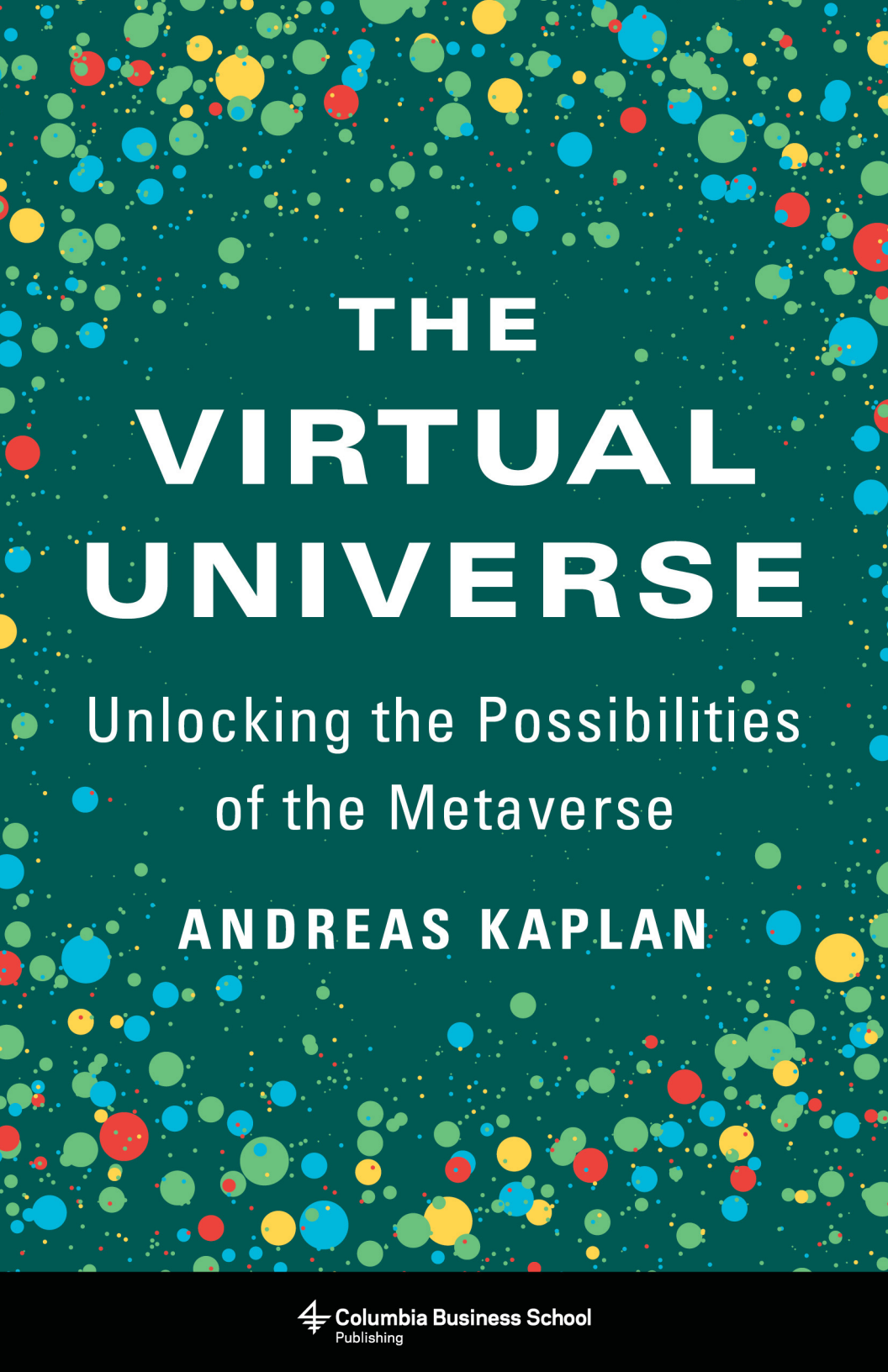




THE VIRTUAL UNIVERSE

Unlocking the Possibilities
of the Metaverse

ANDREAS KAPLAN



Columbia Business School
Publishing

THE VIRTUAL UNIVERSE

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LIST OF ABBREVIATIONS

2D	Two-dimensional
3D	Three-dimensional
A2A	Avatar-to-avatar
AI	Artificial intelligence
AR	Augmented reality
AV	Augmented virtuality
BBA	Bachelor of business administration
BMW	Bayerische Motoren Werke
CBS	Columbia Broadcasting System
CEO	Chief executive officer
ChatGPT	Chat Generative Pre-trained Transformer
CNN	Cable News Network
CO ²	Carbon dioxide
COVID-19	Coronavirus disease 2019
CV	Curriculum vitae
D2A	Direct-to-avatar

LIST OF ABBREVIATIONS

DAO	Decentralized autonomous organization
DEI	Diversity, equality, and inclusion
DHL	Dalsey Hillblom Lynn
DMA	Digital Markets Act
DSA	Digital Services Act
e-commerce	Electronic commerce
eIDAS	electronic IDentification, Authentication, and Trust Services
e-waste	Electronic waste
ESCP	European School of Commerce Paris
ESSEC	École Supérieure des Sciences Économiques et Commerciales
EU	European Union
FIFA	Fédération Internationale de Football Association
FOMO	Fear of missing out
FT	<i>Financial Times</i>
FTC	Federal Trade Commission
GDPR	General Data Protection Regulation
GDP	Gross domestic product
Gen Alpha	Generation Alpha
Gen Z	Generation Z
HMD	Head-mounted display
HR	Human resources
HRM	Human resource management
IE	Instituto de Empresa
IFM	Institut Français de la Mode
INSEAD	Institut Européen d'Administration des Affaires

LIST OF ABBREVIATIONS

IoT	Internet of Things
IP	Internet Protocol
KFC	Kentucky Fried Chicken
KLU	Kühne Logistics University
L\$	Linden Dollars
LindeX	Linden Exchange
MBA	Master of business administration
MET AMS	Metaverse Amsterdam
MIB 3	Management Information Base 3
MLB	Major League Baseball
MMORPG	Massively multiplayer online role-playing game
MPA	Master of public administration
MR	Mixed reality
MSc	Master of science
NDA	Nondisclosure agreement
NFL	National Football League
NFT	Nonfungible token
OMA3	Open Metaverse Alliance 3
P&G	Procter & Gamble
P2V	Physical-to-virtual
PhD	Doctor of philosophy
PPP	Platforms, peripherals, products
PR	Physical reality
PwC	PricewaterhouseCoopers
R&D	Research and development
SMS	Short Message Service
SSI	Self-sovereign identity
SSVI	Self-sovereign virtual identity

LIST OF ABBREVIATIONS

US	United States
UK	United Kingdom
V2P	Virtual-to-physical
V2V	Virtual-to-virtual
V-Bucks	Vinder-Bucks
V-commerce	Virtual commerce
VR	Virtual reality
WEF	World Economic Forum
WOW	Window on the World

THE VIRTUAL UNIVERSE

INTRODUCTION

(NOT) CHASING THE METAVERSE CRAZE!

I FIRST BECAME INTERESTED in virtual worlds when I was a PhD student about two decades ago. At the time, the virtual social world Second Life, founded in 2003, was at the center of media excitement, and I was fascinated by the idea of a virtual space where you could earn money while working as an avatar—a term that I had to look up to understand. This curiosity led me to start several projects examining consumer behavior in virtual worlds and exploring how brands could establish flagship stores on an island in Second Life.

Unfortunately, the hype surrounding Second Life and virtual worlds faded during my research, and my findings were published after the craze had subsided. While this was depressing at the time, it turned out to be a blessing in disguise, although I didn't realize it then. As virtual worlds became an unappealing field for a young researcher aiming for tenure, I broadened my research into social media, arguing that virtual worlds are a

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specific category of social media. The argument was that, while virtual worlds might have been considered outdated as a topic, social media have not—in fact, the opposite was true.

This broader perspective resulted in the writing of my most-cited paper, coauthored with the extraordinary Professor Michael Haenlein and published in *Business Horizons*, titled “Users of the World, Unite! The Challenges and Opportunities of Social Media.” Therein, we not only coined and defined social media but also classified it into six groups: collaborative projects (e.g., Wikipedia), blogs (and microblogs such as Twitter, aka X today), content communities (e.g., YouTube), and social networking sites (e.g., Facebook), as well as virtual game worlds (e.g., World of Warcraft), and virtual social worlds (such as Second Life, the initial impetus for writing the article).

Had it not been for the decline in media coverage of Second Life, I would not have garnered the over 40,000 citations that our social media paper has received on Google Scholar and more than 10,000 citations on Scopus. This paper has been immensely valuable to my academic career (and still is), and it has become an example of a publication by two academics that has achieved significant managerial impact. However, I’ll stop bragging, as, truth be told, I believe that these citations are largely due to being fortunate enough to be at the right place at the right time with a topic that had not been extensively researched heretofore. In addition, we were lucky to have Catherine Dalton, editor-in-chief of *Business Horizons*, who recognized the paper’s timeliness and ensured its publication in record time—something that I have not experienced since. For all these reasons, I am grateful to Professor Dalton and *Business*

INTRODUCTION

Horizons, as well as for being drawn to the hype around virtual worlds in the 2000s, for the hype fading away, and for being compelled to pivot to the topic of social media, even though this period also contained many moments of frustration and desperation.

I didn't imagine that virtual worlds would again play a significant role in my academic life until 2021, when Mark Zuckerberg announced his Metaverse strategy, sparking new media interest in virtual worlds. Suddenly, our fifteen-year-old research became relevant again; actually, it became relevant for the first time. I received press inquiries and was asked to develop courses and modules on virtual worlds for executive education—something that also did not happen previously.

Encouraged by this first-time interest in my old research on virtual worlds, I embarked on new research projects on the Metaverse, including this book. The validation of our classification of virtual worlds as social media—initially met with strong skepticism—by Zuckerberg, CEO of one of the world's largest social media conglomerates, announcing his strategy for the Metaverse and plans to invest massively therein, even going so far as to rebrand Facebook as Meta, also might have motivated me.

As a book project usually takes time, this work is published in 2026, a couple of years after the media hype around the Metaverse had again dissipated. This felt like *déjà vu*, but with much less frustration and worry, for several reasons. First, something very positive resulted from the first decline of the hype around virtual worlds, and there's the hope that something similar will also happen with the dissipation of the second

INTRODUCTION

virtual world craze. Second, being more experienced (and a lot older), I'm now more relaxed about my work's appeal and public interest. As a side note for young researchers: Don't stress about such occurrences; one door closes, another opens! Easier said than done, certainly, but instead of stressing if something similar happens to you, just think of how you can reposition your research and turn it into an advantage. Stressing out won't improve your productivity or lead to success in any case. So why not choose to let it go instead? Finally, I'm convinced that this work, and generally work on virtual worlds and virtual reality, are highly relevant; although the hype has faded again, the importance and future significance of the Metaverse and virtual worlds remain intact, at least from where I sit.

This book should be read with this understanding in mind, and my thinking followed this logic when structuring the work as follows: Chapter 1, "Annals and Advances: History, Hype, and Heart of the Metaverse," explores the history of virtual worlds from the earliest virtual realities to today's (and the future's) Metaverse. It delves into the heart of the subject, defining and exploring the key concepts and principles surrounding the Metaverse.

Chapter 2, "Bits and Barriers: Technologies, Opportunities, and Boundaries of the Metaverse," delves into the technologies behind virtual worlds, starting with the Metaverse's tech ABC: artificial intelligence (AI), blockchain, and cloud computing. It further explores the various blends of extended reality, which lie between physical and virtual reality; describes its opportunities and boundaries; and provides an overview of the virtual reality basics.

Chapter 3, “Cash and Commerce: Economies, Markets, and Business Models in the Metaverse,” focuses on virtual economies and business models in the Metaverse, as well as their effects on their real-world counterparts. It addresses questions of ownership and virtual possession, virtual assets, virtual currencies, and income in the Metaverse and virtual worlds. Furthermore, it discusses the “five Cs” for corporations to conquer the Metaverse.

Chapter 4, “Deeds and Dreams: Applications, Innovations, and Corporate Functions in the Metaverse,” examines what has already been applied, innovated, and accomplished in various business functions in virtual worlds and explores future possibilities, envisioning and dreaming of the potential of the upcoming Metaverse, describing it as a means for communications, a marketplace for (virtual) product sales, a medium for research and development (R&D), a model for human resource management (HRM), and an essential tool and must for operations and supply chain management.

Chapter 5, “Ethics and Endeavors: Regulations, Responsibilities, and Rights in the Metaverse,” addresses various ethical and regulatory issues, such as an avatar’s right to data protection and privacy and the human duty to aspire toward ethical behavior in virtual worlds. It discusses the dangers of virtual identity theft and the regulator’s responsibility for enforcing law and order in virtual spheres to ensure the proper functioning of virtual worlds and the Metaverse.

Finally, chapter 6, “Future and Fate: Humanity, Sustainability, and Possibilities of the Metaverse,” explores the Metaverse’s path toward becoming the next generation of the internet,

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rebranding it as the “Petaverse” to symbolize its Perpetuality of Possibilities—also a nod to this book’s title. On the other hand, the chapter also delves into its darker counterpart, the “Darkverse” or “Metaworse,” presenting a dystopian vision of its future and the potential to disrupt human civilization.

This book also contains six case studies covering Paris Fashion Week, Balenciaga, and virtual apparel for stylish avatars; the question of diversity, equality, and inclusion (DEI) in and outside the Metaverse, exemplified by Roblox; the multibillion-euro business of virtual gaming in general and the highly popular virtual game world Fortnite in particular; the Metaverse’s effect on the automotive industry, with the BMW becoming the ultimate virtual driving machine; the leveraging and potentially frightening power of virtual worlds in the collection (or not) of sensitive data, illustrated by Meta and its virtual space Horizon Worlds; and the future Metaverse’s influence on higher education, with Spanish IE University as a prime example.

To conclude this introduction (and personal therapy session!), I hope that you enjoy reading this book as much as I have enjoyed writing it. I’m convinced that it’s only a matter of time until interest and media frenzy might reappear. It could take a decade—another fifteen years, maybe longer, or perhaps less—but the time will come when this work (and any other research on virtual worlds and virtual reality) will again be relevant, just as our research on Second Life from the 2000s gained traction much, much later.

Chapter One

ANNALS AND ADVANCES

HISTORY, HYPE, AND HEART OF THE METAVERSE

THIS CHAPTER explores key advancements in virtual worlds, tracing their historical evolution and cycles of hype, while identifying the enduring elements that form the foundation, the very heart, of the Metaverse. Clearly defining the Metaverse is essential to understanding both what it represents today and what it is envisioned to become. Unlike existing virtual environments, the Metaverse is conceptualized as an immersive, independent, and interconnected virtual social universe, one that has yet to fully materialize. These “three I’s,” alongside its inherently social nature, are central to its identity.

While the Metaverse may appear to be just a familiar concept in a fresh package, several notable developments mark its evolution. Advances in technology have greatly enhanced immersion. Decentralization is reshaping traditional power dynamics, paving the way for greater autonomy and independence within these spaces. While the Metaverse is still a work in progress,

interoperability and interconnectedness have become central objectives in its development.

The chapter concludes with a case study on Balenciaga and its 2021 presentation at Paris Fashion Week, showcasing how the French-Spanish fashion house has embraced the Metaverse as part of its brand strategy. Balenciaga's use of virtual fashion and avatars exemplifies how creative industries are experimenting with digital identity and presence.

ONCE UPON A TIME: EARLY VIRTUAL REALITIES TOWARD THE METAVERSE

The term “Metaverse,” a portmanteau of “meta” and “universe,” was first popularized by Neal Stephenson in his influential 1992 sci-fi novel *Snow Crash*.¹ Therein, a vast virtual multiverse is depicted, in which users engage with shared digital environments set against a dystopian backdrop. The story follows Hiro Protagonist, a freelance hacker and pizza delivery driver navigating early twenty-first-century Los Angeles, who often immerses himself in the Metaverse. This virtual realm is accessed via personal computer terminals that project urban landscapes onto specialized goggles, creating an immersive experience. Users create unique avatars as digital representations of themselves, allowing for a range of personal expression limited only by height restrictions to prevent avatars from being excessively tall.²

In this fictional virtual ecosystem, users can perform numerous activities, from socializing in nightclubs to forming friendships

to exploring various recreational options, including drugs like “snow crash.” This name, referenced in the novel’s title, alludes to a visual glitch on early computers where crashes displayed chaotic patterns of random pixels and static noise.³ The allure of the novel’s Metaverse is so compelling that some individuals opt to take up residence in small storage units filled with technology, allowing them to remain connected to this virtual landscape on a near-constant basis. For many, the virtual realm offers an appealing escape from real life, creating a powerful incentive to prioritize virtual interactions over physical ones.⁴

The roots of virtual reality (VR), however, can be traced to 1962, long before the term “Metaverse” entered the lexicon. This early innovation was embodied in the creation of “Sensorama,” a machine designed to simulate the experience of riding a motorbike through the bustling streets of New York City. Sensorama combined sensory elements like a vibrating chair for street bumps, fans for wind, and odor emitters for city smells to create a synchronized experience that closely mirrored reality. This early foray into immersive technology laid the groundwork for future advancements in virtual reality.

While both *Snow Crash* and Sensorama constitute milestones in the evolution of the Metaverse, the first truly immersive, large-scale virtual world resembling today’s conception of the Metaverse was Active Worlds, launched as Alpha World in 1995. This platform enabled users to design their own virtual spaces, constructing homes, streets, and gardens using pre-made objects. Active Worlds provided a canvas for creativity and self-expression, enabling users to shape their environments and share them with others. However, it wasn’t until 2003 that

Second Life, developed by Linden Research, emerged and largely became a synonym for “virtual world.”⁵

Second Life quickly gained popularity and became a focal point of mainstream media, prominently featured in various business publications and tech journals and even making it onto the cover of the May 1, 2006, issue of *BusinessWeek*. The platform enabled users to create personalized avatars, own virtual property, and interact in real time, marking a significant evolution in the Metaverse. Users could engage in a variety of activities, from socializing and attending virtual events to creating and selling their own content. This user-generated approach to content creation set Second Life apart, fostering a community where users could express themselves and monetize their creativity.

Initially, communication among Second Life avatars was primarily via text, but as the platform evolved, voice chat was introduced, enhancing the interactive experience. Users could navigate their environments by walking, flying, teleporting, or using various vehicles, adding another layer of engagement. The platform featured a robust virtual economy where residents could purchase virtual real estate, ranging from small plots to entire regions, and even private islands. This property could be customized and furnished with an array of virtual items, enabling users to create their ideal living spaces.

What distinguished Second Life was its user-centric approach to content ownership. Residents retained copyright over their creations, enabling them to sell their work for Linden Dollars (L\$), the platform’s virtual currency. This unique economic model enabled users to generate actual income by exchanging L\$ for real currency through the Second Life

Exchange, providing a financial incentive for participation. Some users reported that their earnings from Second Life supplemented their real-world income, demonstrating the platform's economic engagement potential.

Second Life's increasing popularity and economic significance attracted real-world companies, leading them to establish a presence in the virtual environment. Major corporations like Telecom Italia and Toyota set up flagship stores on Second Life, offering virtual versions of their products. These stores provided users opportunities to explore and interact with brand offerings in an engaging way. In addition, companies such as Endemol and Dell organized virtual shows or sponsored events, further integrating real-world brands into the virtual landscape.

A pivotal milestone in the Metaverse's development occurred in 2012, when Oculus released the first affordable three-dimensional (3D) headset, enabling users to immerse themselves fully in virtual environments. This development marked a turning point, paving the way for broader acceptance of immersive experiences.⁶ In 2014, Facebook acquired Oculus, setting the stage for further evolution in virtual and augmented reality technologies.⁷

In 2021, Mark Zuckerberg announced his vision of the Metaverse as the next evolution of the internet, reigniting discussions about the future of digital interaction. Many had seemingly forgotten about Second Life and similar virtual worlds, mistakenly believing that they had faded into oblivion. In contrast to Second Life's model, Zuckerberg envisioned a unified, 3D environment that resembles the interconnected nature of the internet, where users can seamlessly navigate various worlds, spaces, and experiences.⁸

Although this comprehensive Metaverse has yet to materialize, the concept has evolved significantly since its inception in *Snow Crash*. Few could have predicted that the world's largest social media platform would rebrand itself as “Meta” to reflect this ambitious vision.⁹

HISTORY REPEATING: THE SECOND LIFE, HYPE, AND DIVE OF VIRTUAL WORLDS

When announcing its bold vision for the Metaverse in late 2021, Facebook made headlines across the board. This ambitious move created considerable buzz around the concept of virtual worlds, but the enthusiasm quickly waned, similar to the rapid decline of interest in Second Life nearly two decades earlier. Although it's perhaps unsurprising that such an announcement—especially without a tangible new technology or platform—failed to sustain public interest, it's still worth taking a closer look. By examining the factors behind the initial and second hype waves and their subsequent wane, we can gain insights into the Metaverse's current status and potential future.¹⁰

Interest in virtual worlds surged after Zuckerberg's announcement, during which he revealed that Meta would invest \$10 billion in developing the Metaverse. He stressed the project's significance by renaming the company, underscoring his commitment to this new direction. By that time, Facebook already employed more than 10,000 people in Reality Labs, its division focusing on augmented and virtual reality. Thus, the initiative wasn't entirely new to Facebook or the tech industry. Rather,

Zuckerberg's announcement appeared strategically timed, potentially serving as a way to shift focus from the company's challenges, such as its diminishing popularity with younger users and the public scrutiny around its various controversies. The rebranding of Facebook to Meta also provided an opportunity to address issues of trust and reputation, potentially rendering the company more appealing to talent, advertisers, and partners.¹¹

The reasons for the buzz surrounding Zuckerberg's announcement can be attributed to several factors. Of course, a \$10 billion investment by one of the world's most prominent tech companies was bound to attract attention. The rebranding from Facebook to Meta also signified a monumental shift, catching the eye of the public and the media. The timing of the announcement, however, was perhaps the most critical factor: In 2021, the COVID-19 pandemic still significantly affected lives worldwide, with lockdowns, travel restrictions, and social distancing in place. Feeling isolated and weary, people found the concept of the Metaverse appealing, as it promised new ways of interacting socially without physical proximity. The Metaverse's story provided an optimistic escape from the constant barrage of grim pandemic-related news, offering an alternative vision of social connection. Yet this rise in interest was likely more a result of strategic timing than an indication of technological breakthroughs or a fundamentally new platform.¹²

Given these factors, the subsequent cooling of interest in the Metaverse might no longer come as a surprise. This doesn't mean, however, that the Metaverse is a lost cause or that work on it has ceased.¹³ While the media has sometimes painted the

Metaverse as a failure, this portrayal often reflects the high expectations initially set, which were challenging to meet in the short term. Early signs of skepticism about the Metaverse's potential began to surface by early 2023. Around this time, several large tech companies announced layoffs and scaled back their investment in virtual reality development. These reductions, though, weren't restricted to the Metaverse. Economic factors, such as inflation, global instability, and a generally strained economic climate, likely pressured companies to cut costs and prioritize projects with more immediate returns.

In addition, as Metaverse enthusiasm began to wane, another technological trend quickly gained popularity: generative artificial intelligence (AI). Tools like ChatGPT captured public attention by delivering practical, readily observable results, in contrast to the more speculative, longer-term promises of the Metaverse. While the Metaverse announcement largely revolved around vision and potential, generative AI offered immediate, tangible benefits that resonated with investors and users alike. Consequently, the Metaverse began to seem like a high-risk, uncertain investment, especially compared to the clear, present capabilities demonstrated by generative AI.

The decline in Metaverse excitement isn't unprecedented. As already noted, it mirrors the rise and fall of interest in virtual worlds following the launch of *Second Life* in the early 2000s. Around 2006, for example, *Second Life* gained significant media attention when one of its users, Anshe Chung (whose real name is Ailin Graef), became the first individual to earn over \$1 million through her activities in a virtual world.¹⁴ At the time, many companies jumped on board, hoping to build

their brands by establishing a presence on Second Life, offering them a novel way to interact with consumers. However, the idea of virtual flagship stores did not generate the expected returns for most brands.¹⁵ Consumer interest was lukewarm, with many users rarely visiting these virtual storefronts. While there were exceptions, such as virtual worlds being used to sell real-life products in specific categories, Second Life's general effectiveness as a marketing and sales platform remained limited, resulting in the exit of most brands from this early virtual space.

Ultimately, the fluctuating interest in the Metaverse underscores the difficulty of building continuous engagement in virtual worlds. Technology alone does not guarantee widespread adoption; Successful virtual worlds need to provide experiences that offer genuine value, relevance, and ease of use.

THE METAVERSE: THE IMMERSIVE, INDEPENDENT, AND INTERCONNECTED VIRTUAL SOCIAL UNIVERSE

At the beginning of my research career, I focused on investigating virtual worlds.¹⁶ As interest in virtual worlds began to diminish, I expanded my focus to social media as a whole, framing virtual worlds as a specific category in the broader social media landscape.¹⁷ This perspective proved instrumental in shaping my academic journey. Therefore, it seems fitting to start a discussion of defining the Metaverse by exploring the reasoning behind including virtual worlds in the social media domain.

In 2010, we characterized social media as “a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that enable the creation and exchange of user-generated content.”¹⁸ This definition underscores the transformative nature of Web 2.0, a phase in the evolution of the internet where content is no longer exclusively created by individuals but rather continuously enhanced through collaborative and participatory efforts. Virtual worlds exemplify this principle, facilitating both the participatory interaction central to Web 2.0 and the creation and exchange of user-generated content.

In the same article, we classified social media into six distinct categories: collaborative projects (e.g., Wikipedia); blogs and microblogs (e.g., Twitter, now X); content communities (e.g., TikTok); social networking platforms (e.g., Facebook); virtual game worlds (e.g., World of Warcraft); and virtual social worlds (e.g., Second Life).¹⁹ This classification scheme was developed using theories from media research, such as social presence and media richness, and social processes like self-presentation and self-disclosure—both of which we identified as core components of social media.

Regarding the first set, social presence theory asserts that communication media vary in their capacity to foster “social presence,” defined as the sensory, visual, and physical connection among communicators.²⁰ A greater sense of social presence enhances the influence that communicators have on one another’s behavior. Similarly, media richness theory evaluates media based on the volume of information that they can convey in a specific time frame.²¹ Virtual worlds excel in both dimensions,

offering a high degree of social presence and ranking high in media richness.

Regarding the second set, social processes, the concept of self-presentation posits that individuals strive to shape how others perceive them during social interactions, aiming to project an image consistent with their personal identity.²² This process often involves self-disclosure, which entails the deliberate or unintentional sharing of personal information such as thoughts, emotions, preferences, and dislikes, aimed at aligning with one's desired image.²³ To understand the level of self-representation and self-disclosure enabled by virtual worlds, one must distinguish between virtual game and virtual social worlds.

Virtual game worlds, essentially massively multiplayer online role-playing games (MMORPGs), impose strict behavioral guidelines on their users, leaving limited opportunities for self-expression and individual presentation. In contrast, virtual social worlds, scoring high on self-representation and disclosure, offer users and their avatars considerable freedom to shape their behavior and lead a virtual existence that closely resembles their real-life selves, if they so choose. These environments support an extensive array of self-presentation strategies, and with increased engagement and familiarity, users in virtual social worlds begin to exhibit behaviors that increasingly mirror those observed in real-life interactions.²⁴

While the Metaverse, envisioned as a space where individuals can work, learn, live, and socialize, clearly aligns with the concept of a virtual social world, it may be more appropriately described as a virtual social universe, emphasizing its broader and more expansive nature. To further characterize the

Metaverse, three key adjectives—“immersive,” “independent,” and “interconnected”—can be used. This leads to defining it as an immersive, independent, and interconnected virtual social universe (figure 1.1).

“Immersiveness” refers to the extent to which an environment can captivate an individual and enable him or her to fully engage therewith. In the context of virtual worlds, virtual reality, and the Metaverse, immersion is the sensation of being physically present in a digital or nonphysical realm. An immersive experience can be considered ideal when the user behind the avatar perceives no significant difference between the virtual environment and the real world. Although immersion is often associated with 3D virtual spaces and visual experiences, it encompasses all five senses—including smell and taste—which, for the Metaverse of the future, must be incorporated to create a truly perfect immersive experience.

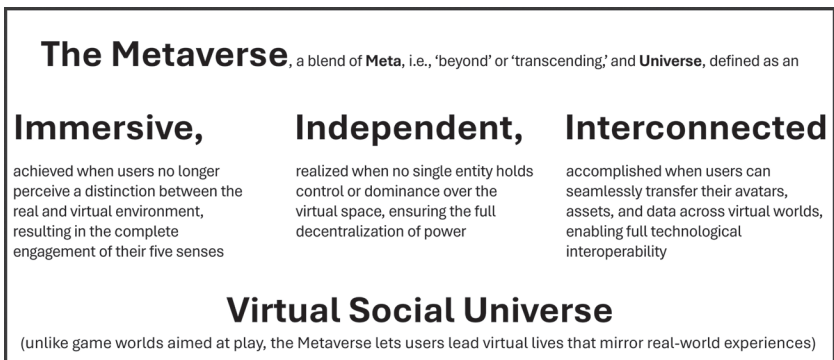


FIGURE 1.1 Metaverse definition: An immersive, independent, and interconnected virtual social universe