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# "Japan's Retreat to the Metaverse"

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#### Abstract

As in much of the world, interest in Japan surrounding the 'metaverse' quickly arose in response to Facebook's embrace of the term and rebranding to Meta in October 2021. While Meta's own vision focused on blending virtual spaces with existing office environments, prominent Japanese metaverse approaches focused instead on the production of alternate worlds that could more fully substitute for this one. This essay turns to trade paperbacks from metaverse developers and proponents released in Japan in the wake of Facebook's rebranding, exploring the emphasis on physical and social withdrawal that characterizes these metaverse appeals. Examining the conservative 'otaku' politics that underwrite this retreat to more comfortable, more controllable forms of media immersion, I offer a critical examination of these Japanese proposals to outsource the space of everyday social interaction to for-profit American technology platforms.

# Keywords

metaverse, Japan, digital utopianism, Meta, embodiment, social VR, otaku

# Introduction

At the October 2021 Facebook Connect conference, CEO Mark Zuckerberg drew renewed attention to the term *metaverse*. Rather than the in-person, highly social occasion the event had been in previous years, in 2021 the Connect event was reimagined as a feature-length video stream where Zuckerberg and other Facebook management made their pitch for refocusing the company on immersive 3D digital worlds. The marathon presentation culminated in Zuckerberg announcing the entire company was changing its name to Meta, in an attempt to position the business at the leading edge of the more embodied, immersive social media to come.

Predictably, the pitch was mocked on social media and criticized by much of the Englishlanguage technology press for being out-of-touch, aesthetically unappealing, and, just weeks after the emergence of the highly damaging "Facebook Papers" leaks and their associated scandals, a not-so-subtle attempt by the company to distance itself from its rapidly declining public image (Evans, Frith, and Saker, 2022: 11). This skepticism has continued to greet most of Meta's metaverse moves in the year-and-a-half since, from the laughable graphics and lack of legs in their home-grown *Horizon Worlds* metaverse platform, to the announcement Meta would be taking a nearly 50% cut of any sales of digital assets within the platform. At the same time, however, it was undeniable that Zuckerberg had singlehandedly set aloft a new buzzword overnight. The term, first originating in Neal Stephenson's 1992 science fiction novel *Snow Crash*, had also popped up here and there in previous years, for example in talks from Epic Games CEO Tim Sweeney. But Facebook reorganizing their entire multi-billion-dollar brand around the term signaled to many that mock it or not, a lot of money was about to flow towards anything calling itself a metaverse. In the days and weeks that followed a remarkable number of already existing web and tech businesses would revise their mission statements to position themselves under the large, poorly defined, but remarkably capacious metaverse umbrella. At the same time, critical responses to Meta's metaverse campaign remained decidedly mixed. Pew Research Center's early 2022 canvassing of over six hundred English-speaking technology experts amply illustrates the divisiveness of the concept, with just over half predicting a viable metaverse by 2040 on something approaching the scale Meta has promised, and the remaining respondents often acerbically critical of the metaverse's technological improbability and potentially negative social impact (Pew Research Center, 2022). Many of the high-profile corporate metaverse initiatives in the United States announced by companies like Microsoft and Disney were quietly shelved by spring 2023, in the context of a wider wave of layoffs in the technology and entertainment industries.

However, the global take-up of Zuckerberg's pitch has been more complex, with private and public interests around the world each seeking to capture and mold the metaverse hype for their own local purposes. In Japan, where this essay focuses, municipal governments and large corporations have tended to pitch metaverse projects building off existing 'smart city' and digital promotion strategies already in the works. At the same time, smaller scale but highly active Japanese communities on social VR platforms like *VRChat*, often intersecting with the larger subcultures of anime, manga, videogame, and technology enthusiasts (the so-called "otaku"), have taken the metaverse concept in more original directions.

Unlike the often-short-lived metaverse platforms produced by larger corporate and government players, these enthusiast-driven metaverse projects are entwined with already emergent forms of VR-based socialization, and for that reason are also much more likely to stick around long after mainstream attention has moved on to the next area of technology hype. In this essay I examine the metaverse visions put forth by these more grassroots Japanese VR enthusiasts, and what their reworking of Zuckerberg's initial pitch reveals about deeper shifts in the social desire for escape into immersive media technologies. More specifically, I examine how these Japanese understandings of what it means to translate one's body into the metaverse differ considerably from the vision put forth at Facebook Connect.

## 'Strong' and 'Weak' Metaverse Approaches

As information society philosopher Takehiko Daikoku notes, following Meta's rebranding three different branches of the global tech industry moved to align themselves with the term, each defining it in a different way (Daikoku, 2022: 96-97). The first group was those already working on virtual reality, who had been closely watching Facebook's moves ever since their purchase of Oculus VR in 2014. The second group were those interested in the metaverse primarily as an extension of social media, including social VR. And the third group were those focused on the metaverse's promise of decentralization, intersecting with the blockchain, cryptocurrency, NFTs, and related buzzwords like Web3.

As Daikoku notes, the VR world understood the metaverse as a kind of technology; the social media-aligned saw it as a communications platform; and the Web3 crowd understood it primarily as an investment opportunity. These groups' different agendas have sometimes come into conflict. For example, when four of Japan's major crypto firms quickly announced they were banding together as the "Japanese Metaverse Association" in December 2021, there was much consternation from those working in VR who didn't wish to see the concept so closely affiliated with the crypto world (Kurosawa, 2021).

Alongside these definitional tensions, there was the question of how the metaverse would be positioned in relation to the existing, non-virtual spaces of everyday life. Is the metaverse *another* world (or a collection of worlds), separate from this one? Or is it to be mapped on to existing spaces, meshing the real and virtual together? Echoing the earlier distinction between virtual reality and augmented reality, the other world approach hews towards a fully immersive interface, while the mesh of physical and virtual spaces leans more towards augmented reality, mixed reality, and other passthrough formats. The latter category also includes a wide variety of "digital twin" and "mirror world" projects aiming to produce responsive virtual models of existing (usually urban) environments. In classic philosophical style, Daikoku calls the enclosed, alternative-world focus the "strong" metaverse, and the approach that would blend real and virtual the "weak" metaverse (Daikoku, 2022: 97-98).

The 'weak' approach of AR, mirror worlds, and digital twins was an easy expansion from existing 'digital city' projects already underway in much of East Asia, often under the auspices of earlier urban tech trends like ubiquitous computing, the smart city, and the internet of things. Cities like Beijing, Seoul, and Tokyo were quick to rebrand these projects as their own urban metaverses, promising easier access to city data and civic resources. Urban shopping districts like Shibuya and real-world department stores like Isetan got involved in building metaverse mirror worlds, initially as a Covid-era pivot to try and sustain interest while in-person foot traffic had receded. In parallel, major Japanese publishers like Shōgakukan set about creating more proprietary promotional metaverse platforms aligned around their specific intellectual properties. Schools including the University of Tokyo attempted to leverage the lure of a metaverse version of the campus in the hopes of attracting new students. As in much of the world, these 'weak' metaverse approaches echoed earlier attempts by governments and corporations to stake a claim

in persistent online 3D social environments like *Second Life* (2003-present) and, in Japan, the virtual Tokyo of *Meet-me* (2007-2018). As with Meta's more general approach to platform building (Egliston and Carter, 2022), the goal here was to provide basic social infrastructure to substitute for existing offline services.

## **Promising Escape from Existing Social Conditions**

For 'strong' metaverse proponents in Japan, in contrast, the promise was to get away from all this: to escape from existing physical and cultural constraints, and to start over in a more flexible space freed from the intense inequality and economic struggle of the existing social order (Katō, 2022: 269; Okajima, 2022: 134-35). This promise is also specifically one about embodiment. Metaverse evangelists like Virtual Bishōjo Nem promise the metaverse will allow a person to "become who you want to be in the virtual world" (*bācharu de naritai jibun ni nareru*), by adopting a specially designed avatar appearance of your choice. Nem uses the language of cosplay, traditionally a practice of fans dressing up as their favorite fictional characters. She promises the metaverse will extend this 'costume play' to more everyday contexts like identity cosplay, appearance cosplay, even economic cosplay, as the metaverse makes a working life via the new identity possible (Bācharu Bishōjo Nem, 2022: 6 and 12). While the social dynamics of large online multiplayer game platforms like *Roblox* and *Fortnite* are often highlighted as key to the larger metaverse project (Foxman, 2022), the focus here is not just on entertainment but on building out a metaverse-based virtual existence as an alternative to offline life.

Equally important is the promise of escape from one's existing form, or as Japan's metaverse proponents put it, a "liberation from the flesh" (*nikutai kara no kaihō*) (Bācharu Bishōjo Nem, 2022: 13). Nem's 2022 book *On Metaverse Evolution (Metabāsu shinkaron)* 

emphasizes this element of escape as the key difference between Japan's 'strong' metaverse approach and the 'weak' metaverse envisioned by Meta, where there is much more overlap between online and offline identity. Nem describes staying up late in Japan to watch the Facebook Connect livestream with friends from inside the social VR platform *VRChat*, but feeling let down when Zuckerberg's metaverse avatar turned out to be just a cartoon version of his real-world appearance. The point of the metaverse, Nem writes, should be to get away from one's existing body and become the person you always wanted to be: a *kawaii* (cute and approachable) anime character (Bācharu Bishōjo Nem, 2022: 4-5).

This ideological split over the metaverse's relation to the existing offline society has strong echoes of the similar division that ran through earlier Web 2.0 platforms. Facebook famously had trouble gaining traction in Japan due to its real-name policy, where individuals were urged to post under their legal names and befriend their real-world relatives, friends, and acquaintances on the platform. This ran counter to a long-standing emphasis in Japanese social media on anonymity, as internet researcher Satoshi Hamano has noted (Hamano, 2008). The policy has had opponents in the United States as well, such as the successful 2014 petition by a San Francisco drag queen group to use only their drag names on the site (Holpuch, 2014).

What changes with the more "embodied" internet of the metaverse and social VR is that this becomes not just a question of anonymous social media posts, but anonymous bodies interacting in three-dimensional space. And there is also a temporal expansion, as the 'strong' metaverse promises something closer to a full-time existence in the virtual world. As digital media scholar Tōru Nishigaki puts it, if earlier virtual social environments were content to provide a *Second Life*, the emerging metaverse aspires to be your *first life*, with the offline world relegated to second tier (Nishigaki, 2023: 32). Compared to the largely investor-oriented books by metaverse proponents appearing in English (e.g. Ball, 2022), Japanese-language trade paperbacks introducing the metaverse published since Zuckerberg's announcement have largely been written from a social VR enthusiast perspective, and lean heavily on this promise of embodied escape. Consider Naoto Katō's *Metaverse: Goodbye to the age of the atom (Metabāsu: Sayonara atomu no jidai)*. Katō is founder and CEO of the prominent Japanese social VR and metaverse event platform Cluster. In his book, Katō presents the metaverse as a more embodied form of social media, one providing new worlds for interaction with others through the bodies of virtual avatars. However, again in contrast with Zuckerberg, who often emphasizes the metaverse's potential to replace in-person meetings and the need for physical travel, Katō positions the metaverse as primarily an extension, or an enhancement, of the kind of anonymity and flexibility of identity traditionally found on the Japanese internet. This extends a marked preference for fictional "other worlds" and imaginary characters in Japanese virtual reality projects more generally (Roquet, 2022).

Here Katō makes reference to his several years spent as a *hikikomori* prior to founding Cluster, from 2012-15 (Katō, 2022: 113). *Hikikomori* is a Japanese term for individuals locked into a form of social withdrawal involving long periods spent without leaving home and, as Katō describes it, interacting with others primarily through a screen. For Katō, what the metaverse promises is not an alternative to in-person meetings, but a new horizon for an enhanced form of social withdrawal. Going beyond the text and 2D image-based communication offered by current internet sociality, the metaverse here promises a more fulfilling and physically embodied *hikikomori* life, eliminating any remaining pressure to leave the house. Katō notes how earlier social media inevitably had temporal constraints, as it was ultimately just for conversation eventually one had to log off to deal with other aspects of life. In contrast, the metaverse promises a chance to dwell in the virtual world for far longer at a stretch and participate in a far wider range of activities. Media theorist Dominick Chen succinctly characterizes Katō's metaverse vision as a *Matrix*-like future where individuals will be content to stay in their pods, thinking "we're done with the physical world; there's no longer a reason to go outside" (Chen and Yasuda, 2022: 10).

There are a striking number of current or ex-*hikikomori* involved in creating metaverse and social VR spaces. Another is Moving Castle Fio, the 'Chief Virtual Officer' of Tokyo-based HIKKY, who run the world's largest VR-based amateur content market, the Virtual Market. In *Metaverse Revolution: How to Create a Virtual Economic Zone (Metabāsu kakumei: Bācharu keizaien no tsukurikata*), Fio describes their similar background as a *hikikomori* and presents the metaverse as also a promising life choice for the depressed or with social anxiety (Ugoku Shiro no Fio, 2022).

Yūshi Okajima's *What is the Metaverse?* (*Metabāsu to wa nani ka*) follows a similar line of thought to Katō but leans even further into the promise of escape from existing social conditions. Okajima is a professor of Information Science and a self-proclaimed otaku, and this latter perspective informs his presentation of the metaverse as, as the subtitle of his book puts it, "another world" to be found online. Extending from the 'other world' (*isekai*) fantasy narratives prominent in Japanese popular culture since the early 2000s (Roquet, 2022: 105-135), Okajima's metaverse promises escape from the difficult and uncomfortable aspects of social life, whether in work, relationships, or personal appearance, in favor of dwelling in more controllable virtual worlds full of imaginary characters.

Throughout the book he envisions the metaverse as consisting of worlds customized to each individual's needs: a stress-free setting perfect for the risk-averse students he describes encountering in his classes. Okajima emphasizes that even online interaction with other live humans can include undesirable risk and uncertainty. He instead imagines innumerable personalized metaverse worlds where each person lives surrounded by AI-driven characters tuned perfectly to their personal desires, what he describes as a "comfortable, closed space" (Okajima, 2022: 139 and 151). Okajima admits that a contemporary mainstream perspective would likely find such a scenario "grotesque" at best, but emphasizes that otaku trends have often been the "canary in the coal mine" when it comes to larger social developments (Okajima, 2022: 151 and 238). Like Katō, his argument for the metaverse's importance rests on assertions that while spending long hours in a virtual world might currently be a niche hobby unappealing to many, the general population will eventually come around once real-world conditions deteriorate further.

#### **Differences from Earlier Digital Utopianism**

As Daikoku notes, these 'strong' metaverse pitches often echo the digital utopianism of the early 1990s internet. But there are at least two areas where contemporary metaverse proponents like Nem, Katō, Fio, and Okajima depart from the media escapism of the last century. The first is their acceptance of the metaverse's dependency on large, mostly American technology corporations, or what many in Japan simply call the "tech giants" (e.g. Bācharu Bishōjo Nem, 2022: 2). At first glance, the 'strong' metaverse promise of a comfortably mediated escape from reality strongly echoes similar themes from the consumerist heights of late twentieth century Japan. In philosopher Akira Asada's semi-satirical 1989 essay on Japan's "infantile capitalism," for example, he describes a situation where Japanese consumers are happy to outsource larger

political and economic concerns to the national government, in exchange for the ability to focus entirely on their local hobbies and personal interests (Asada, 1989).

However, unlike Asada's infantile capitalists, Katō and Okajima's metaverse dwellers are dependent not so much on the parental largesse of the Japanese government, or even on their actual parents (as a traditional *hikikomori* might be). Instead, they are primarily indebted to the corporations who provide the metaverse platforms. Okajima describes metaverse otaku as handing everything over to the tech giants in exchange for the "comfortable kennel" the companies provide for them to live in in return (Okajima, 2022: 165-67).

In contrast with the more explicitly nationalized notion of a "K-verse" or Korea-centered metaverse that quickly emerged to shape South Korean metaverse projects, the wide range of metaverse books published in Japan since Zuckerberg's announcement share the assumption that American companies will dominate. Each dedicates numerous chapters to comparing the relative strengths and weaknesses of Meta, Microsoft, Google, Apple, Epic Games, Niantic, and other US corporations. If Japan is going to have a significant role to play, they argue, it is by drawing on its strengths with imagining virtual characters and alternative fictional worlds (Katō, 2022: 254-60).

This overlaps with the second striking departure from earlier digital utopias running in the background of many of these books, one I gestured to above. This is the notion that continued environmental and social decline will be a key driver of the metaverse's future mainstream success. Both Katō and Okajima point to climate change and the Covid-19 pandemic as evidence that the non-virtual world is likely to become gradually less physically hospitable over time, making life inside the metaverse ever more appealing by contrast (Katō, 2022: 86). They admit today only certain groups of people with inhibited access to existing social spaces might find

value in living fully online (for example: alongside otaku, the socially anxious, and *hikikomori*, those with physical paralysis and the elderly) (Katō, 2022: 128). But a core premise of their pitch for the metaverse's future potential is that the existing environments of everyday life are only going to get worse.

In contrast to the first virtual reality boom of the 1990s, where a VR evangelist like Jaron Lanier could promise the flexibility of identity in virtual space would in turn help solve existing social issues like racism and sexism (see Cohen, 2019: 210), for the 'strong' metaverse proponents of 2020s Japan there is simply no notion of a triumphant return from the other world back to this one. While this image of social and environmental collapse has long been central to VR and metaverse-themed science fiction (from *Neuromancer* to *Snow Crash* to *Ready Player One*), it is still striking to see this dystopian future directly embraced as a key driver of the metaverse's future success. Escape from a damaged planet has been a major focus of the billionaire class for a while now, whether the destination is the metaverse, Mars, or meditation retreats, as *Guardian* journalist Sam Wolfson puts it (Wolfson, 2021). But Japan seems to be a site where the neoliberal escape impulse historian Raymond Craib (2022) calls "libertarian exit" seems to also find an audience among ordinary media otaku, willing to tag along in the hopes of securing a small but comfortable imaginary life to call their own.

## **Critiques of the Metaverse Retreat**

This vision of escape depends on a kind of willful ignoring of the larger implications of the metaverse industry. Media scholar Jonathan Abel has recently pointed out how philosopher Hiroki Azuma's early 1990s theorization of cyberspace (Azuma, 2011) neglected the material

infrastructure that underlies the technology (Abel, 2023: 5). While Azuma's cyberspace analysis was written well before the recent media studies turn to infrastructure, contemporary metaverse exponents have no such excuse. Even as these authors point to an unlivable planet as a core motivator for the exodus to virtual worlds, nowhere in the materials I could find do they consider how widespread metaverse adoption might accelerate environmental decline, not least by ceding the non-virtual world even more fully to the tech giants and their ever-intensifying energy demands. Katō even blithely envisions a transition from "fossil fuels" to "creativity" as the prime economic driver, as if the metaverse could simply be manifested out of thin air (Katō, 2022: 261).

Then there is the promise of bodily self-determination, the "liberation of the flesh" I mentioned above, which carries no little irony considering more and more research is showing the movement data produced by VR is nearly impossible to anonymize. A recent study out of UC Berkeley, for example, analyzed motion data from 50,000 players of the popular VR rhythm game *Beat Saber* using just three points – the spatial position of the head and each hand – and with the help of machine learning was able to successfully deanonymize individual users with 94% accuracy, after just 100 seconds of movement (Nair et. al., 2023). As one of the study authors puts it, this could mean for example that casually walking around a virtual shop in VR while retaining anonymity would be effectively impossible (Rosenberg, 2023). Of course, this bodily exposure is to the platform and whoever the platform shares their data with, not necessarily to other users or a person's immediate virtual acquaintances.

Finally, a more practical concern with embodiment in the 'strong' metaverse is why everything seems to look so *dasai* (ugly and resolutely uncool). Fashion theorist Yūki Namba sees the metaverse's lack of aesthetic interest as rooted in the flight from anything uncomfortable (Namba, 2022). Namba draws on aesthetic philosopher Shūzō Kuki's classic theory of *iki*, a kind of fashionable chic born out of personal struggle. Importantly, as Namba notes, recognition of *iki* simultaneously functions to trigger the viewer's own guilty conscience in relation to the social inequality that led the person they encounter to struggle in the first place. Namba argues the escape from reality promised by the metaverse cannot produce *iki*, because *iki* can only be born through a struggle to overcome one's immediate circumstances, including the appearance one is born with. While he admits Kuki's *iki* might have its own shortcomings as a social philosophy, Namba argues this still gives it far more aesthetic interest than anything in the metaverse, where the freely designed comforts and 'ideal' (*tsugō no ii*) appearances have carefully evacuated any otherness, any hint of conflict (Namba, 2022: 79).

Media phenomenologist Shōji Nagataki makes a similar point, noting that while VR on the one hand aspires to provide an experience of "full-fledged embodiment" indiscernible from everyday life, on the other hand it seeks to eliminate the risks involved in fully embodied experience. Drawing on the phenomenological tradition, Nagataki argues it is precisely the vulnerability of the body—the ease with which it can be injured or it's *kizutsukiyasusa*—that is the ultimate foundation of any kind of interpersonal ethics, and ultimately what gives life meaning. A virtual world that promises full embodiment but eliminates physical vulnerability—something like Okajima's risk-free and "comfortable" metaverse—could thus send us down some socially and ethically treacherous roads indeed (Nagataki, 2022: 73-74).

Namba's essay ends with a key point that the trade paperbacks' more sanitized visions leave out, however. He notes the idea of fully comfortable and frictionless 'other world' is only possible when visions of the metaverse exist primarily in speculative form. When and if the metaverse were to go mainstream, this world's existing problems are sure to follow (Namba, 2022: 84)—as indeed they have already, judging by the frequent reports of harassment, racism, and sexism in social VR. Opportunities for *iki* will also grow in tandem, surely, but as many VR critics have pointed out, we'll be back with the same serious issues social media struggles with today, likely made even worse by being more embodied and immersive.

# Conclusion

In conclusion, the 'strong' metaverse interests emerging in Japan rehash the cyberspace utopianism of the late 20<sup>th</sup> century, but infuse it with intensifying forms of climate and technological defeatism, and promises of deeper, more sustained, risk-free immersion. The early internet promise of freedom and escape from one's given body remains, but notably absent is any promise to transform society.

It would be easy, and probably wise, to dismiss the recent metaverse discourse as nothing but a desperate attempt for Facebook to shift the conversation, one that will soon enough fizzle out of its own accord. Google Trends, for example, as of this writing shows global searches for 'metaverse' at less than a fifth of their peak in the months following Zuckerberg's announcement.<sup>1</sup> However, there is much to learn from the promises of physical liberation the fantasy of the metaverse seems to have reawakened among immersive media enthusiasts in Japan still holding out hope for a virtual alternative to everyday embodiment. If nothing else, this attempted escape to the metaverse shows how the internet's initial utopian promise has had a long half-life globally, and now merges with a kind of last-ditch escapism that very much plays into the existing tech industry status quo. The underlying social and cultural desires behind

<sup>&</sup>lt;sup>1</sup> Based on a March 2023 search for "metaverse" at https://trends.google.com/

Japan's 'strong' metaverse interests will no doubt continue surfacing long after the recent wave of hype has receded from our collective memories.

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## References

- Abel J E (2023) *The New Real: Media and Mimesis in Japan from Stereographs to Emoji*. Minneapolis: University of Minnesota Press.
- Asada A (1989) Infantile Capitalism and Japan's Postmodernism: A Fairy Tale. In: M Miyoshi and H Harootunian (eds) *Postmodernism and Japan*. Duke University Press, pp. 273–278.
  Available at: https://doi.org/10.1215/9780822381556-015.
- Azuma H (2011) Saibāsupēsu wa naze sō yobareru ka+. Azuma Hiroki ākaibusu 2. Tokyo: Kawade bunko.
- Bācharu Bishōjo Nem (2022) Metabāsu shinkaron: Kasō genjitsu no kōya ni mebuku 'kaihō' to 'sōzō' no shinsekai. Tokyo: Gijutsu hyōronsha.

Ball M (2022) *The Metaverse: And How It Will Revolutionize Everything*. New York: Liveright. Chen D and Yasuda N (2022) Mirai no shintairon taiwa. *Gendai shisō* 50(11): 8–18.

- Cohen J N (2019) *Virtual Evolution: An Alternate History of Cyberspace, 1988-1997.* Ph.D. Dissertation. Stony Brook University.
- Craib R (2022) Adventure Capitalism: A History of Libertarian Exit, from the Era of Decolonization to the Digital Age. Oakland, CA: PM Press.

Daikoku T (2022) Metavāsu to vācharu shakai. Gendai shisō 50(11): 95-114.

- Egliston B and Carter M (2022) 'The metaverse and how we'll build it': The political economy of Meta's Reality Labs. *New Media & Society* (forthcoming)
- Evans L, Frith J, and Saker M (2022) From Microverse to Metaverse: Modelling the Future through Today's Virtual Worlds. Bingley, UK: Emerald Publishing Limited.
- Foxman, M (2022) Gaming the system: Playbour, production, promotion, and the metaverse. *Baltic Screen Media Review* 10(2): 224-233.
- Hamano S (2008) *Ākitekucha no seitaikei: Jōhō kankyō wa ikani sekkei sarete kitaka*. Tokyo: NTT Shuppan.
- Holpuch A (2014) Victory for drag queens as Facebook apologises for "real-name" policy. *The Guardian*, 1 October. Available at:

https://www.theguardian.com/technology/2014/oct/01/victory-drag-queens-facebookapologises-real-name-policy

Katō N (2022) Metabāsu: Sayonara atomu no jidai. Tokyo: Shūeisha.

- Kurosawa Y (2021) Japan Metaverse Association has been established to promote NFT, and the initial receptions are quite negative. *AUTOMATON WEST*. Available at: <u>https://automaton-media.com/en/news/20211208-7219/</u>
- Nagataki S (2022) *Media toshite no shintai: Sekai/tasha to kōryū suru tame no intafēsu*. Tokyo: Tokyo daigaku shuppankai (Chi no seitaigaku no bōken: J. J. Gibuson no keishō, 6).

Nair V *et al.* (2023) Unique Identification of 50,000+ Virtual Reality Users from Head & Hand Motion Data. arXiv. Available at: <u>https://doi.org/10.48550/arXiv.2302.08927</u>.

Namba Y (2022) Metabāsu wa 'iki' ka?: Yamashisa no bigaku. Gendai shisō 50(11): 76-85.

Nishigaki T (2023) Chō dejitaru sekai: DX, metabāsu no yukue. Tokyo: Iwanami shinsho.

- Okajima Y (2022) Metabāsu to wa nani ka: Nettojō no 'mō hitotsu no sekai'. Tokyo: Kōbunsha shinsho.
- Pew Research Center (2022) *The Metaverse in 2040*. Available at: https://www.pewresearch.org/internet/2022/06/30/the-metaverse-in-2040/
- Roquet P (2022) *The Immersive Enclosure: Virtual Reality in Japan*. New York: Columbia University Press.
- Rosenberg L (2023) New research suggests that privacy in the metaverse might be impossible. *VentureBeat*, 20 February. Available at: <u>https://venturebeat.com/virtual/new-research-</u> <u>suggests-that-privacy-in-the-metaverse-might-be-impossible/</u>
- Ugoku Shiro no Fio (2022) Metabāsu kakumei: Bācharu keizaien no tsukurikata. Tokyo: Fusōsha.
- Wolfson S (2021) Metaverse, Mars, meditation retreats: Billionaires want to escape the world they ruined. *The Guardian*, 29 October. Available at: <u>https://www.theguardian.com/lifeandstyle/2021/oct/29/metaverse-zuckerberg-mars-</u>

billionaires-escape-world