A Contending Reality: The Secluded Physical Infrastructure of the Digital World

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Reality receives its definition in the human mind based on its interpretations and regardless of what is actually real. This can bring about inaccurate definitions of reality, such as the long-held assertion that the Sun revolves around the Earth. Currently, thanks to scientific innovation, humanity has clarified reality a great deal – *reality* in this case being the physical things that can be *directly* observed by a human, including face-to-face interactions with others and scenery and sounds physically occurring in front of the observer. However, scientific innovation has also allowed humanity to create a contending "reality." This is *the digital world*, a widely accessible web of electronic technology engineered by humans to accurately capture and display records of reality, to share knowledge and ideas, to communicate without spatial barriers, and to entertain with unparalleled sensory immersion. From interactions with social media to the idea of achieving total immersion in a digital universe termed the "metaverse" using virtual reality systems, the digital world is easily interpreted as very real by the mind,

thanks to its effective replication of key aspects of reality such as interpersonal communication and visual sensations. Fundamentally, the digital world is a creation of humans however, and distinctly *not* reality. It is thus important to be aware of the real, physical structures the digital world relies on to avoid passively treating it like reality when, unlike reality, it is a markedly novel occurrence, fundamentally unnatural, and created for profit.

The digital world has only existed for a strikingly brief fraction of human history, but has within that time managed to have disproportionately extensive impacts. A primary reason for this is the internet, with its ability to greatly expand and enhance the reach of human relationship and communication in a way that has never been possible before. In 2022, the percentage of the population using the internet among 18 surveyed countries with advanced economies averaged at a substantial 93% (Wike 32). Ten years earlier, this number was 68% at its highest and ten years before that there was no public internet to speak of (Wike 31; Ring). Broadly available computing technology, the enabler of the internet and the digital world as it currently exists, has only been around for a similar span of time (Pottenger). Thus, the impacts of these technologies have unfolded within only the last four decades of human history. These impacts have been considerable, particularly in the realm of communication, as

virtual communication has added a never-before-seen dimension to human relationships, which lie at the heart of what it means to be human. In addition to natural in-person communication, it is now possible for more than half the world's population (Dennis) to communicate from almost anywhere, to almost anywhere immediately. This can be done irrespective of distance, using not only text, but also video and speech, both in close personal relationships and inconceivably massive global social networks. Additionally, beyond enlarging the field of interpersonal communication, digital technology makes advanced visual and auditory entertainment in the form of games, videos, and virtual reality possible and allows almost total visual and auditory immersion in them. No previous technology humans have invented to aid in communication or entertainment has been sufficiently advanced to offer such personal, immediate, interconnected, and complex communication and entertainment capabilities as digital technology can, making its emergence in the course of history a unique shift in human experience. This marks one of the key differences between physical reality and the digital world – the latter, despite being similarly impactful on a human observer, is a very new part of the human experience.

The ability of digital devices to vastly extend human communication and entertainment capabilities has proven very

attractive. In the United States of America, about 50% of teenagers 12-17 years old spend four or more daily hours in front of a digital screen and about 41% spend two to three hours (Zablotsky et al.). In an article by Peter Clark of TIME Magazine, one mother, speaking about her son's virtual birthday party, stated, "just because it happens in a virtual space doesn't make it less real. It's very real to my son." Arguably, this ability for digital technology to act as a medium for very real and extensive social interaction between real people, allows it to merge effortlessly with day-to-day experience of reality. Clark writes that young people of the day are "growing up with the expectation that a large part of their future will exist in the metaverse". This marks a notable change from previous generations who have come to know digital technology in adolescence and adulthood as opposed to growing up with it. With every subsequent generation going forward, the distance from a world without digital technology and communication will grow. And with more time to continue innovation, many envision a future where there is increasing integration of digital life into real life, with "greater overlap [between the two] in wealth, socialization, productivity, shopping and entertainment" (Clark). Increasingly, the digital world is merging into the real world with ease thanks to its ability to greatly enhance already-valuable human experiences.

Considering this trajectory of technological integration within society, it becomes pertinent to carefully consider the underlying differences between it and physical reality. Most notably, the function which digital technology has in human experience, and its similarity to reality, bear almost no resemblance to its underlying physical infrastructure. To the user, digital devices are almost synonymous with what they display – a sender's message, a video or movie, a medium for creativity, an extension of one's own thoughts, or an entrance point to the information megastructure of the internet. And all these functions have parallels in physical reality – an in-person conversation, watching a play, painting an imagined different world, a personal filing system, or a library. However, the "real" component of their digital counterparts looks nothing like them. Until the very last moment, the occurrences on a screen are in fact processes that are unlike anything nature would ever produce. They are not biological, but at their foundation, highly structured electrical circuit systems often connected only by light waves (Britannica), and ending in screens, which are essentially lattices of tiny glowing lights that appear like an image only when viewed at a sufficient distance. The mass of electrical signals which underpins all this can be described as data (Data), and there is an immense amount of it on the internet. This data is mainly stored in massive data centers, commonly

known as “the cloud” (Herr 2). While this term and the ease of use of cloud storage implies silent and direct information retrieval similar to reading paper files or a book, it is in fact anchored in the real world as “miles of metal racks housing sophisticated electronics [, primarily computers,] connected by planetary-scale fiber and radio data networks all supported by specialist teams and massive cooling sources” (Herr 2). Furthermore, the data and data centers are run and managed by corporations for profit. Experimental data valuation for Canada in 2019 was estimated at $200 billion, and the estimated values of market capitalizations of major data companies like Google, Amazon, Apple, and Meta are in the trillions of dollars (Fay). Herein lies a crucial distinction between reality and the digital world: nature, physical reality, is *not* a product of humanity’s profit-seeking industry, but the digital world is. Lastly, the devices that comprise the digital world are nothing like the devices of nature. Unlike the systems of the natural world, which typically exist inherently as some form of a cycle, digital devices are built, used, and then disposed of with only limited possibility of reuse, and the materials are highly artificial, often containing toxic substances like mercury and lead (Campbell). At this point, electronic waste is “the world’s fastest growing source of waste” (Campbell). As such, the core components of the digital world largely remain hidden behind what is on the display of the user’s

device because they are nothing like their final function or the structures of nature they aim to enhance.

Ultimately, while the digital world can greatly resemble reality and seems like its viable extension, it should never be passively accepted, depended on, or treated anything like reality because it is fundamentally not, and can thus easily shift in drastic, fundamental, and unpredictable ways. David Suzuki notes that the implementation of new technology always comes with potential costs proportional to the technology's power, and that these costs typically only show when the technology has already been implemented on a very large scale. He writes that "we have to build into our judgments a large leeway for our ignorance and err on the side of extreme caution" (Suzuki 255). This perspective seems especially relevant to digital technology, which has been implemented on a massive scale and is extremely powerful. While four decades of implementing a "new" technology may seem like a long time, it is arguably very brief considering the fundamental shift in human experience digital technology represents. And so, the full extent of its costs are not yet known; still, its usage and influence continue to grow (Anderson et al.), as well as the intent to increase that influence. One potential cost is that allowing the digital world to merge with one's experiences of physical reality can result in the formation of an unstable and inaccurate perception of reality. As

previously mentioned, the physical infrastructure of the digital world neither resembles biological structures nor natural cycles. Whether or not it will prove to be as consistent or fundamentally dependable as the natural world is thus uncertain. The fundamental stability and format of the digital world, from social media to virtual reality experiences, is rooted in large part in economic structures and the arbitrary corporate decisions of companies on such things as subscription plans and features. Such decisions can potentially result in the sudden change or even disappearance of entire chunks of the digital world at any moment. And in terms of its content, unlike real communication and data storage (written text and images), *digital* communication and data storage, including the internet, rely on complex human systems to sustain them. Consequently, major disruptions to these systems, such as disruptions to power supply or resource chains, can drastically shake the digital world. Considering the unnatural, untested, and potentially unstable physical infrastructure of the digital world, it is sensible to err on the side of caution and avoid intentional dependence on it, or immersion in it, despite its invitation.

Overall, it is crucial to avoid passively treating the digital world like reality: despite its resemblance, it is fundamentally not like reality, being a very recent historical occurrence created in the midst of human economy. Within only the last four

decades, the digital world has emerged with unparalleled impact, releasing human communication from the restraint of distance and vastly enriching human entertainment experiences. Unsurprisingly, the digital world has thus widely engulfed countries economically advanced enough to afford its implementation. Due to its resemblance to reality, it integrates effortlessly with sensory experience and almost *becomes a part of* physical reality for its users. Many anticipate a continued move in that direction in the future. Despite all this, the digital world is fundamentally not what it seems. While its major components have what seem like parallels in reality, those components are fundamentally nothing like reality, being neither organic structures nor cyclic systems, but rather complex structures of electronic signals and wireless transmission of data, which is largely stored in massive computer facilities that require rigorous maintenance to uphold. As digital technology continues to grow as a force in society, consistently gaining in its ability to integrate and merge with individual experiences of reality, it becomes increasingly important to remain conscious of its nature and careful with the scope of its implementation.

Works Cited

Anderson, Monica, et al. “Teens, Social Media and Technology 2023.” *Pew Research Center*, Pew Research Center, 11 Dec. 2023, www.pewresearch.org/internet/2023/12/11/teens-social-media-and-technology-2023/.

Britannica, The Editors of Encyclopaedia. "wireless communications". *Encyclopedia Britannica*, 26 Nov. 2024, www.britannica.com/technology/wireless-communications. Accessed 16 December 2024.

Campbell, Katie, and Ken Christensen. “Where Does America’s e-Waste End up? GPS Tracker Tells All.” *PBS*, Public Broadcasting Service, 10 May 2016, www.pbs.org/newshour/science/america-e-waste-gps-tracker-tells-all-earthfix.

Clark, Peter. “The Metaverse Has Already Arrived. Here’s What That Actually Means.” *TIME*, 15 Nov. 2021, time.com/6116826/what-is-the-metaverse/. Accessed 15 Dec. 2024.

“Data.” *Merriam-Webster.com Dictionary*, Merriam-Webster, www.merriam-webster.com/dictionary/data. Accessed 15 Dec. 2024.

Dennis, Michael Aaron and Kahn, Robert. "Internet". *Encyclopedia Britannica*, 14 Dec. 2024,

www.britannica.com/technology/Internet. Accessed 15 December 2024.

Fay, Bob. "Data: the precious asset we chronically undervalue." *Globe & Mail* [Toronto, Canada], 30 Oct. 2023, p. B4. *Gale In Context: World History*, link.gale.com/apps/doc/A770912689/WHIC?u=red68720&sid=bookmark-WHIC&xid=ebde663e. Accessed 15 Dec. 2024.

Herr, Trey.There is no Cloud, Just Other People's Computers." *Four Myths about the Cloud: The Geopolitics of Cloud Computing*, Atlantic Council, 2020, pp. 2–5. *JSTOR*, http://www.jstor.org/stable/resrep26033.4. Accessed 16 Dec. 2024.

Pottenger, William Morton , Freiberger, Paul A. , Hemmendinger, David and Swaine, Michael R.. "computer". *Encyclopedia Britannica*, 31 Aug. 2024, www.britannica.com/technology/computer. Accessed 15 December 2024.

Ring, Julian. "30 Years Ago, One Decision Altered the Course of Our Connected World." *NPR*, 30 Apr. 2023, www.npr.org/2023/04/30/1172276538/world-wide-web-internet-anniversary. Accessed 15 Dec. 2024.

Suzuki, David. “It Always Costs.” *Essay Writing for Canadian Students with Readings* edited by Roger Davis and Laura Davis, 9th ed. Pearson, 2020, pp. 254-255.

Wike, Richard, et al. “Internet, Smartphone and Social Media Use.” *Social Media Seen as Mostly Good for Democracy Across Many Nations, But U.S. Is a Major Outlier*, Pew Research Center, 2022, pp. 31–42. *JSTOR*, http://www.jstor.org/stable/resrep63204.6. Accessed 15 Dec. 2024.

Zablotsky, Benjamin, et al. “Daily Screen Time Among Teenagers: United States, July 2021–December 2023.” *National Center for Health Statistics*, Centers for Disease Control and Prevention, 30 Oct. 2024, www.cdc.gov/nchs/products/databriefs/db513.htm.