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The frictions of virtual reality for at-home entertainment

ESCP Impact Paper No.2023-08-EN

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Abstract

Despite being the focus of big consumer technology players (i.e. Meta) and while gaming sales topped \$185 billion in 2022, virtual reality headsets are not living up to expectations. Using data from a longitudinal study, this research shows that the technology struggles to live up to its potential and that its appeal is curbed beyond any initial excitement. As a result, VR is used less than other entertainment devices due to barriers specific to the medium. These barriers are conceptualised here as “frictions”: bodily contestations, technical obstacles or contextual factors which either prevent engagement or accumulate to cause the user to decide to stop engaging entirely. There is therefore a need to minimise or modulate these frictions. We demonstrate how placing the user of the experience at the centre of plans for VR distribution and delivery can do so. We do so by considering how proper on-boarding (preparation and steps taken to move from the real world into virtual reality) and off-boarding (steps taken to move out of virtual reality and re-adapt to the real world) can overcome or avoid any frictions.

Keywords: Virtual Reality, consumer entertainment, frictions, ‘in the wild’ research, longitudinal study

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Virtual reality's hype-filled promises

Time magazine once announced that virtual reality (VR) technology would “change the world.” Indeed, since Facebook paid \$3 billion for headset maker Oculus VR in 2014, VR has been widely proclaimed as the “next new thing” in consumer entertainment (Jenkins, 2019) and of course we know that Zuckerberg has pinned the future of Facebook on VR with his rebranding to Meta. Despite these hype-filled promises, and the increased access and affordability of VR headsets, VR is still far from a mainstream technology. Sales figures for headsets themselves are also not as buoyant as expected.

VR has also received growing attention in social science literature. Lanier et al.'s (2019) review of this literature shows that much of it comes from psychology, focusing on issues such as telepresence and violence, how VR can be used to treat anxiety and phobias and how it can foster empathy and prosocial behaviour. As they note, this literature is predominated by quantitative and experimental investigations in lab-based settings. Meanwhile marketing is starting to realise the potential of VR technology, particularly in retail settings but also how the technology is particularly suited for the delivery of hyperpersonalised marketing content.

Although there are many uses of VR across various industries, we focus specifically on VR for at-home entertainment including games, films and digital art which has been generally overlooked in the literature (Burt & Louw, 2019) despite being the focus of the big consumer technology players. Pizzi et al. (2019) note that most studies of VR focus on technological aspects of the tool, neglecting the consumer behaviour domain. So, we shift from a focus on the technology to a focus on the consumer to understand some of the frictions involved in VR use which can help to explain why, while gaming sales topped \$185 billion in 2022, VR headsets are not living up to expectations. In doing so, we consider some managerial implications for makers and marketers of VR experiences in order to modulate or remove these frictions, including: their duty of care in making users aware of the themes and content of the experience, as well as the types of interaction required; how to frame the content to ease users into – and out of – VR; and opportunities for users to further experiment and become comfortable with the technology through pop-ups, arcades and wider communications strategies.

Frictions

Ash, et al. (2018) examine the design and experience of interface interactions in applying for credit online. Their analysis finds that there is a need to guide applicants' actions in order to minimise negative affective states at key thresholds of the application process. This means managing friction, defined as the “practical, affective or emotional contestations between bodies and interfaces that interrupt or stop” (Ash et al., 2018: 1136) the consumer from completing or continuing to use a digital interface, whether this is buying a product or service or finishing a game. A friction can therefore be a bodily contestation or technical obstacle. We follow Ash et al. (2018) in moving away from a focus on the technical system as autonomous and towards an ongoing exchange between the user and the technology (in this case hardware device and software code), and we find that sense-making and meaning-making is distributed between them. While Ash et al.'s (2018) study focuses on a particular consumer service, we take a broader view to understand how consumers use VR

headsets, which frictions hinder or induce them in doing so and what can allow them to move beyond the frictions they may encounter.

Moving beyond the literature which has focused on discrete factors of engagement, we follow the consumer journey to consider the interplay of frictions that occur from the moment the consumer considers picking up their device to after they have removed it. Some of these frictions are intrinsic to the headset and the technology, while others are more personal due to certain pre-existing individual tendencies or “feeling histories” and are expressed through bodily states such as motion sickness, anticipation, stress, relaxation or excitement. We therefore answer Suh and Prophet’s (2018) call for further consideration of some of the negative consequences of immersive technology use, particularly as the technical limitations and performance issues, as well as bulky hardware, were identified as the top obstacle for mass adoption of VR (Bennett et al., 2021). We seek to uncover these and other sources of friction. By considering the different forces and tensions at work in these frictions, we provide practical solutions for VR designers and marketers to consider in minimising or working productively with friction in order to produce a pleasurable experience where consumers don’t need to think about the technology itself but can be transported elsewhere.

‘In the wild’ data collection

How and why consumers choose to use VR headsets and what prevents them from doing so is still largely unknown. We take a qualitative approach, moving beyond models which assume rational consumers as information processing computers but rather consider how consumers use VR technology in the context of their “cultural constellation” (Baron, Patterson & Harris, 2006: 119). The research draws upon a large-scale, multistage longitudinal project to explore the place of immersive technologies in the lives of young people aged 16-30, conducted between 2019 and 2021. We provided 86 young adults with headsets for home use for a period of 3 to 6 months. Participants tracked spending and engagement, and we concluded with in-depth interviews. This type of data collection ‘in the wild’ is common in human-computer interaction studies. Concluding semi-structured in-depth interviews helped us understand the participants’ experiences of using the headsets and how this changed over time as well as how it affected their broader media use. We used their media diary entries to elicit further details on specific experiences, for example which content was considered most and least enjoyable. These methods afforded us a sustained engagement grounded in participants’ real-life engagement with VR at-home.

Spatial, temporal and embodied frictions

Our analysis revealed a large number of frictions which occur throughout the VR experience and, more significantly, showed us how they intersect in various ways to distract from the experience. Given that the participants had volunteered to take part in the study, there was a general sense of excitement and anticipation in receiving the VR headsets. However, there was also some apprehension and foreboding, in that the technology was perceived as somewhat “overwhelming” (Josh). The first barrier to VR uptake is, therefore, a lack of knowledge on the part of the public: “I just think that people don’t know much about virtual reality” (Thomas); “they don’t know what to expect from it” and therefore, “they get scared at the beginning, as everything is new for them” (Eleni). The headset itself contributes to this sense of foreboding: it can be resisted because of “a whole mess-up of the hair (...) and because sometimes it left a bit of a mark on the face” (Jake) or due to difficulties with glasses: “it didn’t fit around my frame and no matter how I adjusted it, it would push around my face and cause fogginess” (Astarte); but more significantly, it cuts the user off from the

rest of the world. The data shows that the headsets are not easily incorporated into participants' daily lives and VR is perceived as a more intense form of entertainment which reduces its usability. Cumulatively, these experiences discourage consumers from even starting on their VR journey; the bodily and technical hesitations stop consumers from "crossing the threshold." The frictions are at play in relation to the specific histories of the consumer's body before they even pick up the headset, resulting in feelings of anxiety and fear. At this early stage in the journey, the sources of friction therefore lie in the realm of the "real" as opposed to the virtual world. Beyond these initial misgivings, a more problematic series of hesitations, which are difficult to overcome, centre around the need for space and time in order to commit to VR as well as the embodied demands of the technology.

Spatial frictions are the most common set of frictions to come up in the data. Lack of space was a frequent concern, sometimes requiring the movement of furniture: "if I hadn't had to move the sofa, probably, that would've been the biggest thing. It was just making that space, (...) I'd kind of get sidetracked, go on my phone or something (...) because I know I'm going to have to move the sofa. It's just more setup than watching on your phone or TV" (Ben). Furthermore, as young adults, many of them lived in shared accommodation, so there was the added embarrassment of "getting in people's way" (Dorothy). The social dynamics of the space were also significant. Self-consciousness was a related source of frictional drag at this early stage of the VR experience. In unpacking this self-consciousness, the data reveals a sense of unease with the unsociability the headset imposes, "so, I found that often it was kind of like I wanted to use it, but I didn't want to leave what my friends were doing" (Oscar). Oscar also notes that with other technologies such as his phone "there isn't this complete barrier to the real world." Furthermore, once in the headset, participants are cut off: "...you hit that first sort of, 'Oh, how do I pause, oh, my phone is ringing' and then you lose where you were in the game, for example. There doesn't seem to be this main menu, select or save, you know." (Harry). While this particular set of frictions may well be limited to this specific demographic, our data show that even when participants took their headsets to their family homes, floor space was still a concern: "even my living room here wasn't quite big enough" (Joe). Space was therefore one of the key hindrances in setting up the VR experience. Furthermore, this bled into the VR experience, preventing full immersion: "it's just, like, so easy to whack stuff on my table (...). But because you just so quickly forget your boundaries" (Jake).

Following on from the effort of setting up for VR headset use, temporal frictions emerge due to the perceived time commitment that VR requires. Many of the participants discuss "the accessibility" as one of the main reasons they did not use the headset. The headset was not considered something "quick to pick up and play" (Leo) but rather something which required uninterrupted blocks of time: "I need to have a block of a few hours just to really get into it" (Gordon). There were also temporal constraints due to the features of the headset itself notably its heaviness. These ordeals were mainly felt physically in the form of eyestrain, headaches, nausea and fatigue from the weight of the headset, and they prevented participants from using the headsets for long periods of time. Again, these frictions were often cumulative, eventually resulting in an abrupt early end to the experience. Most participants only used the devices "in shorter stints" (Noah). Despite wanting to stay on for longer to become fully immersed, in fact, we have numerous accounts of bodies which "had to tell me when it was time to stop" (Noah, diary), often leaving "red marks" on participants' faces "as if I was an astronaut taking off my helmet" (Adeel).

In considering these spatio-temporal frictions collectively, we can start to unpack why VR headsets fail to integrate into participants' entertainment spectrums: "it didn't really find itself integrating into my routine or like, how I use technology. (...) Even though I had it to

access and there were all the free resources, I didn't find myself reaching for it" (Jake). The sense of being cut off from things meant that ultimately, the headset was seen as an irritant.

Once participants transition into VR, new sources of friction came into play as participants sought to acclimatise to VR and find their bearings, this requires new corporeal learning and often results in feelings of motion sickness. As the virtual frictions bleed into the real world, we see the common outcome is exhaustion – "after the gaming session, all I wanted to do was grab a bottle of water and lie on my sofa to regain some energy" (Thomas). Beyond the tiredness, however, is the cognitive toll resulting from the transition back to reality. After two months of using the headset, Dorothy claimed that "the adjustment in immersion is more apparent when taking the headset off rather than putting the headset on." Indeed, some content left participants finding themselves "still thinking in that sort of world when I came off it" (Victor). Particularly for the more proficient VR users, who had mastered more control over and learnt how to navigate their VR experiences, minimising any negative physical effects and controlling for feelings of disorientation, there was a need for "a big adjustment back to real life" as it was "jarring" (Gordon), especially for sessions of a few hours. Adeel explained this return to reality as not just "a physical toll" but: "the cognitive toll that it takes is that you're in this other state and seeing all these things (...). It's mentally exhausting to be in this different state, to have all your senses deceived and subconsciously, you are not really there." The engagement that is required of VR is therefore considered more demanding than other forms of media.

Conclusion and managerial implications

Ash et al. (2018) point to three key sites of friction :

- Before picking up a device or accessing an experience
- Within the interface or experience itself as a result of the choices made by the creator
- The moment of interaction between interface and user during any given instance of engagement

We further acknowledge that frictions can also occur after the experience has ended – in the process of transitioning away from the virtual into the real world. Therefore, frictions are part of the entire immersive customer journey and a lack of attention to the transition of the user in and out of virtuality results in poor levels of enjoyment, disengagement, fatigue and potentially physical or psychological detriment. Further attention to on-boarding and off-boarding to help mitigate and navigate frictions is required. Planning on- and off-boarding into budgets, workflows, training and distribution is a crucial investment needed industry-wide.

The ability to immerse several of one's senses in the virtual, blocking out the real world and moving in 3-dimensional environments, presents enormous potential for valuable VR experiences. It does, however, put the user at potential risk of injury, vulnerability, or disorientation, to name a few risks that need to be mitigated during careful on-boarding. The ability of VR to virtually transport the user comes with a need to ensure that this transport occurs safely and enjoyably. Similarly, the transition out of a virtual world is not always straightforward, so there can be a need for a period of "decompression" while the user readjusts to "reality." These challenges can be cognitive (involving confusion between real and virtual information), emotional (involving a continuation of the emotions that were prompted by the experience) and behavioural (relating to adaptations that have occurred during the experience, such as adapting to a different body type).

In order to reduce consumers' unease with this new technology, further opportunities are needed for them to try out and experiment with the technology. Arcades and pop-ups could provide such "safe" spaces, with on-boarding and off-boarding provided by trained staff to ensure optimal "easing" into VR. Clear instructions within VR content are also needed as different experiences require different levels of interaction, make different use of the controls and have different parameters. In fact, standardisation within the industry in user design and interactivity conventions might go a significant distance toward quicker establishment of VR literacy. Mixed reality affordances which are currently being developed that allow VR users to incorporate the real world with pass-through and hand-tracking may also help with this transitioning.

The VR experiences themselves could also further consider "acclimatising" users into – and out of – the content by framing it in certain ways, for example, through more gentle and relaxing music and visuals to give time for users to ready themselves for what is to come both at the start and at the end of the experience. Indeed, our research found that the use of familiar genres of experience (such as mindfulness) could allow users to focus their attention and facilitate transportation, minimising the intensity of the transition and eliminating any unnecessary distress. Similarly, users must be made aware of the themes and content of the experience they are about to undertake from the start. Content must provide an invitation to immersion but also has a duty of care to ensure that users are aware of a "contract of participation" and how they can stay safe during their VR experience both physically and psychologically. As noted earlier, given the physical limitations of staying in the headset, content that cannot be broken down into short sessions is deemed largely unwatchable.

Furthermore, our data shows that VR currently lacks a space in consumers' "cultural constellations." For this, we suggest the need to establish consumer rituals around the use of VR so that it is integrated into their lives more regularly, adding value to the experience by increasing feelings of control over the uncertainty of this cutting-edge technology. The idea of consumer rituals has been shown (Arnould, 2001) to play a role in stabilising culture categories, activating object meanings pertinent to social life. They have been shown to provide significant value to marketers. The use of advertising and other PR such as product placement could be significant in educating consumers as to how, through consumer rituals, VR can create meaning in their lives, perhaps by focusing on the social interaction VR can create between different generations of the family – "Sunday family time" for example.

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