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Towards a smart glasses society? Ethical perspectives on extended realities and augmenting technologies

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The release of Apple Vision Pro in early February and the subsequent media coverage have pushed Mixed Reality (MR) and augmenting technologies into public consciousness, raising the question of whether we are moving towards a “smart glasses society” where wearing MR-devices in public becomes commonplace, and regularly engaging with extended realities will be part of our everyday experience. This paper delves into the ethical implications of this potential development, scrutinizing the effects smart glasses may have on our humanity, our relation to the world, and our shared-life world. It calls for a nuanced approach that earnestly engages with these concerns while maintaining a composed outlook, recognizing that many of these issues discussed in the context of immersive technologies, although they seem new, have been with us for quite some time.

KEYWORDS

augmented reality, virtual reality, mixed reality, immersive technologies, surveillance capitalism, privacy

1 Introduction

On February 2nd, the *Apple Vision Pro* hit the market in the USA, and right away, it provoked worldwide reactions. While journalists and tech enthusiasts all over the world wanted to get their hands on this new device, one could witness impressive and somewhat bizarre scenes in urban areas and across social media: people wearing these new smart glasses while sitting in cafes or on the subway, walking, or even driving their cars. For the most part, they seem to manage their daily lives quite well (Stein, 2024). Only occasionally does the new technology seem to overwhelm them. Then, their movements start to stutter, reminiscent of a poor internet connection during streaming, followed by sudden, bewildered glances in all directions as if trying to reorient and recalibrate themselves.

Certainly, Apple is not the first that has developed smart glasses—we’re using this term broadly to encompass all types of smart eyewear and augmentation devices, head-mounted displays and immersive technologies (Zuidhof et al., 2021). Prior to Apple’s entry, other tech giants had already launched powerful models into the market for Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR). Among these are AR-devices like Microsoft’s *Hololens 2* and the now-discontinued *Google Glass* that add new layers (e.g., information or virtual objects) to the “analog” world; VR-headsets like Sony’s *PlayStation VR2* or the *Varjo Aero* that create a (more or less realistic) virtual world in which users can dive in and completely immerse themselves; or MR-technologies like *Meta Quest 3*, which supports both VR and AR functionalities. However, despite being on the market for several years,

smart glasses have yet to become mainstream. Relatively few people own such devices, and it's a rare sight to see anyone wearing them in public.

The limited spread of and ongoing resistance to smart glasses prompts us to ponder the trajectory of these immersive technologies following the debut of the *Vision Pro*. Given Apple's track record of setting trends and democratizing markets—take the *iPhone*, for example, which has played a significant role in popularizing smartphones since 2007, leading to a cultural shift in how these technologies are accepted and woven into our daily lives (Karcz, 2017), not to mention how the *iPad* and *Apple Watch* have reshaped the tablet and smartwatch markets—it's reasonable to speculate: will smart glasses see an increase in their acceptance soon? Could the observations mentioned above even give us a glimpse into the future we're heading toward, worldwide? A future where wearing smart glasses in public becomes commonplace, not just in the USA, and regularly engaging with extended realities, i.e., realities that are either entirely virtual or augmented by technology, will be part of our everyday experience?

This vision of society carries the potential for polarization, with tech enthusiasts and AR-/VR-/MR-devotees on the one side, who eagerly await this future, and on the other, skeptics who view it warily and with substantial reservations. Beyond immediate concerns about privacy and/or surveillance, raised by smart glasses and similar technologies (Hofmann et al., 2017; Rauschnabel et al., 2018; Fowler, 2024; O'Flaherty, 2024; Smith, 2024), there are broader concerns at play: about how the gradual shift towards something that might be called a “smart glasses society” will affect our humanity, our relation to the world, and our interactions with one another.

To prevent techno-utopians and doomsayers from dominating the narrative and thus skewing the vitally important debates that are yet to take place, it's critical to address these issues promptly (Avanessian, 2022). Equally important is the need to alleviate unnecessary fears by contextualizing and properly categorizing them; just as it is necessary to point out the true risks of these technological trends. In this perspective piece, we aim to succinctly address these concerns in a scholarly yet accessible tone. We adopt a hermeneutic approach, seamlessly blending cultural studies interpretations with pragmatic analyses and ethical reflections.

2 We: cyborgs

As technology invades our personal space as intimately as the *Vision Pro* or similar devices—evidenced, for instance, by *YouTube* reviews of people wearing Apple's *Vision Pro* non-stop for 24 (+) hours (Ryan Trahan, 2024; *The Wall Street Journal*, 2024)—some raise concern what this will do to us and our “humanity” (Sotraidis, 2023; Elledge, 2024; Estes, 2024). Sure, a smart glasses device is not a *Neuralink* chip implanted firmly in our brain. In theory, it could be removed at any moment. Nonetheless, the idea of people taking off their smart glasses only for showers or sleep quickly raises questions about whether we are on a dangerous path toward the gradual “robotization of humans” (Coelho, 2022). This path could ultimately lead to a society filled with technologically-enhanced human-machine cyborgs, reminiscent of Marvel's *Robocop*, DC's *Cyborg*, or, for those who prefer a darker twist, CD Project Red's *Cyberpunk 2077*.

The question of whether technology is currently becoming too intrusive and invading our personal identity is highly legitimate, given the recent developments in the fields of immersive and neurotechnologies, as well as the near-omnipresence of artificial intelligence. Yet, the fear that the use of smart glasses is something like the first step on a slippery slope, at the end of which we will no longer be human, but technologically trans- or even posthuman beings (Loh, 2018), can quickly be put into perspective (Midson, 2018).

If such a pivotal point (of no return) existed, beyond which we could no longer resist our “technological dehumanization” (Kronfeldner, 2021, p. 18), we would have collectively crossed it long ago. The extent to which technology has already become a part of our selves is evident by how “naked” we feel without our smartphones, and how helpless we find ourselves in numerous situations without them. It's not just smartphones; from pacemakers and hearing aids to the fundamental cultural technologies like electric lighting and agriculture, it's clear we rely profoundly on technology for survival and thriving. Technology has ever been an integral part of our humanity, and that fact that none of us could ever live without it is reflected by Donna Haraway's claim that we as humans have always been “cyborgs” at heart (Haraway, 1991).

3 Our relation to the world: mediated

Where we start to perceive the world increasingly through a “digital lens” (*AI Agenda*, 2023)—for instance, on the integrated displays of devices like the *Apple Vision Pro* or the *Meta Quest 3*, streaming live images of our surroundings with passthrough technology—this prompts the critical question of how such digital intermediation might affect our relationship to the world. Because with smart glasses, it might seem as if something is coming between us and our environment (Estes, 2024), and the apparent immediacy that previously existed might be getting lost (Siniawski, 2013).

Like the concern before, this one is justified insofar as it points to the danger of us drifting more and more into digital worlds and—echoing the scenario on which the world-building of Ernest Cline's *Ready Player One* is predicated—losing touch with the “real” world (Beisbart, 2024). Yet, underlying this anxiety are the arguably flawed assumptions that we can clearly distinguish between digital and analog realms and that there was something like a “direct access to the world” prior to the advent of smart glasses.

The first assumption, that digital and analog worlds can be distinctly separated, was prominently debunked by digital philosopher Luciano Floridi. In his work *The 4th Revolution*, Floridi illustrates the deep interconnectedness and mutual dependency of both realms, asserting that the analog could scarcely function without the digital, and *vice versa* (Floridi, 2014). Instead of clinging to an unsustainable distinction, Floridi advocates for emphasizing the inseparability of both, coining the neologistic term “onlife” for this purpose (Floridi, 2015).

The second assumption, the idea that there once was some kind of unmediated access to the world, is critically examined through *Postphenomenology*, a philosophical field that examines how technologies shape our access and relationship to the world

(Selinger, 2006). One central claim that key representatives of this discipline tirelessly emphasize is that direct access to the world has never been, and could never be, a reality (Rosenberger and Verbeek, 2015). Don Ihde, for example, demonstrates how various technologies help us *perceive* the world (glasses, hearing aids), *interpret* it (scientific theories, non-fiction books), or provide the backdrop for our experience of the world without us interacting with them directly (electric light, internet) (Ihde, 2009; 2010). This leads him to the conclusion that *all* technologies we employ shape our perception and engagement with the world. Given our inherent reliance on technologies, the concept of immediacy thus emerges as a crypto-theological fantasy—the dream of returning to what Paul Tillich might have called a paradisiacal state of innocence (Tillich, 1973).

4 Our shared life-world: work in progress

With devices such as Microsoft's *Hololens 2*, Canon's *MREAL MD-20*, or Apple's *Vision Pro* already beginning to, and expected to further, augment our perceptions and customize our environments—be it through adding virtual elements, hiding unwelcome aspects, or imposing video filters on our surroundings (Schwenck, 2024)—it begs the question: How does this affect our communal life-world? Does this lead to the dissolution of a shared reality in which we all partake?

This concern is more than justified. There's no need to delve into dystopian fiction, like certain *Black Mirror* episodes (*White Christmas* or *Men against Fire*), that phenomenally illustrate what might happen if we (are manipulated to) lose sight of a common world. To understand the gravity of this issue, one only needs to consider Jürgen Habermas' insights from his *Theory of Communicative Action* (Habermas, 1984). In this seminal work, the German philosopher compellingly makes the case that a shared life-world, consisting, among other aspects, of our collective experiences that inform our perceptions of ourselves, the world, and our surroundings (Fairtlough, 1991), is the cornerstone without which rational debates, cultivated disagreements, and, in turn, peaceful coexistence are nearly impossible (Habermas, 1984).

However, the issue of lacking a common life-world isn't new with the advent of smart glasses. A poignant example that brings this to light for a wide audience is the 2017 inauguration of the 45th President of the United States of America. The numbers of how many people were present at the ceremony-site were depicted very differently by various sides, with each attempting to validate their narrative using facts or "alternative facts" (Blake, 2017)—a term popularized by Donald Trump's advisor, Kellyanne Conway, in 2017, and since regularly linked to philosopher Harry Frankfurt's concept of "bullshit" (Frankfurt, 2005; Ball, 2017). This example, along with the subsequent information battles waged in the media and on social media, proves that what's often intuitively thought of as our "natural common world" does not exist in this form—but is more accurately the result of collective bargaining processes, where different perceptions and interpretations of the world are discussed to find a minimal consensus.

Thus, the shared world has always been a collective endeavor all along. As such, it must also—one might say, especially—be

considered in the context of extended realities. Individuals living across various "realities" must strive to find intersubjective intersections that can be postulated as a common life-world and keep communication flowing.

5 Discussion

What are the (ethical) takeaways from these explorations?

Due to Apple's pivotal role as a trend indicator and market innovator, the recent release of the *Vision Pro* raised questions about the future development of virtual, augmented, and extended realities on a global scale, and whether the public use of smart glasses will soon become a part of everyday life. This prospect brought to the forefront several fears and concerns that require attention.

Upon reflecting on three key apprehensions, it's evident that many of the fears we've discussed above—human cyborgization, the mediated nature of our engagement with the world, and the perceived decline of our shared reality—aren't exactly new. Expanding our view a bit, we can see that these or similar concerns have been raised in numerous other contexts and with regard to similar technologies. Essentially, the debut of the *Apple Vision Pro* has rekindled focus on some longstanding debates and concerns that have been posed by other smart glasses devices—a bit like old wine in new wineskins or, as Joshua Smith (2022) might say: "old questions through new media".

The fact that these questions and concerns have been around for some time doesn't imply they can be overlooked or dismissed as ethically trivial. Quite the opposite: it's imperative to take these concerns seriously. However, our seriousness should not stem from a fear of imminent human cyborgization or a detachment from our common world due to emerging devices. These fears seem a long way off. Rather, we should regard these concerns as cautionary tales that highlight the paths to steer clear of as we forge ahead with the development and rollout of these immersive technologies.

Yet, it is all the more vital to ensure, that the real and immediate risks presented by smart glasses are not overshadowed by such sensationalist fears. Among the pressing risks that demand timely attention are the escalation of data collection exploitation in the era of surveillance capitalism (Zuboff, 2019), the transformation of individuals into quantified and statistical entities (Lupton, 2016; Bjerring and Busch, 2024), the progressive erosion of privacy as smart devices become more pervasive and intrusive (Véliz, 2020), and the insidious expansion of a surveillance mechanism into increasingly broader aspects of our lives (Marx, 2016).

Therefore, what's required is a balanced approach, one that takes into account both the conspicuous concerns of tomorrow and the stealthy threats of today, while acknowledging the enduring nature of these issues amidst the novel challenges presented by immersive technologies. This strategy should be marked by calm and rational reflection, avoiding the pitfalls of polarized extremes, with a focus on persistently confronting and resolving the deep-rooted ethical and anthropological dilemmas from the onset. By integrating these considerations early in the development and design phases of smart glasses and following an

ethics-by-design philosophy (Brey and Dainow, 2023), it can be ensured that these critical reflections shape the technology's trajectory right from the outset.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

MT: Writing—original draft, Writing—review and editing. MH: Writing—original draft, Writing—review and editing. PD: Writing—original draft, Writing—review and editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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