom history, when the conventions of this newly digitized landscape were yet to be established and D&D podcasts were still finding their foothold in modern fandom culture. The book is a collection of essays and interviews organized into three main parts: "Analog Meets Digital," "Gameplay Experiences Meet Digital Affordances," and "TRPGs Meet Fans." Each section is made up of 4–6 individual essays or interviews, all contributing to the discussion on how digitization affects the TRPG medium and the wide variety of games within it.

Hedge and Grouling share a professional background in rhetoric and first-year composition, both serving as directors of the writing program at their institutions (University of Illinois Springfield and Ball State University in Muncie, Indiana, respectively) These backgrounds permeate the text, most obvious in its focus on TRPGs and digital spaces as vehicles for composition, rather than the narrative content of any particular game. This focus itself may not necessarily be considered a weakness of the book, as it does provide further insight into how the TRPG medium functions rhetorically. However, some readers may find issue with the text's presentation of the act of storytelling as a heavily insular and personal experience despite the collaborative nature of most TRPGs. In the introduction, the editors also give an overview of their personal histories with TRPGs and how their shared interest in the field of TRPG studies has influenced the ways in which they continue to interact with the medium. While such personal connections to the subject matter function to enhance the text in terms of ethos, this can, at times, come off as alienating to readers who may not share the same level of literacy in the field. Considering the editors' direct involvement with TRPGs alongside their backgrounds in composition studies, their ability to maintain scholarly

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distance with the subject is repeatedly brought into question throughout.

Many of the book's central concepts take the form of acronyms (TRPG, GM, PC, EO, IRL, D&D, etc.) which are a product of the TRPG medium themselves, though a key or clarifying footnotes might have been useful in such instances. The prose is consistent and mostly neutral throughout despite its many contributors, and is heavily research-based, albeit often reliant on very small sample sizes. This only exacerbates the undercutting of collaboration's significance within the TRPG sphere. These limitations are clearly noted in the "Lightning in a Bottle: Capturing the Shifts" portion of the book's introduction, which addresses the text's primary goal of capturing a specific moment in the history of TRPGs, that of the COVID era and its influence on transmedia texts through isolation. If you are looking to read about certain individuals' very specific and personal experiences with TRPGs or your research concerns digital behavior at an individual level, this book will be of great use to you. However, if you are seeking the answers to broader questions and conclusions drawn about TRPGs and their digitization, you might read a few articles from each section and disregard the rest. Some articles of note include Shelly Jones's "The Quest for More Yarn: Fiber Fictions as Transmedia Narratives," Daniel Lawson and Justin Wigard's "Roll20, Access, and Rhetorical Agency in Digital Game Spaces," and Emily Friedman's " 'Is It Thursday yet?': Narrative Time in a Live-Streamed Tabletop RPG."

The first section, "Analog Meets Digital," provides an expansive look at the sheer variety of games that fall under the category of TRPG. From mobile apps to knitting-based narratives, this section establishes some of the ways in which the traditional hands-on elements of TRPGs interact with the digital landscape that has become increasingly engrained in the genre. Foregrounding each text is the emphasized importance of sites like Kickstarter for crowdfunding and community building. Many games within the TRPG space rely on crowdfunding efforts to be produced and refined. One such game is discussed in the article, "The Quest for More Yarn: Fiber Fictions as Transmedia Narratives," which centers a non-traditional fiber arts-based roleplaying game called Yarn Quest and its use of digital spaces as a secondary medium of storytelling alongside the knitted project itself. Professor and transmedia scholar Shelly Jones writes, "The double knitting reifies the narrative of the character (e.g., the dragon they fought) as well as the narrative of the player (e.g., the experience of learning how to double knit)" (p. 42), noting how the material and skill-based aspects of the craft inform the narrative created through roleplay. To fit neatly under the section's scope, the role of the website Ravelry as the main means of communication between "knitter-players" is repeatedly highlighted. This article stands out among the rest, primarily for the niche nature of its subject matter, but also in its detailed analysis of both the form and content of Yarn Quest. Jones

succeeds at both introducing the reader to an unfamiliar gaming experience and illustrating why such an experience has resonated so deeply with its audience.

The book's second section, "Gameplay Experiences Meet Digital Affordances," suffers the most from the aforementioned limitations of this text. However, two clear highlights are the interview and following article about the online TRPG platform, Roll20. In an interview with Grouling, Nolan T. Jones, creator of Roll20, states, "I had no concept in terms of how important it would be for people…In terms of going from 'I just made this thing to play with my buddies' to 'this is a way I can keep in touch with people and be my authentic self,'" (p. 97) speaking to the Roll20 community's surprisingly personal responses to the platform. This finding supports the section's main thesis, that digitization offers certain affordances to TRPG players that expand beyond the games themselves. Professors of Rhetoric and Composition, Daniel Lawson and Justin Wigard, continue this discussion in "Roll20, Access, and Rhetorical Agency in Digital Game Spaces," writing, "In some ways, Roll20 might best be understood as a utopian technology, one that…has the potential to promote more inclusive gaming practices and to broaden our understanding of how rhetoric works in gaming spaces," (p. 111). Such rhetoric effectively bridges the gap between internal workings of TRPGs in digital spaces and the wider implications it has on issues of accessibility.

The third and final section, "TRPGs Meet Fans," details the influence of fandom on TRPG communities, particularly regarding actual-plays in the forms of livestreams or podcasts. It additionally contributes to a broader conversation surrounding parasocial behavior in interactions between fans and content creators. In "'Is It Thursday yet?': Narrative Time in a Live-Streamed Tabletop RPG," Professor Emily Friedman posits, "Because of its massive length, with more content coming every week, I came to the viewing and analysis of Critical Role expecting to find more strategies of compression and abridgement than I have found. Instead…the experience of the 'full' narrative, including the social banter at the table that is often cut down or eliminated by edited streams, is understood as essential to the pleasure of the narrative," (p. 202). While the Critical Role canon has expanded exponentially over the years since this collection was published, to a point where abridged versions are currently under development, Friedman's conclusion about fans' desire to consume the actual-play on every diegetic level available remains profound. It places the TRPG actual-play in a media category of its own, one that has tropes, conventions, and expectations, yet its existence still blurs the lines between modes of viewing and interactivity. Hedge and Grouling write in the book's conclusion, "RPG studies is not simply transmedia because role-playing exists across analog and digital platforms. Rather, RPGs, and TRPGs specifically, are designed with a transmedia ecology in mind and must also

Roleplaying Games in the Digital Age, review, continued

be studied this way," (p. 218). "Roleplaying Games in the Digital Age" ultimately illustrates that TRPGs are inherently transmedia, which leads to some complications in making this text accessible to those outside of the field with its highly specific and isolating vocabulary and having its material maintain relevancy as the years pass. The TRPG industry has only continued to expand in scale exponentially since the publication of this book, its online adaptability with it, forcing scholars to scramble to keep up. As scholars who hoped to capture a crucial moment within TRPG history, Hedge and Grouling admirably rose to the challenge. TRPG studies is an ever-evolving field that values multiplicity and individual experience at its core, a notion that this text captures skillfully and unabashedly. ■

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About the Contributors

Artist

Bizon is a glitch artist of five years who started creating around the age of 13. Drawn to the distortions of color and light on screen, Bizon's art usually features internet culture, melancholy, and nostalgia. Bizon's art can be followed on Instagram @cybernetic_slaughter.

Authors

Jason Embry is an Associate Professor of English at Georgia Gwinnett College in Lawrenceville, GA, where he teaches courses in First-Year Writing, Literary Theory, 20th-century American Literature, and Science Fiction. His research focuses on mechanisms of control within utopian fiction, science fiction, and (new) weird fiction. These mechanisms include human, alien, and computerized language; existing and imagined economic systems; and scientifically modified human and environmental constructs. His book article, "Magic's Failure to Reanimate Fantasy," appears in Keith Kelly's edited collection *Power and Subversion in Game of Thrones: Critical Essays on the HBO Series,* published in 2022. He is currently writing about national art and hegemony in Arkady Martine's *A Memory Called Empire.*

Philip L. Frana, PhD, is Professor of Interdisciplinary Liberal Studies at James Madison University, with appointments in Independent Scholars, General Studies, and the Honors College. His expertise includes software and information studies, technology and culture, and AI and society. He is co-editor of the *Encyclopedia of Artificial Intelligence: The Past, Present, and Future of AI* and writes technology policy briefs for the Atlantic Council in Washington, DC. He also serves on the advisory board of the Museum of Science Fiction. He earned his doctorate in the History of Technology and Science from Iowa State University.

Travis Loof, Ph.D., is a social and communication scientist focused on turning research into operational tools that serve public agencies and communities. His work spans media psychology, crisis communication, and human–AI interaction, with a particular focus on AI-enabled decision support. Based at The University of Alabama's College of Communication and Information Sciences, Loof is affiliated with the Alabama Water Institute, the Center for Cyber-Social Dynamics, and CIROH. His recent work includes evaluating how AI can support crisis messaging and understanding the dynamics of human-AI teamwork. He is known for connecting researchers, policymakers, and operators to co-design practical solutions that are actively used in the field, especially in high-stakes environments like water security and emergency response.

David Tamez, Ph.D, is an Assistant Research Professor and Research Program Director for the Institute for Information Sciences at the University of Kansas. He also serves as the Managing Director for the Center for

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Cyber-Social Dynamics. His research examines how emerging technologies (including machine learning, algorithmic governance, and digital media) influence legal reasoning, social dignity, and epistemic practices. Drawing from philosophy of law, social epistemology, and science and technology studies, he investigates how tools such as AI systems and deepfakes challenge the authority of judicial institutions, reshape civic agency, and transform the conditions under which knowledge is produced and evaluated. At the University of Kansas, he helps lead research initiatives focused on socio-technical systems, epistemic resilience, and emerging ethical challenges in computational contexts.

Srđan Tunić is an Art History PhD student at Temple University, Philadelphia, who works with global contemporary and public art. He is one of the cofounders of initiatives Street Art Walks Belgrade, Kustosiranje / About and Around Curating, and Trans-Cultural Dialogues (the latter as part of Cultural Innovators Network). Since 2012, he has been working as a freelance curator, organizing art exhibitions and educational projects. Since 2018 he has been one of the contributing editors of Not Afraid of the Ruins. Some of his latest publications inckude: "Ghosts, Traces, and Care: A Reflection on Street Art, Public Space, and Urban Politics in Philadelphia" (SENSUS 1.0, 2025), "Queering the Urban Space: The Adventures of Inspector Yoda the Wrinkled in Belgrade, Serbia" (SAUC, Vol. 10, No. 1, 2024) and "The New Gods: Merging the Ancient and the Contemporary of Egypt," co-authored with Omar Houssien (*The Routledge Handbook of CoFuturisms,* 2023).

Asami Nakamura, Ph.D. is a lecturer in European and American Studies at the Graduate School of Intercultural Studies at Kobe University, Japan. Since completing a PhD (University of Liverpool) on nostalgia in dystopian and homecoming novels by Katharine Burdekin, George Orwell, Margaret Atwood, and Kazuo Ishiguro, they have been teaching and doing research on utopian/dystopian literature and speculative fiction at various universities in Japan. Their major publications include "On the Uses of Nostalgia in Kazuo Ishiguro's *Never Let Me Go*" (*Science Fiction Studies,* vol. 48, 2021) and *Reading* The Handmaid's Tale: *Beyond Feminist Dystopia* (a collection of essays in Japanese co-edited with Megumi Kato, 2023). They also co-organized an international symposium with Stefan Würrer on feminist/queer utopias and dystopias. They received a JSPS early career grant in 2024 and serves as the PI for a three-year project entitled "Techno-Orientalism in Anglophone Speculative Fiction: The Intersection between Gender and Race." Nakamura's current international collaboration projects include an edited volume in English on transcultural perspectives on digital inequality in the arts, humanities, and sciences.

François Zammit, Ph.D., completed his philosophy doctorate at the University

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of Malta. His studies explore the role of neoliberalism in creating new forms of being based on the definition of the human as *homo oeconomicus.* In his thesis he also looks at the role played by new technologies in this process. His research interests are linked to political economy, political theology, biopolitics, and political theory. He also works and lectures on education, philosophy of technology and the role of technology in the fields of ethics, political economy, and politics. He has published papers on the concept of the market order in Hayek and has contributed to discussions on topics linked to technology such as the influence of technology on political thinking or the ethical implications of the digital self or digital immortality.

Book Reviewers

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Editorial Team

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Barbara Jasny has a PhD in molecular biology from Rockefeller University. After a period of conducting wet-lab research, she joined *Science* magazine, the weekly journal of the American Association for the Advancement of Science, in 1985. Until she retired in 2018, she solicited papers and evaluated research reports for publication in genetics, medicine, and computational social science. Barbara is author of more than 60 research papers, editorials, and overviews, and has been involved in communicating science in books, articles, posters, virtual presentations, CDs, and podcasts. She enjoys a variety of science fiction genres, including (but not limited to) fantasy, and loves gem and mineral collecting, folk music, and (her newest passion) her grandchildren.

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Sayan Chattopadhyay is a Doctoral Researcher and Faculty of English at Adamas University, India. He researches upon the changing perspectives of Postmodern concepts, focusing upon the "assumed" politicized Science Fiction of the 20th and the 21st Centuries, globally. His interest within the field spans from Retro-Futurism to Postanimalism and beyond. His books, research articles on the sub-genres of Sci-Fi, his Sci-Fi short stories, media interviews, and other publications are widely and openly available on the internet for anyone to explore.

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Kristine Larsen (PhD in Physics, University of Connecticut) is CSU Distinguished Professor in Earth and Space Sciences at Central Connecticut State University. Her teaching and research focus on the intersections between science and society, including Gender and Science; pseudoscience, misconceptions, and science illiteracy; science and popular culture (especially in the works of J.R.R. Tolkien); and the history of science. She is the author of *Stephen Hawking: A Biography* (Greenwood, 2005), *Cosmology 101* (Greenwood, 2007), *The Women Who Popularized Geology in the 19th Century* (Springer, 2017), *Particle Panic!* (Springer, 2019), *Science, Technology and Magic in* The Witcher*: A Medievalist Spin on Modern Monsters* (McFarland, 2023), and *The Sun We Share: Our Star in Popular Media and Science* (McFarland, 2024).

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John J. Doherty holds a Masters in Arthurian Literature from the University of Wales, as well as a Masters in Library Science and a doctorate in Curriculum and Instruction. He is currently Head of Research and Instruction for the Cline Library, Northern Arizona University. His work has been published in *Extrapolation, Arthuriana,* and the *St. James Encyclopedia of Popular Culture,* as well as in professional library and curriculum journals. His current research is focused on libraries and librarians in popular culture, as well as the intersection of American horror with Irish noir.

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