Across the Metaverse:

POLICY PRIORITIES TIED TO SOCIAL IMPACT

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Abstract

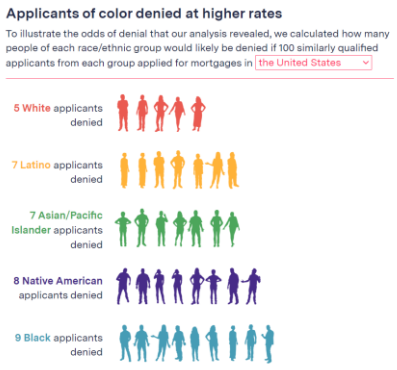
As with digital platforms and artificial intelligence, each new wave of innovation brings benefits and risks, and the emerging 'metaverse' tests this philosophical debate. In this essay, I explore how romanticisation of the metaverse as a 'novel' phenomenon act as a red herring, distracting us from current systemic issues. Exploring the forces at work in technology, consumer habits, and market dynamics, constructs a silhouette of the metaverse that imparts more questions than answers. This analysis also exposes a set of key policy considerations that need to be addressed urgently and proactively: how can safety be prioritised, how will data be protected, and how will the market respond? As the boundaries of the communications paradigm continues to shift, adding in new, persistent, and immersive realities, the core policy considerations around technology remain unchanged and warrant attention.

Introduction

In early 2019, newly married couple Crystal Marie and Eskias McDaniels moved from Los Angeles to North Carolina in the hopes of pursuing the American dream, complete with a house, lawn, and pool. With good credit, income from two steady jobs, and enough savings to cover the down payment, they prequalified for the mortgage and were on the way to making their dream a reality. But shortly before signing their papers, they were notified that their mortgage application was rejected 15 times. They wouldn't be moving into their dream home.

What happened to Crystal and Eskias is not a fluke accident but a larger trend that's negatively shaped housing in America for years. Analysis of more than 2 million mortgage applications showed "applicants of colour [like Crystal and Eskias] were significantly more likely to be denied than White applicants with comparable credit scores" (Martinez & Kirchner, 2021) (see Figure 1).

Figure 1 *(Martinez & Kirchner, 2021)*



How exactly did this happen? *Technology*. Specifically, *algorithms*.

Using data developed from the 1990s, mortgages rely on credit scoring algorithms to award loans. Research exposed these algorithms to be often detrimental to people of colour, rewarding 'traditional credit', to which White Americans have more access. Thus, further entangling structural racism into the very fabric of communities.

Since the dawn of the internet, the transformative nature of technology has shaped the world we live in. Algorithms deliver important benefits for society: from automating captioning to make content accessible, to scanning emails for fraud (BBC Academy, 2022). However, the algorithms that failed Crystal and Eskias demonstrate the damaging repercussions of designing technology without social public impact in mind.

As with digital platforms and artificial intelligence, each new wave of innovation brings benefits and risks, and the emerging 'metaverse' tests this philosophical debate. In this essay, I explore how

romanticisation of the metaverse as a 'novel' phenomenon act as a red herring, distracting us from current systemic issues. Exploring the forces at work in technology, consumer habits, and market dynamics, constructs a silhouette of the metaverse that imparts more questions than answers. This analysis also exposes a set of key policy considerations that need to be addressed urgently and proactively: how can safety be prioritised, how will data be protected, and how will the market respond? As the boundaries of the communications paradigm continues to shift, adding in new, persistent, and immersive realities, the core policy considerations around technology remain unchanged and warrant attention.

NEW WORLDS, SAME ISSUES

Fast forward two years later to 2021, Mark Zuckerberg, CEO of Meta (nee Facebook) announced plans for the metaverse – a utopian prospect for today's internet beyond the limits of a 2-dimensional digital space (Milmo, 2021).

Figure 2 (Miller, 2021)

Technology terms used in startup descriptions and tech articles

2020	2021
Multiplayer game	Metaverse
Virtual Reality experience	Metaverse
Augmented Reality filter	Metaverse
5G Connection	Metaverse
AR Cloud	Metaverse
Digital Avatar	Metaverse
Digital Event	Metaverse
ML classifier	Metaverse
E-commerce	Metaverse
Blockchain	Metaverse
Internet	Metaverse
Social Media	Metaverse
Videocall	Metaverse

Since then, countless definitions of the metaverse have cropped up. Oxford reference described it as a 'virtual representation of reality implemented by means of virtual reality software' (2021) and Zuckerberg pointed to "a persistent, synchronous environment" "accessible across VR and AR but also PC, mobile devices and game consoles" (Newton, 2021). An image circulated on Twitter showing the anthology of terms that previously had their own fields of research, only to be relegated into the metaverse "catch-all" by 2021 (see Figure 3). The 2.62 million search queries on the metaverse (Figure 2), demonstrated a fundamental lack of understanding from the public of what the metaverse entails. This rise in interest gave a sense of false 'newness' to the concept.

Figure 3 (Heston, 2021)

However, the "metaverse" is an old idea, derived from prominent 90s scient fiction novel *Snow Crash* (Knox, 2022). For some, the metaverses' traction is rooted in a desire to 'rebuild the Internet' to be decentralized and stateless, reminiscent of its early days (Jandrić, 2017). The metaverse may represent a "vanishing point on the horizon," "used to justify developments as they occur now" (Beer, 2022). Some predict the metaverse will be a progression of current business practices, accompanied by the same difficulties of traditional platforms (Knox, 2022) (Freuler & Cruz, 2021).

As we navigate this liminal space between a promised future and the present moment (Beer, 2022), policymakers urgently need to influence the shape of this world. Emerging technology metaverse is not just new, shiny hardware and software but in fact a form of social power and increasingly the 'control surfaces of our social infrastructure' (Vallor, 2022). The promise of tomorrow itself should be scrutinised in the here and now (Beer, 2022).

How will this world evolve?

Armed with this urgent call to action, policymakers should explore how this world develops to understand what priorities come first. What factors will dictate our strategic agenda?

Using a cross-cutting lens to explore 1) technology and innovation developments, 2) changes to consumer habits and behaviours, and 3) competitive market dynamics, and how these themes interact with one another, cues policymakers into metaverses' shape and where energy should be focused.

TECHNOLOGY AND INNOVATION

Although 'metaverse' has become commonplace there remains 'different ways of conceptualizing it' (Hall & Baier-Lentz, 2022). Technology will lead the way in transforming this space but where do the boundaries lie?

One definition attributes "collaborative spatial computing, interactive 3D graphics, augmented (AR) and virtual reality (VR), photorealistic content authoring, digital twins, real-time collaboration, and multi-user gaming" to the tech phenomenon (Metaverse Standards Forum, 2022). From this list, the development of extended reality (XR) technologies, including AR, VR, and mixed realities appear poised to achieve mass adoption (Hall & Baier-Lentz, 2022) (Mozumder, et al., 2022).

As we develop these technologies, a shrewd technological acumen is needed to understand the changing hardware and software stack and how it will carve the metaverse:

- **Devices and screens.** The metaverse can be accessed through conventional interfaces like TVs and phones as well as unconventional interfaces like headsets (Raj, 2021). What tools are being designed and how seamless will it be to switch from physical to digital worlds?
- **Design**. Similarly, what technologies allow access (Mozumder, et al., 2022)? How will content be delivered? What programming languages will be used?
- **Standards.** How will protocols converge in this space? What level of interoperability exists between platforms? Are digital identities and goods consistent and accessible across platforms (Deloitte, 2022)?

CHANGES TO CONSUMER HABITS AND BEHAVIOURS

As young, digitally native consumers spend more of their day online, their habits will likely influence how the Metaverse evolves.

In addition to consuming most of their media online (Ofcom, 2020), young users gaming diet points to communication priorities in the metaverse. 88% of 16-24s gamed in the UK, opting to play with others on platforms like Twitch and Discord (Ofcom, 2021). Adoption of these apps highlight priorities for young people: social interaction is key, and user generated content will continue to flourish (2021). The pandemic has further entrenched this trend - Rapper Travis Scott performed a concert in Fortnight with over 27 million attendees (Brooks). These social, interactive, and community-led features continue to be adapted to fit into metaverse settings (PCGamesinsider, 2021).

Against this backdrop, there is an argument to be made about the promised desirability of the metaverse, especially as it relates to social media. Whereas virtual mobility in gaming adds an entertainment dimension, a social network 'rendered in virtual space', may be meaningless as it adds nothing to interactions and connections that define them (Knox, 2022). This is where technology component bleeds through to consumer behavior, as there are many technical hurdles to overcome to blend the digital and physical worlds, including the pressing need to incorporate all five senses into the VR world.

MARKET CONSIDERATIONS

Lastly, what economic model will underpin these tech innovations and consumer trends? Gaming was one of first footholds for the metaverse and could indicate how the market takes shape. Social games are on the rise, especially those like Roblox and Fortnight, which democratise game creation and put more power in the hands of the user to create their surrounding environment (Tambiama Madiega, 2022). Other market forces could coalesce around social metaverses where companies like Snap look to leverage their prominence to build 3d social media virtual worlds (The Economist, 2020). There is also a growing body of work around enterprise use cases for the metaverse which focus on collaboration in education and work (Thompson, 2021).

Within the gaming, social and enterprise metaverse markets, there is an underlying question in how digital assets operate. The market for metaverse transactions is expected to reach 6.1 billion in 2022 alone and many of these transactions will be powered by the blockchain, specifically non-fungible tokens (NFTs), which create benefits for players and personalise digital identities (Fonarov, 2022). Nike introduced "Nikeland" NFT studio where consumers can outfit their online avatars (Brooks, 2021). If the Metaverse strives to connect beyond a 2-dimensional world into one that 'feels real', then NFTs and digital assets are fertile ground, allowing users to hone their identity and exchange goods in a decentralised, secure, and trusted manner.

Many of these questions remain unanswered but exploring the interplay of these three dynamic elements 1) transformative technological innovation 2) changing user behaviours, and the 3) shifting market responses, will illuminate a policy pathway.

Policy Priorities

The confluence of these dynamic elements also draws attention to an exhaustive list of policy considerations. As we look ahead, regulators should address safety, privacy, and competition issues in the metaverse given their resulting impact on users. The challenge will remain in striking a balance between encouraging its potential but safeguarding risks that could harm users, business, and society.

SAFETY

The metaverse will soon become ubiquitous, with 1 in 4 people predicted to use it for at least an hour a day by 2026 (Wise, 2022). As explored in section one, AR/VR is a foundational entryway to the future metaverse. However, with a current predicted user count of 1.4 billion users by 2023 (Wise, 2022), the harms users experiences in these worlds are unfortunately unfolding.

Case study:

Investigative journalists at Channel 4 in the UK recently produced a segment on safety in the Metaverse (Inside the Metaverse Are You Safe? Dispatches, 2022). Using avatars to test and monitor safety functions in popular metaverse apps VRChat and Rec Room, their research exposed issues around flagging harm, age verification, protection of children, sign-up procedures, and liability for enforcement:

- Although these apps place limitations on how users under 13 access them using an internationally recognised age-gating system, there is no indication that this is enforced or easily bypassed. Despite these apps advertised with a 7+ age rating, the harms experienced on these platforms were shocking and inappropriate for young children and even adults.
- These apps have introduced default "safety bubbles" to avoid being touched by other users without consent. But once researchers entered these metaverses, even signing up as a 13-year-old girl user, they experienced a wide range of harms including racial slurs, sexual abuse, and even witnessed other users being abused.
- Users breaking the code of conduct inside these metaverses seemingly faced no repercussions. VRChat and Rec Room are not Meta-owned, but they can be found in the Meta-owned Oculus app store. When the avatar reported harmful behaviour, Meta claimed there was no action they could take against customers who were using non-Meta owned apps. They subsequently promoted their 'identity system' that allows people to block users more effectively across all virtual worlds.

This investigation's findings are supported by other research in this space. The Center for Countering Digital Hate found users on VR Chat are exposed to abusive behaviour every seven minutes (2022). Furthermore, they found Meta's reporting system for their VR headsets to be lacking: no historic footage to review flagged issues, users in third-party apps can hide their usernames, and they provide no follow-up on actions taken after flagging harms (Center for Countering Digital Hate, 2022).

The current outlook leaves regulators with a litany of unanswered safety questions:

1. How can we encourage metaverse actors and companies to deliver pro-active instead of reactive safety? Can we trust them to put safety before profit?
2. How do we encourage interoperability of safety concerns/reporting across metaverses? How does an 'identity system' controlled by Meta interact with questions of market dominance?
3. Research suggests the immersive nature of AR/VR harm is more damaging to users' mental health (2022). How do platforms factor this into the design of metaverses?
4. What are requirements to sign-up for these platforms? How will identity and age verification be managed?
5. What enforcement standards apply and how can that be transparent? How will platforms monitor for harms and what options for remedial action are there?
6. Who is responsible for promoting safety: the users, the parents, companies, or regulators? These apps rely on users to flag harms but if that is the case, then there is a wider media literacy question (see Figure 2) about the degree to which people understand these technologies.

PRIVACY

Core to these considerations is understanding the business models that fund the metaverse. Meta derives 95% of their profits from digital ads which rely on user data (Freuler & Cruz, 2021). Given the troves of data involved in use of digital assets and identity, there is concern that large-scale user surveillance and the "extractive nature of the current platform economy" will proliferate unrestrained (Marinelli, 2022) (Freuler & Cruz, 2021) (Tambiama Madiega, 2022).

Avatars, which comprise a user's digital identity, are a "conglomeration of all issues relating to privacy in the digital realm" (Marinelli, 2022). Functioning as a gateway to the metaverse, they track biometric data such as facial features and mirror them onto user avatars. Before, ad-tech was an empire built on data like age and time spent on websites (Milmo, 2021). Now in the Metaverse, this could be based on body language or user interactions (2021). There is immense commercial value in advertisers gaining access to the "array of facial expressions captured" in a visit to the metaverse (2021). This prompts thoughtful consideration as to how data governance and privacy work in the bourgeoning metaverse.

ECONOMIC OPPORTUNITY AND INTEROPERABILITY

Economic opportunity and interoperability are critical concerns as they will distinctly impact consumer interactions. When Meta's first announced its pivot to the metaverse, their decision was parodied (Knox, 2022). Yet the idea still gained traction; Disney recently appointed a metaverse lead and Oculus 2 was most downloaded app in 2021 (Hoskins, 2022). Despite this interest from tech giants, Meta has mentioned that metaverse will be built by other companies and users as well, nodding to the importance of interoperability in this space (Newton, 2021). This is reflected in the recently founded Metaverse Standards Forum which aims to foster the development of industry-wide interoperability and open standards (2022).

As companies take this new venture seriously, it's important for policymakers to explore the economic opportunities and value proposition. If the market is competitive, we could expect lower barriers to market entry, accelerated innovation and competition for user attention through exclusive content (Deloitte, 2022). Interoperability suggests a possibility for no single metaverse provider but there is a chance consumers prefer a "home" metaverse platform (2022).

OTHER KEY POLICY CONCERNS

If the metaverse is to radically transform the way we live, socialise, and entertain, the considerations are limitless. VR headsets will require expanded infrastructure and implicate connectivity, resilience, and security. Can networks accommodate this uptick in activity? Furthermore, as demand for metaverse bandwidth skyrockets, net neutrality debates will arguably resurface 1 (GlobalData Thematic Research, 2022). As companies adapt to these new technologies, they risk exposing themselves to new security risks and vulnerabilities (Nichols, 2022). Although the market has consistently improved efficiency in computing platforms, security, and connectivity (The Economist, 2020) the underlying infrastructural questions merit further exploration.

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1 Net neutrality refers to the concept that a telecom network should be a neutral gateway to the Internet rather than a gatekeeper with the power to decide what content is available or what speeds that content is transmitted at (GlobalData Thematic Research, 2022).

Other policy concerns exist around financial fraud, healthcare, and digital exclusion via accessibility. Moreover, the immersive, digital nature of the metaverse implicates wider health issues around mental wellbeing, loss of community and endemic loneliness (Hertz, 2021).

What steps should be taken to shape the future of the Metaverse?

The secret bias hidden in the algorithms that denied Crystal and Eskias draw out important lessons for policymakers. When technology is created in a silo-ed, purely enterprise-led environment, it subverts the need to ensure it positively impacts society. Overemphasis on the benefits of free-market innovation is often given as justification for hands-off regulation (Grant, 2022). In early days of internet, this allowed for fast adoption but also made for a fractured global policy response, which we are now grappling with today (Inside the Metaverse Are You Safe? Dispatches, 2022). If history has shown us anything, the time to act is now (Bell, 2022).

Companies' history of self-regulation has proven to be ineffective (Aspen Insititute, 2021) and platforms cannot expect consumers to take on sole responsibility (Rosenberg, 2022). As the world constructs its digital rulebook, government regulatory intervention will be needed (2022). Forthcoming legislation, like that of the UK Online Safety Bill and European Digital Services Act promote principles-based and outcomes-led regulation that will be adept at handling future emerging tech challenges like the metaverse (Inside the Metaverse Are You Safe? Dispatches, 2022). These types of initiatives are a step in the right direction but unfortunately take time to implement.

In the immediate term, a return to the contract of 'social innovation' should be encouraged through a multistakeholder approach. Shannon Vallor, a prominent AI Ethics researcher and professor at University of Edinburgh, describes the delicate contract that exists at the heart of thoughtful innovation in AI. Social innovation implies a contract whereby enterprises enjoy a license to operate, given by stakeholders and the public, as a means to human flourishing (Vallor, 2022). If innovation becomes 'decoupled' from that end its social license is invalid. Restoring public trust in the ability to construct a future that benefits society, not just companies, is steeped in analysing ethical and social issues in any technical creation (2022).

In a similar vein, this contract must be applied to the metaverse. Innovation in the metaverse should be driven by:

1) Meaningful improvements for 'shared and sustainable' human flourishing and values (2022). For example, Meta announced a $50m investment programme to ensure the metaverse is "built responsibly" (Beer, 2022). On paper this appears to be values-driven but what does it mean practically? Having one vaguely defined social benefit is not enough to outweigh potential harms.
2) Creating robust structures of accountability and answerability for social impacts of innovation. On the hiring side, this means requiring social and moral judgment to be a part of technical excellence and shifting ethics to be central to mission and a key performance indicator (Vallor, 2022). There is also an argument to designing technology with restrictions and explicit awareness of its power (Rosenberg, 2022). This translates to restricting platforms from monitoring users and disallowing storage of data for long periods of time, giving users ability to protect and choose how their data is used, and limiting emotional analysis and advertising (Rosenberg, 2022) (Marinelli, 2022).

3) Building innovation practices that are anticipatory of future harms and representative of a variety of voices to produce value-conscious and reflective technology. The Australian eSafety approach emphasises this by underscoring intersectionality in fighting online harms, connecting educators, counselling services, civil society, and law enforcement into the conversation (Grant, 2022).

Conclusion

As we grapple with a changing technology stack, shifts in how consumers communicate and connect, and transforming market structures, policymakers are confronted with urgent complexities around user safety, privacy protections and ensuring good competitive outcomes in the metaverse. Idealising the promise of the metaverse presents a false dilemma – misaligning business incentives and regulatory environments from key human needs (Vallor, 2022). With the possibilities of the metaverse on the horizon, there is an opportunity to learn from unintended mistakes and consequences from before (Grieg, 2022) (Bell, 2022) and instead create technology for societal impact.

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