

CHAPTER ONE

MHVR Introduction and History

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MHVR: The Power of Immersive Worlds is an exploration into the integration of virtual reality (VR) within the spectrum of mental health offerings. This book is not merely a collection of research and examples; it is a journey through the evolution of VR, tracing its origins from visionary fiction to a substantial, transformative tool in mental health therapy. As we embark on this journey, this introductory chapter aims to provide a historical backdrop, tracing the lineage of VR from its conceptualization to its current stature, and outline the enriching journey you are about to undertake.

THE DAWN OF VIRTUAL REALITY: VIRTUAL REALITY AND SPATIAL COMPUTING

Traditionally, *virtual reality* (VR) is the term used to encompass a diverse array of immersive, adaptable, and digital resources and experiences, and is nestled under the extended reality (XR) umbrella (Stone, 2022, 2023; Weinstein, 2022). Current headsets, namely the Apple Vision Pro (Apple, 2024), have disrupted the field in numerous ways, including the preference for the term *spatial computing* over *virtual reality*, specifically to encompass the virtual and mixed reality features of the device (Ball, 2024; Bar-Zeev, 2023; Hackl, 2023). The term *spatial computing* was used as early as 1992 by the Human Interface Technology (HIT) Lab at the University of Washington (Ball, 2024; HITLab, n.d.). Per Hackl,

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“Spatial computing is already starting to make an impact, including on communication and co-presence, manufacturing, gaming, human resources, media, sports and entertainment, and data visualization” (para 1). Other head-mounted displays (HMDs) (the term given to this type of hardware worn on the head) offer both virtual and mixed reality experiences, and the industry is currently reevaluating (and debating) which terms should be used for accuracy.

For the purpose of this book we will use the term VR throughout as it is most common at this time, with the understanding that the landscape is constantly changing.

We recognize that accuracy in terminology has great importance.

VR encompasses engaging, multisensory experiences that may feature a complete 360° panorama of either real-world video, computer-generated imagery, or a blend of the two (Irvine, 2017). This technology represents a fusion of computing technology and physical hardware designed to “remove the conventional barrier between the user and the device, facilitating a more immediate and instinctive engagement with data” (Bricken & Byrne, 1993, p. 200). Additionally, VR incorporates sensors that monitor movements of the face, body, head, and hands, mirroring the user’s natural motions in the virtual environment, allowing for a profound sense of immersion and congruency (Maples-Keller et al., 2017; Stone, 2021).

These characteristics – immersion, embodiment, and adaptability – are particularly crucial in the realm of offerings within mental health treatment. Historically, the field of mental health has faced conceptual, understanding, and treatment limitations. Traditional therapeutic prompts like “imagine if” or “tell me about” come with inherent translational constraints. While XR is not without its own limitations, it significantly broadens the scope of possibilities by allowing individuals to engage fully in environments that are tailored to their needs, with boundaries largely determined by technological progress and availability, rather than the subjective interpretations and predispositions of two individuals in a therapeutic setting.

In conventional therapy, guiding a client to “try to imagine” or to mentally “paint a picture” does facilitate the exploration of various themes, strategies, emotional release, and more (Nanay, 2021; Stone, 2022). The client can conceive a scenario mentally. Yet, articulating this imagined scenario requires translating mental imagery into verbal communication, sharing the narrative, and hoping the portrayal accurately reflects the original vision. The therapist, in turn, must interpret the verbal description back into mental imagery, aiming to both understand the scenario and integrate it into the therapeutic dialogue.

This exchange is complex and ripe with potential for misunderstanding. Sometimes, clients may opt to draw or craft their visualizations, which aids in reducing misinterpretations. However, limitations such as drawing skills, the range of available art materials, and the fidelity of the representation to the mental image can pose challenges. While exact replication may not always be critical for some therapeutic contexts, precision in depiction can be significantly impactful. In a customizable, immersive environment, the visualizations that are requested can be “constructed, accessed, shared, experienced, and interactively participated in, allowing both client and therapist to visually and emotionally engage” (Stone, 2022, p. 127). This approach is just one of many possibilities.

HISTORY

THE JOURNEY

The history of VR begins in the imaginative corridors of science fiction, with Stanley G. Weinbaum’s groundbreaking short story, “Pygmalion’s Spectacles,” setting a visionary precedent. Penned in 1935, Weinbaum’s narrative introduced the world to the concept of a pair of goggles that let the wearer experience “a fictional world through holographics, smell, taste, and touch” (p. 5). This story was not just about seeing a different reality; the goggles were a gateway to a multisensory experience, engaging sight, sound, touch, and even smell and taste. This visionary idea laid the conceptual groundwork for what we today recognize as virtual reality. Weinbaum, through his literary genius, proposed a world where the boundaries between the real and the artificial blur, a world where experiences could be crafted and savored, transcending the limitations of physical reality. “Pygmalion’s Spectacles” serves as a classic instance of how science fiction has often foreseen technological progress.

Morton Heilig, who invented the Sensorama in 1957, is often referred to as the “father of virtual reality” (Mandal, 2013). Heilig’s Sensorama, developed in the 1950s, was an arcade-style theater cabinet that provided a fully immersive cinematic experience, engaging multiple senses (Norman, 2019). The user experienced a prerecorded film in color and stereo, which was augmented by sound, scent, wind, and vibration experiences. It was Heilig’s vision that first demonstrated how multisensory input could be synchronized with visual content to create an immersive experience, setting a precedent for the multisensory VR experiences we see today. It is important to note that the Sensorama was immersive but not interactive (Mandal, 2013).

This seed of imagination sown by Weinbaum and set into motion by Heilig, propelled forward in the 1960s with Ivan Sutherland, a visionary in his own

right (Sack, 2018). Often revered as the “father of computer graphics,” Sutherland’s *Ultimate Display* was a watershed moment in the history of immersive technologies (Mandal, 2013). This device, albeit rudimentary and cumbersome by today’s standards, was the first HMD system, providing users with a primitive, yet groundbreaking, immersive experience. It wasn’t merely a window to a new world; it was a departure from traditional computing, a leap into the realm of interactive, spatial, and immersive computing. The *Ultimate Display*, with its apt name signifying both the marvel and the burden of pioneering technology, was a testament to human ingenuity and curiosity, laying down the technical foundation upon which the VR of today is built.

Another significant contributor to the history of VR is Thomas A. Furness III, known as the “grandfather of virtual reality” (Mertz, 2019). Furness’s work in the 1960s and 1970s on flight simulators for the US Air Force laid the groundwork for the development of VR technology. His pioneering research in HIT has been instrumental in shaping the evolution of virtual environments (HITLab, n.d.; Mandal, 2013). Differing from Sutherland, Furness told podcaster Kent Bye that “he [Furness] has always been much more focused on solving real problems with VR” (2015, para 3). Bye explains that Furness recognized the need for pilots to understand increasingly complex fighter jet technology, “. . . so Tom turned to creating augmented reality systems to display more information to the pilots in a virtual environment. This resulted in the first ‘Visually Coupled Airborne Systems Simulator’ system that he helped develop in 1971” (para 3).

With the development activity progressing, a name was needed to reference this unique type of technology. During the 1980s, Jarod Lanier popularized the term *virtual reality* with inspirational credit given to the work of Susan K. Langer (Langer, 1955; Virtual Reality Society, 2017) and multiple science fiction publications such as *The Veldt* (Bradbury, 1982), *The Judas Mandala* (Broderick, 1982), and *The Neuromancer* (Gibson, 1984). Lanier’s efforts to coin a term for this burgeoning field underscored the importance of establishing a shared language for discussing the vast potentials of immersive digital environments.

Lanier established VPL Research, pioneering the creation and sale of VR technologies. His contributions were pivotal in introducing VR to a broader audience, but his influence extended far beyond technological innovation. He explored the deeper ramifications of VR on the ways we connect, communicate, and understand reality. Viewing VR as an amplification of human expression and empathy, Lanier set the foundation for the technology’s reach into various sectors, especially mental health, emphasizing VR’s capacity to enhance human-centric experiences.

The contributions of Char Davies to the field of VR are also noteworthy. Davies, an artist and researcher, is renowned for her immersive virtual environments that explore the intersection of art, technology, and consciousness (Rafferty, 2017). She created 3D virtual scenes in the early 1990s, but they appeared two-dimensional when exhibited. She then created an “immersive, interactive virtual environment”; this became “Osmose” (1995) and its companion piece “Ephémère” (1998)” (para 3). Her work, which often emphasizes the philosophical and ecological implications of VR, invites users to engage in a deeply introspective and contemplative experience, expanding the application of VR beyond mere entertainment. Davies states, “I wanted to prove that this new spatiotemporal medium was capable of enabling experiences that could reaffirm our embodied being in the world, rather than distracting and distancing us from it” (para 4).

As we trace the evolution of virtual reality, the cultural influence of visionary fiction cannot be understated. Neal Stephenson’s seminal work, *Snow Crash*, published in 1992, is a prime example of this phenomenon. In his novel, Stephenson introduced the term *metaverse* to describe a shared virtual world that blends an enhanced version of the real world with a lasting virtual space, presenting it as a dystopian reality. The vivid and immersive depiction of a digital universe, where users interact through avatars, significantly shaped the public’s understanding and expectations of virtual environments. Stephenson’s visionary concept of the metaverse has not only become a foundational element in discussions about the future of the internet and virtual reality but has also inspired technologists and developers in their quest to bridge the gap between digital and physical realms. The inclusion of *Snow Crash* in the historical review of VR underscores the profound impact of speculative fiction in inspiring real-world technological innovations, particularly in fields like mental health, where the seamless integration of virtual and physical realities holds immense therapeutic potential.

The interest in VR surged during the 1960s but gradually waned by the end of the 1990s. This decline has been linked to several issues, including the high cost and bulkiness of the equipment, a shortage of software, and the inability to achieve genuine immersion (Dudley, 2018). However, a revival was sparked by Palmer Luckey, an 18-year-old who revisited these dormant concepts and crafted a novel type of headset in his garage (Dudley, 2018; Rubin, 2014). Previously confined to large machines in academic, research, and industrial labs, VR was transformed by Luckey into a system compatible with personal computers for consumer markets.

Luckey’s initiative led to a Kickstarter campaign with Brendan Iribe to finance the project, culminating in Mark Zuckerberg acquiring his startup for over \$2 billion (Dudley, 2018; Kovach, 2014). This acquisition marked the

beginning of a boom in VR, with numerous firms vying to develop and market HMDs for the mass market. As co-founders of Oculus VR, Luckey and Iribe launched Oculus and emerged as a cultural phenomenon, signifying a turning point in the accessibility and public perception of VR technology. The Oculus headsets democratized VR, transforming it from a niche, high-end gadget to a household name.

The impact of Oculus, and subsequently Meta, extended beyond the realm of gaming and entertainment. These advances catalyzed a surge in innovation, inspiring a multitude of applications in diverse fields such as education, training, medicine, and notably, mental health. The advent of this technology opened up new vistas for therapeutic interventions, where therapists and clients could engage in a shared virtual space, transcending the traditional boundaries of treatment. Luckey's vision and execution tapped into the unexplored potential of VR, ushering in an era where virtual environments are not just seen as escapism, but as platforms for healing, learning, and connection. Today, as we stand on the threshold of new discoveries and developments in VR, the foundational work of these pioneers continues to inspire and guide the future trajectory of this transformative technology.

Mark Bolas, a researcher and professor, has also been instrumental in shaping the VR landscape. His work on immersive design and the development of VR systems and applications has significantly contributed to making VR a practical and versatile tool in various fields (Hamilton, 2016). Bolas's dedication to fostering a deeper understanding of human perception and interaction within virtual environments has laid the groundwork for more intuitive and natural VR experiences, profoundly influencing both the technological evolution and the human-centric approach to virtual reality. He "focuses on creating virtual environments and transducers that fully engage one's perception and cognition, and create a visceral memory of the experience" (USC Cinematic Arts, 2024, para 1).

EVOLUTION

The metamorphosis of VR from Sutherland's prototype to the sophisticated systems we have today was not instantaneous. It was a journey marked by gradual, yet significant, advancements in computing power, graphics technology, and sensory feedback mechanisms. The late twentieth and early twenty-first centuries were pivotal in this evolution, witnessing a democratization of VR technology. Once a high-end, niche technology, often confined to research labs and specialized applications, VR began to permeate the mainstream. The advent of commercial VR headsets and the integration of sophisticated sensory feedback systems transformed VR from a novel concept to a versatile, accessible tool.

Today, VR stands at the cusp of innovation, no longer confined to the realms of gaming and entertainment. Its potential as a potent instrument in many fields, including mental health treatment is being increasingly recognized and harnessed. The immersive nature of VR opens up new avenues for therapy and treatment, providing many controlled environments where individuals can confront and work through their challenges. The evolution of VR is a testament to human innovation, a journey from the realms of fiction to the frontiers of reality. As VR continues to evolve, it holds the promise of transforming not just how we interact with digital environments but how we understand and treat the complexities of the human mind. With visionaries highlighted in this chapter, along with many others who are currently working in this realm, the future of VR in mental health treatment is not just promising; it's virtually limitless.

THIS BOOK

EMBARKING ON A TRANSFORMATIVE JOURNEY

As you navigate through *MHVR: The Power of Immersive Worlds*, you will be part of an enlightening expedition. This book is structured to provide a holistic view of the multifaceted nature of VR in mental health. While the detailed history of VR sets the stage, the subsequent sections delve deeper into its applications, ethical considerations, and future potential.

You will uncover how VR transcends traditional therapy boundaries, offering unique, controlled environments where therapeutic scenarios are not just imagined but experienced. The immersive nature of VR allows for a level of engagement, embodiment, and presence that traditional therapy modalities might not always achieve. As you progress, you will witness the intersection of technology and human empathy, where digital environments become spaces of healing and growth.

INFORMATION AND INSIGHT

Each chapter of this book is carefully curated to provide not just information but insight. The contributors are pioneers and thought leaders, bringing together a wealth of knowledge, research, and practical experience. The content is not just informative; it is thought-provoking, challenging you to envision the future of mental health treatment through the lens of VR – of spatial computing.

From understanding the nuances of human connections in virtual spaces to grappling with ethical dilemmas and rights considerations, the book offers a comprehensive exploration of the VR landscape in mental health. It addresses the need for accessibility, ensuring that the benefits of VR are not confined to a privileged few but are extended to diverse populations, each with unique therapeutic needs.

APPLICABILITY AND THOUGHTFULNESS

This book is more than a narrative; it is a resource. It is designed to cater to mental health professionals, educators, researchers, and anyone interested in the intersection of technology and mental health. The practical applications, case studies, and research insights offer readers a foundation to build on, encouraging innovation and thoughtful integration of VR in their practice.

As VR technology continues to evolve, so does its potential in mental health treatment. “MHVR: The Power of Immersive Worlds” aims to be a catalyst, sparking curiosity, encouraging critical thinking, and fostering an environment of continuous learning and adaptation.

As you turn the pages of this book, remember that you are not just reading about the history and application of VR in mental health; you are part of a larger narrative, a collective journey toward understanding and harnessing the power of immersive worlds for healing, empowerment, and growth. Welcome to the journey; welcome to the inclusion of immersive technologies in the future of mental health treatment.

THE FUTURE IS HERE: IMMERSIVE TECH AND MENTAL HEALTH TREATMENT

The future of immersive technology in mental health presents an exhilarating frontier, promising unprecedented possibilities for personalized therapy and profound client–therapist interactions. As we stand on the brink of this new era, virtual reality’s capability to customize experiences and environments tailored to the specific needs of the client and the therapeutic goals is becoming increasingly tangible. This approach to therapy leverages the power of immersive technology to create controlled, yet profoundly personal, therapeutic settings where every element – from the visual and auditory stimuli to the pace and intensity of the experience – can be meticulously crafted and adjusted to suit individual treatment plans. This level of customization ensures that therapy transcends the one-size-fits-all model, fostering an environment where clients can engage with their therapeutic journey in a manner that is most resonant and effective for their unique circumstances.

Virtual reality revolutionizes the traditional dynamics of therapy by replacing ambiguous, unilateral “imagine-if” scenarios with vivid, shared experiences. In the realm of VR, therapists and clients can navigate the same virtual spaces, experiencing and interacting with the same digital environment in real-time. This shared experiential platform eradicates the uncertainties and

limitations of verbal descriptions, allowing therapists to see and understand exactly what the client is seeing and experiencing. Such clarity paves the way for more precise assessments, targeted interventions, and an empathetic understanding of the client's perspective. The immersive nature of VR enables clients to articulate and confront their fears, traumas, and challenges in a safe, controlled environment, fostering a therapeutic process that is not only about recounting experiences but living them. As we continue to explore and harness the capabilities of VR in mental health, the potential for transformative change is immense, promising a future where therapy is not just an exercise in imagination, but a journey of shared, tangible, and deeply impactful experiences.

On behalf of every contributor to this book, we extend our heartfelt thanks for your engagement with our shared passions. We are navigating an era abundant in opportunities and responsibilities. Together, let's strive to harness these advancements, aiming to profoundly enrich mental health treatment and care.

REFERENCES

- Apple. (2024). Apple Vision Pro. https://www.apple.com/apple-vision-pro/?afid=p238%7CroKrKIA3-dc_mtid_%5Btracker_id%5D_pcrd_78477849328258_pgrid_1255643577244716_&cid=wwa-us-kwbi-VisionPro-slid---productid--Category-Avalanche-announceCategory-
- Ball, M. (2024). On spatial computing, metaverse, the terms left behind and ideas renewed. MatthewBall.co. (February 6). <https://www.matthewball.vc/all/metaversespatialandmore>
- Bar-Zeev, A. (2023). What is spatial computing? Medium. <https://avibarzeev.medium.com/what-is-spatial-computing-48d5da22b09d>
- Bradbury, R. (1982). *The veldt*. Perfection Learning.
- Bricken, M., & Byrne, C. M. (1993). Summer students in virtual reality: A pilot study on educational applications of virtual reality technology. In A. Wexelblat (Ed.), *Virtual reality applications and explorations* (pp. 199–217). Academic Press Professional.
- Broderick, D. (1982). *The Judas Mandala*. Pocket Books.
- Bye, K. (2015). #245: 50 years of VR with Tom Furness: The super cockpit, virtual retinal display, HIT Lab, & virtual world society. Voices of VR (November 17). <http://voicesofvr.com/245-50-years-of-vr-with-tom-furness-the-super-cockpit-virtual-retinal-display-hit-lab-virtual-world-society>
- Dudley, D. (2018). Virtual reality used to combat isolation and improve health. AARP Magazine (December). <https://www.aarp.org/home-family/personal-technology/info-2018/vr-explained.html>
- Gibson (1984). *The neuromancer*. Ace.
- Hackl, C. (2023). What leaders need to know about spatial computing. Harvard Business Review (November 10). What leaders need to know about spatial computing. <https://hbsp.harvard.edu/product/H07VTC-PDF-ENG>

- Hamilton, I. (2016). Microsoft hires USC mixed reality pioneer Mark Bolas. Upload (September 21). <https://www.uploadvr.com/mark-bolas-microsoft>
- HITLab. (n.d.). Welcome! <https://www.hitl.washington.edu/home>
- Irvine, K. (2017). XR: VR, AR, MR - What's the difference? Viget. <https://www.viget.com/articles/xr-vr-ar-mr-whats-the-difference/>
- Kovach, S. (2014). Facebook to buy Oculus VR for \$2 billion. Business Insider (March 25). <https://www.businessinsider.com/facebook-to-buy-oculus-rift-for-2-billion-2014-3>
- Langer, S. K. (1955). *Feeling and Form: A Theory of Art*. Scribner.
- Mandal, S. (2013). Brief introduction of virtual reality and its challenges. *International Journal of Scientific Engineering & Research*, 4(4), 304–309.
- Maples-Keller, J. L., Bunnell, B. E., Kim, S. J., & Rothbaum, B. O. (2017). The use of virtual reality technology in the treatment of anxiety and other psychiatric disorders. *Harvard Review of Psychiatry*, 25(3), 103–113.
- Mertz, L. (2019). Virtual reality pioneer Tom Furness on the past, present, and future of VR in health care. IEEE Pulse (May 2). <https://www.embs.org/pulse/articles/virtual-reality-pioneer-tom-furness-on-the-past-present-and-future-of-vr-in-health-care>
- Nanay, B. (2021). Mental imagery. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy*. (Winter 2021 edition). <https://plato.stanford.edu/entries/mental-imagery/><https://plato.stanford.edu/archives/win2021/entries/mental-imagery>
- Norman, J. (2019). The Sensorama: One of the first functioning efforts in virtual reality 1955–1962. <http://www.historyofinformation.com/detail.php?entryid=3201>
- Rafferty, P. (2017). Virtual reality // healing practice: An interview with Char Davies. BerlinArtLink (January 4). <https://www.berlinartlink.com/2017/01/04/virtual-reality-healing-practice-an-interview-with-char-davies>
- Rubin, P. (2014). The inside story of Oculus Rift and how virtual reality became reality. <https://www.wired.com/2014/05/oculus-rift-4>
- Sack, H. (2018). Ivan Sutherland – Well, I didn't know it was hard. <http://scihi.org/ivan-sutherland-computer-graphics>
- Stephenson, N. (1992). *Snow Crash*. Bantam Spectra.
- Stone, J. (2021). Extended reality therapy: The use of virtual, augmented, and mixed reality in mental health treatment. In R. Kowert & T. Quandt (Eds.), *The Video Game Debate 2: Revisiting the Physical, Social, and Psychological Effects of Video Games* (pp. 95–106). Routledge.
- Stone, J. (2022). *Digital Play Therapy: A Clinician's Guide to Comfort and Competence* (2nd ed.). Routledge.
- Stone, J. (2023). *Technology in Mental Health: Foundations of Clinical Use*. Routledge.
- USC Cinematic Arts. (2024). Directory: Mark Bolas. <https://cinemadev.cntv.usc.edu/directories/profile.cfm?id=22345&first=&last=&title=&did=18&referer=%2Finteractive%2Ffaculty%2Ecfm&startpage=1&startrow=1>
- Virtual Reality Society. (2017). The history of virtual reality. www.vrs.org.uk/virtual-reality/history.html
- Weinbaum, S. G. (1935). *Pygmalion's Spectacles*. Project Gutenberg.
- Weinstein, D. (2022). What is extended reality? <https://blogs.nvidia.com/blog/what-is-extended-reality>