https://doi.org/10.37420/j.cer.2025.087

Science Fiction Metaphors and Technological Anxiety: Entry Points and Focal Perspectives in Cutting-Edge Communication Studies

Yuan Zhu*
Communication University of China, Nanjing, Jiangsu, China
Corresponding author, E-mail: zhuyuan@cucn.edu.cn

Abstract
In recent years, the dramatic rise and fall of the "metaverse"—from a capital-driven frenzy to the reality of technological stagnation—has revealed the deep-seated relationship between science-fiction metaphors and contemporary technological anxiety. Drawing on classic science-fiction texts such as Snow Crash, this paper examines how fictional virtual worlds mirror real-world tensions and contradictions. It identifies several frontier topics in communication studies that can be productively approached through the lens of science-fiction metaphors, offering multidimensional pathways for scholarly inquiry within speculative contexts. The author argues that cutting-edge communication research should remain grounded in social reality and adopt "sociotechnical imaginaries" as a theoretical framework. By integrating China's local practices, such research can help correct cognitive biases arising from both technological optimism and pessimism, mitigate pervasive technological anxiety, and cultivate constructive social orientations. Ultimately, strengthening communication scholarship's interpretive authority over technological change can contribute to the harmonious development of technology and human civilization.

Keywords:
science-fiction metaphor; technological anxiety; sociotechnical imaginaries; communication transformation; social orientation

In recent years, the rapid evolution of emerging technologies—ranging from the "first year of the metaverse" in 2021 to the breakthrough advances of large language models in 2024—has made the digital sphere feel as though it is reinventing itself overnight. Yet by 2025, the metaverse once again receded into silence. Meta, the company that first declared its full-scale entry into the metaverse race, officially abandoned further development of the metaverse in 2025 and redirected its primary investments toward artificial intelligence and smart glasses technologies.[1] Clearly, the conditions for fully entering the metaverse are not yet in place: the foundational technologies remain unrealized, and the networked ecological environment necessary to sustain a metaverse has not been built. No matter how "nutritious" this conceptual stew may be, it simply cannot yet be served on the table of capital.

From the metaverse's triumphant rise in 2021 to its chilling winter in 2025, the concept has resembled a fleeting dream—moving from capital's enthusiastic entrance to its abrupt withdrawal. In a sense, it has functioned as a fable that illuminates the intertwined relationships among humans and technology, technology and

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

capital, capital's dreammaking and mass communication, and mass communication and sociotechnical imaginaries.

1. Science-Fiction Metaphors Embedded in the Metaverse of *Snow Crash*

Tracing the origins of the "metaverse" often leads back to the 1992 science-fiction novel *Snow Crash*, which offered the first explicit depiction of a virtual world existing parallel to and above the physical one. In this cyberspace, individuals inhabit digital "avatars" distinct from their real-world identities.[2] In fact, long before the novel's publication, humans had already begun constructing proto-metaverse environments in the online world. Contemporary discussions of metaverse practices typically revolve around three pathways: gaming, collaborative virtual workspaces, and virtual investment infrastructures. Among these early experiments, the 1986 MMO game Habitat is widely considered one of the first graphical large-scale virtual communities.[3] Within the game, users could not only interact in real time but also embark on adventures, fall in love, marry, divorce, start businesses, build religions, wage wars, or establish autonomous zones.[4]

Built on these early practices, *Snow Crash* presents a broader and more influential cyberspace, reflecting the era's deeper cultural imagination of the digital future as well as the technological anxieties provoked by the emerging network society. One central narrative device in the novel is the idea of a "virtual virus" that crosses into the real world and "kills"—reducing victims to mindless, incoherent slaves.[5] This metaphor directly referenced the proliferation of computer viruses in the 1990s, a problem that has significantly improved today.

Although the novel's metaverse is ostensibly founded on utopian ideals, it is nonetheless constrained by real-world inequalities. Wealth determines the quality of avatars one can purchase; those without financial means are limited to rigid, low-expression models. As a result, "in this information-based virtual society, people become emotionally numb, like robots."[5] This metaphor spoke to the growing awareness that digital technologies were exacerbating the informational divide: even as the internet expanded people's communicative capacities, the gap between those who controlled information and those who did not grew ever wider. In the contemporary era of algorithmic ranking, infotainment-dominated news, and AI-driven synthetic media, this issue has only intensified.

From this perspective, the metaverse in *Snow Crash* functions fundamentally as a science-fiction metaphor. Metaphor is a cognitive tool that uses familiar experiences to illuminate unfamiliar domains.[6] Science-fiction metaphors, specifically, employ technological world-building, character design, and narrative structure to reflect on real social problems and human conditions.

2. Science-Fiction Metaphors and Technological Anxiety

Importantly, science-fiction works should not be read as predictions of technological futures. Rather, they serve as popularized explorations—within mass communication—of emerging technologies and potential developmental trajectories. These works often build on three core philosophical orientations: Technological scientism, which imagines science as capable of solving all currently unsolvable human problems. Techno-

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

logical pessimism, which anticipates that technological development will ultimately lead to loss of control or catastrophic outcomes. Fatalism, which assumes that regardless of technological advancement, humanity cannot escape its destined end—whether through extraterrestrial threats or inevitable natural cataclysms.

Driven by survival instincts, humans are naturally more attuned to tragic narratives. Technological pessimism and fatalism resonate more deeply with the public, activating evolutionary anxieties embedded in our collective memory. In 2024, the widespread adoption of AI large language models exemplified this: while many acknowledged their advantages, public discourse gravitated toward fears of job displacement, industry collapse, and systemic uncertainty.

In recent years, major Chinese science-fiction franchises—such as Liu Cixin's *The Three-Body* and *The Wandering Earth*—have also embodied these tragic sensibilities. They dramatize humanity's struggle against fate while embedding contemporary technological anxieties within unique science-fiction metaphors. For example, *The Wandering Earth* II explores the concept of "digital immortality," where researchers preserve a deceased daughter's memories in digital form and enable her to develop artificial intelligence capabilities. Through continual learning and emotional responses, the digital being gradually acquires self-awareness and sentiment—an act portrayed as both ethically contentious and legally prohibited in the film.

"Digital immortality" represents a frontier topic in communication studies, reflecting how technology reshapes human memory. With cloud infrastructures capable of "reviving" electronic media, "individual experiences and collective social life may be fully recorded and permanently preserved, forming a tangible 'third-order digital memory.'"[7] Its future manifestations may take the form of externalized cognitive systems—"external brains"—or fully realized digital immortality.

3. Frontier Communication Topics Illuminated by Science-Fiction Metaphors

Beyond the notion of "digital immortality," numerous science-fiction metaphors align closely—sometimes even perfectly—with cutting-edge topics in communication studies. Examples include: data-ghost worlds and digital immortality; dystopian megacities and information imperialism; virtual-idol dominance and the digital divide; hypersensory synchronization (augmented reality) and embodied communication; neural symbiosis (brain–computer interfaces) and human–machine relations; and data-fog forests and information overload. Each of these metaphors signals a fundamental transformation in media and communication while also encapsulating public anxieties about an intelligent communication era built upon ubiquitous connectivity.

Approaching emerging communication issues through popular sci-fi metaphors reveals a shared underlying property: connection. The essential nature of the internet is connectivity, and the future promises not merely networked individuals but an era of the Internet of Everything (IoE). In such a landscape, any object can become a medium—and humans themselves function as media. As one scholar notes, "In a deeply mediatized society, media are extensively embedded across all layers of social life, tightly interwoven with diverse settings. The socialization of media and the mediatization of society mutually reinforce and co-evolve, continually reshaping how people connect and interact."[7]

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

Science-fiction works, viewed through this lens, offer a rich array of imaginative scenarios depicting various modes of connection. Drawing from several cutting-edge perspectives—such as embodied communication, socialized communication, spatial and situational media, human–machine relations, and the digital divide—this section outlines representative sci-fi metaphors and the technological anxieties they embody (see Table 1).

Table 1. Frontier Topics in Communication Studies Informed by Science-Fiction Metaphors

Form of Connection	Frontier Topic in Communication Studies	Real-World Manifestation	Related Science-Fiction Metaphor	Representative Works	Technological Anxiety Conveyed
Connecting through the human body as a medium	Embodied communication	Motion-sensing games	Hypersensory synchronization; Temporal datafication	*Black Mirror: White Christmas* (UK)	Objectification of individuals; Emotional desensitization
Interactional, network-like groups linked through social ties, with each person serving as a radiating node	Socialized communication	Social media; Filter bubbles; Collective clustering	Telepathy networks; Cyberpunk slums; Dystopian megacities	*Never Let Me Go* (Kazuo Ishiguro)	Social stratification; Constraints of social layering; Societal fragmentation
Role-based connections across complex environments—familiar vs. unfamiliar, individual vs. group, online vs. offline	Scenes and spatiality	Digital nomads; New farmers; Elderly urban migrants; Invisible overtime	Cyber-dream battlefields; Data-fog forests; Time-distortion devices	*Mobius Space-Time* (Gu Shi)	Information overload caused by excessive connectivity
Human–machine connections	Human–machine relations	Brain–computer interfaces; Wearables; Prosthetics; Augmented reality	Neural symbiosis; Memory editing; Cyber street tribes; Biomechanical hybrids; Post-humanity	*The Spanish Beggar*	Human self-alienation
Connections between the real and virtual worlds	Digital divide	Virtual humans; External brain systems; Digital immortality	Virtual-idol governance; Data-ghost worlds; Emotion simulators; Data fever; Virtual memory trafficking	*Permutation City* (Greg Egan); The Redemption of Humanity (Liu Cixin); Ready Player One (film)	Blurred boundaries between virtuality and reality; Information monopolies deepening inequality

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

4. The Significance of Approaching Frontier Communication Studies Topics Through Science-Fiction Metaphors

First, science-fiction metaphors broaden the spatiotemporal scope of scholarly inquiry, shifting research beyond the constraints of present realities to embrace the full range of future possibilities.

Take embodied communication as an example. Throughout human communication history, any use of bodily gestures or facial expressions to convey meaning constitutes embodied communication.[9] Dance, theater, martial arts, and even advertising performances all fall within this category. In today's media environment, posting personal videos or animated reaction emojis on social media is embodied communication. Entering virtual environments through VR headsets or manipulating virtual elements in physical spaces through AR devices likewise represents embodied communication. These discussions, however, typically center on communication practices that already exist. Science-fiction metaphors allow us to probe additional, unrealized possibilities. In *Black Mirror: White Christmas*, for instance, the "visual blocking" technology enables a woman to completely evade an abusive ex-partner—not only becoming unrecognizable in person, but having all her images and videos automatically blurred out. A character who violates the law may regain physical freedom, yet remain "socially dead" because everyone else has visually blocked him. In this sense, embodied communication can not only be enhanced through online interaction but also entirely disabled in speculative contexts. This opposite of augmented reality might be called "diminished reality." Such speculative exploration enriches the conceptual depth of embodied communication research.

Second, drawing on Paul Levinson's argument regarding the humanizing trajectory of media development,[10] science-fiction narratives—rich in concrete scenes, characters, and storylines—help foreground human needs across various contexts.

All technologies originate from human needs, which change across circumstances shaped by power structures, capital flows, and interactions between social groups. McLuhan famously stated that "the medium is the extension of the human body." Communication activities and media development should therefore serve human needs and address diverse user groups. Some argue that the stagnation of the metaverse stems from its failure to respond to present-day essential needs, whereas AI technologies have rapidly gained traction precisely because they align with people's demands for large-scale information processing and structured reasoning.

Third, many science-fiction metaphors operate within self-contained worldviews, value systems, and media logics. Their imagined settings often serve as reflections of, or compensations for, deficiencies in contemporary society.

Much like reality, virtual worlds in science fiction are rarely egalitarian utopias. More often, they resemble dystopian cities that dramatize real-world tensions. In Liu Cixin's novella The Redemption of Humanity, for example, ordinary people can no longer earn a livelihood due to widespread automation. The narrative concretizes contemporary anxieties about AI replacing human labor. Meanwhile, the sole ruler of First Earth—a super-intelligent individual enhanced through chip implantation—governs not only other humans but also the planet's AI systems. "Inferior" humans are exiled to more primitive worlds. In this brutal hierarchy, both the

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

superhuman and the ordinary person lose their humanity. McLuhan's idea that media extend human faculties emphasizes technology's role in enhancing human perception. Yet when such extensions lead to alienation or distort human value, they undermine their original purpose. The evolution of communication should advance human development, not accelerate human dehumanization.

Science-fiction metaphors, of course, are only dramatic entry points. The ultimate goal of research on frontier communication topics is to help societies employ communication more effectively to construct positive shared visions, alleviate widespread techno-anxiety, and proactively embrace media transformations.

5. Anchoring Research on Frontier Communication Topics

Raymond Williams of the British Cultural Studies tradition argued that scholars should not only attend to political and economic trends but also drive cultural and communicative transformations—changes he regarded as no less consequential than the Industrial Revolution or the struggle for democracy.[11] This underscores the importance of strengthening social agency to cultivate cultural renewal and communication reform. If politics, economics, and technology constitute "hard power," then cultural and communicational innovations form a vital "soft power." Paul Levinson's distinction between "soft" and "hard" technological determinism is instructive here. When we argue that media shape social development, we are operating within soft determinism—media (A) are necessary but insufficient conditions for social change (B).[10]

From the perspective of Chinese scholarship and within the broader goal of "developing a distinctive academic path rooted in China's new era," research should not only address Chinese problems through Chinese practices but also articulate what future civilization entails. How should communication transformations guide human progress? What does a harmonious human–machine relationship look like under socialism? Under which political-economic conditions can technology be developed in ways that benefit humanity rather than alienate it? Western science-fiction metaphors offer inspiration but should not constitute the only framework. Many metaphors emerging from Western contexts reflect pessimistic assumptions—such as the intensification of inequality or the commodification of the human body—stemming from longstanding institutional patterns of wealth and educational stratification. These notions, in turn, shape and constrain Chinese science-fiction creation. At the 11th Future Science-Fiction Master Award (2024), despite a record number of submissions, judges lamented that "a pessimistic tone dominates; optimistic visions of technological progress are in short supply."[12] Given this backdrop, research on frontier communication topics should focus on four aims:Alleviating techno-anxiety embedded in mass communication; Cultivating shared societal visions for media transformation; Employing sociotechnical imaginaries—collectively held, institutionally stabilized visions of desirable futures—to address practical problems and correct biases in mainstream cognition[13]; Securing interpretive authority over narratives of communication transformation.

China is undergoing a historic transformation. Research on emerging phenomena helps people better understand the world, but "the purpose of understanding the world is to act—to change it. If inquiry remains at the level of cognition alone, it loses the essential meaning of communication."[10]

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

6. Correcting Biases in Mainstream Cognition

The four major domains of mass communication—news, commentary, knowledge, and the arts—have been reshaped dramatically by today's media ecology. We witness weakened traditional media, cacophonous online public opinion, diversified knowledge sources, and entertainment-driven cultural production. Audiences experience pressure from information overload and delayed truth. Yet the benefits are equally evident: media coverage now offers unprecedented immediacy; online discourse reshapes journalistic value; knowledge is more accessible than ever; and literary and artistic production has become democratized. People enjoy the dividends of the information age with a tap on their smartphones. Cognition always has two sides, but mainstream cognition can—and should—be reshaped, especially when it concerns emerging technologies.

Following the disruptive debut of large language models in 2024, Lenovo CEO Yang Yuanqing remarked: "AI is absolutely not a bubble. What we call a bubble is simply everyone crowding around large models. But large models are not the only path. The real world is much bigger than that."[14] In 2025, Zhu Songchun, Dean of the Beijing Institute for General Artificial Intelligence, noted that China's AI trajectory in recent years had been "pulled along by Silicon Valley's narrative," and that it was our own mainstream cognition that constrained technological development. He further emphasized a widening gap between the public/media understanding of AI and the academic definition—the concept has been "borrowed" and "over-generalized."[15] If mainstream cognition has indeed borrowed and generalized the concept of AI, then widespread anxieties—such as fears of total occupational displacement—may be rooted in misunderstanding rather than reality. This question warrants further scholarly investigation.

7.Conclusion

When metaphors are understood not as peculiar linguistic devices but as fundamental cognitive tools for generating new ideas, science-fiction metaphors become a meaningful way of imagining the future. Using them to explore frontier communication topics expands the spatiotemporal scope of inquiry, centers human needs, and provides a hybrid framework that is grounded in yet liberated from present-day values. This approach opens new possibilities for studying human–machine relations, the digital divide, embodied communication, and other emerging issues. Ultimately, however, these explorations must return to real-world problem-solving—particularly the correction of biases in mainstream cognition through mass communication.

References

[1]Chang, Q. (2025, April 19). Meta's great retreat! Why did Zuckerberg's "metaverse empire" collapse overnight? [EB/OL]. https://baijiahao.baidu.com/s?id=1830825418389058919

[2]Stephenson, N. (2018). Snow crash (Z. Guo, Trans.). Sichuan Science and Technology Press.

[3]The resurrection of the world's first "metaverse." (2022, July 19). [EB/OL]. https://baijiahao.baidu.com/s?id=1738772864057781748

[4]Shouwangzhe de Maitan. (2024, October 19). How to evaluate Neal Stephenson's Snow Crash? [EB/OL]. https://www.zhihu.com/question/36121880/answer/9107635287

[5]Li, R. (2022). The meta-virus of dystopia. Foreign Literature Trends, 6, 89.

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)

[6]Zhang, J., & Fu, P. (2022). An analysis of metaphorical features in the science fiction novel The Three-Body. Journal of Yan'an Vocational & Technical College, 36(1), 68.
[7]Hu, Z., & Zhang, S. (2025). Rooted in practice, facing the world: A review of frontier topics in journalism and communication studies in 2024. Young Reporter, (1), 5–16.
[8]Tan, T., & Chu, L. (2021). Ten frontier topics in new media communication research. New Observations on Media Convergence, 1, 30–36.
[9]Wang, D. (2025). Role transformation of print media practitioners from the perspective of embodied communication. News World, 5, 56–58.
[10]Zhang, G. (2023). Principles of communication studies. Fudan University Press.
[11]Yao, X., & Li, M. (2022). Into the cave? A triple critique of the metaverse myth. Journalism, 9, 13–19.
[12]Zheng, Z. (2024). Sichuan Online [EB/OL]. https://comment.scol.com.cn/011052/202407/82817453.html
[13]Li, X., & Chen, H. (2023). An analysis and application of Sheila Jasanoff's concept of sociotechnical imaginaries. Journal of Taiyuan Urban Vocational College, (06), 202–204.
[14]Rao, X. (n.d.). Dialogue with Yang Yuanqing: AI is not a bubble, and large models are not the only path to AI [EB/OL]. https://baijiahao.baidu.com/s?id=1807529128692767969
[15]Saixiansheng. (n.d.). Zhu Songchun: Constructing China's narrative of artificial intelligence [EB/OL]. https://www.igcu.pku.edu.cn/info/1026/7208.htm

© 2025 by the author(s); licensee Mason Publish Group, this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (http://creativecommons.org/licenses/by/4.0/)