

## Understanding VR Audiences

Let's get something out of the way immediately. There is no good, or at least mutually accepted word for what or who you become when you take part in virtual reality. This is a relatively new medium, and the language that we use to describe it is yet to settle into a tidy set of cultural norms. A handful of options currently doing the rounds for your consideration:

- Participant
- Audience
- Player
- Actor
- Visitor
- User
- Viewer
- Viewser
- Youser
- Immersant
- Actant
- Interactant

To save you from grinding your teeth to dust trying to resolve the matter during this chapter, we will adopt 'audience' and 'audience member' as our erstwhile descriptors here. 'Audience' is far from perfect, skewing heavily towards traditions of art and culture rather than games or apps for example, but for our purposes it runs a helpful gamut of behaviours, from sitting in a darkened room, eyes glued to a cinema screen, to running through the streets shrieking as you escape heinous villains in an immersive theatre experience.

### What is it like to be an audience member in VR?

Virtual reality as a creative medium can offer audiences a wide range of experiences. In these peculiar, awkward, Tardis-like headsets which are somehow bigger on the inside than they are on the outside, we as audience members might find ourselves tip-toeing through dramatic story worlds, communing with nature, or travelling to distant lands. We might tower above familiar neighbourhoods as giants, or shrink to the size of an atom as we tour the nanosphere. Perhaps we will use VR to connect with people thousands of miles away, coming together for a chat, a dance, for work or to see a show. Perhaps we will find ourselves in a body that is different to our own, witnessing events unfolding as though through someone else's eyes. Perhaps we will sit quietly with someone who is not really there as they tell us about their life, and their ideas. And perhaps we might contribute our own voice, or use our virtual hands to create and destroy virtual worlds brought forth by our own imagination.

Whatever we choose to do in virtual reality, we as the audience will be at the heart of this world. There is no glowing rectangle here for us to tap or look at. We are frameless, boundless, transformed...and at least partially oblivious to the flailing, face-bucket-wearing, pseudo-cyborgs we have become.

### How is being an audience member in VR different to anything else?

To avoid falling for the hype and hyperbole sometimes afforded to this novel technology, one of the questions that any scholar of virtual and extended realities must ask themselves is ‘what, if anything at all, is genuinely different about this particular medium?’

## Immersion

VR is often described by evangelists as ‘immersive’. More immersive perhaps than any other form of media or live performance that has come before it. Some have even suggested that experiencing immersion in VR can induce behaviour-altering empathy, and even elevate our humanity (Milk, 2015). Many fantastic scholars have taken the time to explain why these assertions should be met with a generous dollop of scepticism (Nash, 2018; Rose, 2018; Nakamura, 2020) and I will not attempt to repeat their insights here. Setting aside such grand claims for now, it can be helpful to consider the term ‘immersive’ in terms of its everyday use, and decide for yourself whether this quality may be as particular to VR as we are encouraged to believe. Director and composer Tanuja Amarasuriya describes what she calls “emotional immersion” as “the private, personal, hard to measure, but deeply impactful sense of involvement that keeps us watching, listening, playing, searching, questioning, caring. It’s what moves us. It’s what gets under our skin.” (Amarasuriya, 2021) This is a powerful force that might sometimes be relevant to VR, but could equally be used to describe an amazing movie, a binge-worthy TV series, an engrossing book, an epic game, a powerful piece of theatre, or even a really good conversation.

## Presence

Perhaps a more useful term to explore than ‘immersion’ is ‘presence’. The extra-ordinary experience of putting on a virtual reality headset and feeling that you are now in the middle of, and surrounded by something completely different from what you objectively know to be your physical reality. Jeremy Bailenson describes this somewhat more succinctly as “that peculiar sense of “being there” unique to virtual reality” (Bailenson, 2019)

There have been multiple attempts to unpack and understand this sensation of presence as it relates to VR; with reports ranging from the near total abandonment of your physical reality, to the more pragmatic focus on how much attention you extend to digitally mediated sensory information received in virtual reality, over that which you receive through external stimuli i.e. “presence as the condition when a virtual environment becomes more salient as a source of cognition for a user than the real environment” (Nunez, 2004).

You may find it useful to consider presence along three interconnected but distinct lines,

- Environmental presence, the feeling of being present in a space,
- Social presence, feeling present with other people
- and Self-presence, the sensation of being a physically present entity

(Lee, 2004, Ratan, 2012)

In one study, audience members were asked to report what they thought of an experience and whether they had experienced any of these three types of presence in VR. Reporting of one or more proved to “be a useful predictive experiential component of a successful high-impact experience” (Lessiter et al, 2018)

Ideas of presence in VR and what it can do for us as audience members can connect neatly with ideas of Cartesian Metaphysics; the sense that we can separate our minds from our bodies and embark on voyages of transcendent imagination. Maria Sanchez-Vives and Mel Slater suggest that “Presence in a VE [virtual environment] involves transporting a participant’s consciousness to a place other than that in which the physical body is actually located” (Sanchez-Vives and Slater, 2005)

In the 90s, Robert Switzer went so far as to describe VR as ‘Over-writing the body’ suggesting that it might become a tool for transcending our physical selves and circumstances to achieve a sort of mental liberation and escapism to virtual worlds. (Switzer, 1997) These ideas have proved particularly popular over the years in those interested in psychedelics and post-humanism. And of course, sci-fi imaginings such as ‘Ready Player One’ or ‘The Matrix’ use fictionalised versions of VR to examine whether we might find it preferable to separate mind from body and live in a virtual world.

It’s worth noting that few of those who advocate for VR as a form of Cartesian metaphysics suggest that we should expect or desire this ‘full immersion’ scenario, that in which an audience member truly believes that they are somewhere, or someone else. More this position suggests that our capacity for cognitive dissonance gives us the ability to voluntarily leave our fleshy meat-bags behind us as we mentally commit to an alternate reality.

In her seminal work ‘Hamlet on the Holodeck’, Janet Murray refers to the illusion of presence as an active and consensual act of self-deception, that as an audience member in VR “We do not suspend disbelief so much as we actively create belief. Because of our desire to experience immersion, we focus our attention on the enveloping world and we use our intelligence to reinforce rather than to question the reality of the experience.” (Murray, 1998).

### Embodied cognition

The idea of VR as a form of Cartesian metaphysics was probably at its most popular during the last wave of VR in the 80s and 90s and speaks to the attitudes and technical limitations of the time. As the higher computational powers of modern headsets have started to enable VR experiences that respond more swiftly and precisely to the way that we look, listen and move, another framing has become popular. Despite running almost contrary to the corporal transcendence of its predecessor, ‘embodied cognition’ has been offered by some as a different way of understanding the ‘secret sauce’ of the VR audience experience.

'Embodied cognition' theory suggests that we explore and make sense of the world (VR or otherwise) through our bodies, using senses like touch, taste, proprioception (understanding of where our body is in space) and kinaesthesia (understanding of how the body is moving through space) to map and reinforce the experiential reality of our experiences.

Despite earlier citing them in relation to Cartesian metaphysics, Sanchez-Vives and Slater have been among those quick to suggest that embodied cognition may be a more appropriate and nuanced path to understanding of how presence is constructed in VR, suggesting that presence is "tantamount to successfully supported action in the environment...reality is formed through actions, rather than through mental filters". They go on to explain that "The key to this approach is that the sense of 'being there' in a VE is grounded on the ability to 'do' there." (Sanchez-Vives and Slater, 2005)

Examining this question of embodiment as a differentiator for VR, we can look to a study undertaken by games studies scholars in 2014. Subjects played two versions of the same game, and found that "compared with a conventional joystick controller, embodied gameplay elicited more subjective control, involvement and a sense of interaction with the [...] gaming environment". They also found that "natural whole body movements facilitate social interaction" (Coppi et al, 2014). This study used depth sensing cameras rather than VR equipment to translate body movement gameplay so parallels can only be lightly drawn. However as depth sensing camera have declined somewhat in terms of their use in the gaming sector (the Microsoft Kinect camera used in this study was officially discontinued in 2017 (Wilson, 2017)), VR may offer audiences a comparable experience of 'embodied interaction' using quasi-natural movement as a means to engage with games and mediated experiences in their own homes.

Audience and industry facing thought-leaders including Sol Rogers (Robinson, 2016), Catherine Allen (Allen, 2017) and Gabo Arora (Connect4Climate, 2017) have called for the use of the 'story doing' or 'story living' to replace 'story telling' when it comes to describing narrative-led experiences in VR. These terms are most likely inherited from the Marketing industry (Montague, 2013) and have found resonance in a VR context. Perhaps they offer a more active, embodied, somatic description of the experience of using your head, your hands, and your body in VR to navigate through a story world as it unfolds in front of, and all around you.

As 'story do-ers', audience members in VR can be understood as having an active role to play within a virtual scenario. Perhaps they even "'co-produce' immersive experiences" (Bennett et al, 2021) by choosing where they do and do not look within a 360° scene, or more overtly making decisions that affect the way in which a story progresses.

An 'Audience Insight Report' by StoryFutures in 2021 takes this idea further to suggest that with this enhanced sense of agency and responsibility "Immersive stories can also create a space where a new kind of politics can form by enabling users to experience a differently-composed world, within which they feel emotionally, viscerally and physically present" (Bennett et al, 2021)

We should take care not to infer that this kind of audience agency is particular to VR. Computer games, immersive theatre, live action role play, board games, interactive TV and many others offer differing degrees of agency and can inspire visceral and transformative thinking from their audiences.

Perhaps then VR sits on a continuum with a number of other mediums, containing within it the potential to offer audiences a heightened sense of agency, and to implicate the audience in the act of 'story-doing'.

### Co-presence

It is worth noting that the audience's sense of embodiment within a virtual environment gives rise to another of the more distinctive affordances of VR, that of 'co-presence'. Slater explains "when several participants are in the same virtual environment simultaneously, co-presence is the illusion of being in the same space as and directly interacting with the other participants. Assuming that each participant is embodied in a virtual body, they can interact with another." (Slater, 2021)

The illusion of co-presence is being used to great effect in myriad 'Social VR' platforms such as AltSpace VR, VRChat, Mozilla Hubs and Spatial, each with their own flavour of audience experience and interaction, but ostensibly all providing a virtual space for people to meet, and to have the sensation that they are together, regardless of where they may physically be around the world.

For many, this affordance of co-presence signals a more expansive potential for immersive technologies and their role within society. The potential for these VR spaces and their augmented reality cousins to morph into a kind of "metaverse", a concept described by Facebook founder, Mark Zuckerberg as "an embodied internet, where instead of just viewing content — you are in it. And you feel present with other people as if you were in other places" (Newton, 2021). We will return to some of the ethical implications of this kind of emerging social communications paradigm later on.

### Dual consciousness

To this point, we have more or less assumed that the desirable state for VR audience members is to feel present in, and committed to the virtual world that they might encounter with a headset. One really interesting trend to watch out for is the creation of experiences that cause audience members to remain simultaneously conscious of both the virtual and physical worlds that they inhabit.

This approach can hold a mirror up to the artifice and illusion of VR, leveraging our ability to have one foot in each reality as a material quality of the form. In a way, this exposure of the

dual consciousness of VR resists the idea of a friction-free “metaverse” in which our physical and virtual selves would become further enmeshed. In ‘The Cyborg’s Dilemma: Progressive Embodiment in Virtual Environments’ Biocca warns that “the development of increasingly “natural” and embodied interfaces leads to “unnatural” adaptations or changes in the user. In the progressively tighter coupling of user to interface, the user evolves as a cyborg.” (Biocca, 1997).

In puzzle game ‘Keep Talking and Nobody Explodes’ by Steel Crate games one audience member in a headset can see a ticking bomb with its tantalising wires, buttons and dials, however to defuse it safely they must keep in constant verbal communication with their fellow audience members outside of the headset, as only they have access to the bomb defusal manual. If the first audience member starts to lose themselves in the headset and stops attending to their colleagues outside of the constructed reality, they will certainly fail.

Interactive story ‘The Collider’ by Anagram encourages a slippage between worlds by subverting the ordinary use of VR equipment. A VR headset is given to one audience member, and the corresponding hand controllers to another. The narrative motivates a series of connected movements from each partner, allowing them to become tacitly aware of one another’s experience without either possessing the full picture. At one point the audience member with only the controllers is encouraged to talk to, and physically touch their partner, creating a continuous dialogue between the virtual and physical environment for both, and highlighting the inherent duality of the experience. Here but not here. There but not there. With you but not with you.

### Is there really an audience for VR?

The size of the current global market is hard to pin down, however to give an indication, in 2020 the UK’s communications regulator, Ofcom reported that one in 17 of UK households now own a VR headset (Ofcom, 2020), a marked increase from one in 20 in the previous report (Ofcom, 2018). In April 2021, Facebook reported “non-advertising revenue, which is primarily sales of its Oculus virtual reality headset, increased 146% in the first quarter to \$732 million” (Heath and Varnham O’Regan, 2021) suggesting that the numbers may be even higher. Shortly afterwards, Andrew Bosworth, VP of Facebook Reality Labs announced that their all-in-one headset, Quest 2 had sold more units than all Facebook’s other headsets combined, which in his opinion is “a tremendous indicator that we are now at that point where we have broken through from the early adopter crowd to an increasingly mainstream crowd.” (Bloomberg, 2021)

Headset ownership is only part of the picture, and some studies suggest that after an initial flurry of interest in the new kit, usage can drop off significantly for reasons we will return to later (Green et al, 2020). Data on overall headset usage is tricky to come by, not least as one of the largest companies, Facebook does not share usage data, however we can find some clues in data released regarding specific apps:

- In March 2020, VR first person shooter game *Half-Life: Alyx* by Valve broke all the records for VR experiences, registering 42,858 concurrent players on its release date
- Rhythm game *Beat Saber* from Czech games company Beat Games (owned by Facebook since 2019) reported that in February 2021 alone they had sold over 40 million songs as in app purchases, and have now surpassed 1.4 billion koruna (approx. \$65m) in total revenue (Houska, 2021)
- Social VR platform *VRChat* has seen a steady growth in its user base since its launch in 2017, with a rapid acceleration in the last 18 months. Since the WHO declared Covid-19 to be a global pandemic, concurrent usage of VR Chat has increased by approximately 91%, with an average of 7,979 users per day in February 2020, rising to 15,228 by July 2021, with a peak usage hitting 26,251 in December 2020.<sup>1</sup> (Steamcharts, 2021)

## Where are audiences experiencing VR?

There are two main places to consider when thinking about where audiences are currently encountering VR. Quite simply are the 'in home' or out of their home environments. The audience dynamics in each can be quite different so we will explore the affordances and particularities of each in turn.

### In home

In the UK, domestic headset ownership has accelerated in recent years, with a 2020 Ofcom survey revealing that 6% of UK households now own a VR headset (Ofcom, 2020).

Despite the steady growth, headsets are not yet familiar household objects for most people. We have few easily transferable rituals for how to put them on, when and where is best to do so, and what will happen to us when we do. The idea of placing something that looks like a heavy, plastic blindfold over your eyes and ears, and blocking out your familiar comforts can feel quite unintuitive.

Bennett et al, 2021 highlight three key barriers to audience adoption of VR in the home, which they refer to as "frictions" that will need to be addressed if in home use is to proliferate.

### *Friction 1: Social*

The incompatibility of VR with shared, multi-person and inter-generational activity in the home, alongside "the perceived isolation of VR."

In a recent user study (Green et al, 2020), 14 households received a VR headset and were given access to a range of nonfiction content that they could experience in their own homes, at their

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<sup>1</sup> This data is shared by publishing platform Steam and includes users connecting without a headset via a browser, estimated to be approx. 48% of users (Lang, 2020). The data does not include users connecting via Facebook's Oculus headsets as these operate through a separate app store and usage figures are not published.

own pace over a period of several weeks. There is a lot to learn from this study, but one message received from multiple audience members was that using VR in home use felt antisocial. They suggested that the form factor of a headset “cuts the user off from their surroundings”, removing their ability to keep an eye on the safety of their family or the security of their home. Some compared it unfavourably to TV viewership, where more than one member of the household might otherwise watch something together, having a shared experience and discussing it afterwards (Green et al, 2020)

Interestingly, this very feature of VR as a solitary, one-at-a-time experience has elsewhere been identified as a positive affordance of the technology. The increasingly unusual phenomenon of being un-distractable, unable to check your phone and focussing completely on the virtual world might offer a sense of relief in a culture where “our attention is already overdrawn by the devices we have” (Case, 2016). In an ethnographic investigation of audience members reflecting on their VR experience, StoryFutures propose that “the headset provides a safe haven from sensory overload triggered by multitasking, where engagement energises users and high interactivity increases a sense of immersion and presence” (Bennett et al, 2021).

It seems plausible in this context that VR might find its place in the home as a form of ‘me time’, more akin to taking a warm bath or playing games online with your door shut, more so than as a new version of a located, shared media experience.

Alternatively, or perhaps additionally, future immersive designers may make more use of the passthrough capabilities of modern headsets, blending VR and AR paradigms to give their audiences a more subtle or explicit connection to their physical surroundings. One step in this direction as been the recent decision by Facebook to open up the ‘Passthrough API’ for their Quest 2 headset, giving developers the tools to integrate the feed from the front facing cameras into their VR experiences. (Oculus, 2021)

Added to this, content ‘casting’ functionality has been steadily improving across platforms, with companion apps enabling the ‘in headset’ experience to be viewed externally via a flat screen such as a smart TV or mobile phone. Mixed reality companies such as LIV offer tools that give a real time blended view of the person doing VR with the 3D world that they inhabit, giving onlookers a window into the primary audience member’s immersive experience and creating a secondary ‘live streaming’ audience experience akin to that of Twitch or Facebook Live that might enliven and socialise domestic (and online) viewership of VR.

### *Friction 2: Spatial*

The challenge of how much, and what type of space is available to you in your home environment.

For a time, domestic use of VR would involve either sitting or standing on the spot, viewing 360 experiences that allow the audience member to look up, down and all around (known as having 3 degrees of freedom or 3DOF) but did not encourage them to move away from a central pivot



point like a swivelling chair. In recent years, most VR manufacturers have re-focused on headsets that allow free movement around a living space (six degrees of freedom, or 6DOF). As such, many virtual reality designers now favour experiences that encourage and reward the active motion of their audience through a space. Objects placed just out of reach, characters glimpsed around corners and obstacles to avoid alongside and sound, light and motion 'lures' can motivate audience members to move through a scene in virtual reality, and correspondingly in real life.

All of this movement carries with it an expectation that there is space in the domestic environment to accommodate all of this reaching, dancing and scampering about. But of course, this notion of 'free space' that can be cleared for participation in VR is not something that is universally available. Circumstances such as household income, family size, urban vs rural location, and where you are in the world can all impact on whether 'in home' VR feels viable for you. To take one example, average house sizes vary widely across the world:

- United States of America – 2,204 sq ft
- United Kingdom – 826 sq ft
- India – 504 sq ft

(Demographia, 2019; Thakur, 2008)

Facebook stipulate that for 'roomscale' experiences (another term for 6DOF) "you'll need a safe and unobstructed play area of at least 6.5 feet by 6.5 feet (2 meters by 2 meters)" (Oculus, 2020). Steam similarly recommends "a minimum of 2 meters by 1.5 meters of free space (6.5ft x 5ft)" (Steam, 2020). For many, however, the ability to designate that amount of space to VR in an already crowded home environment is prohibitive, especially given the need to keep space clear of other family members and pets for fear of collision and harm. For those with modest space available, and who persist in using VR within such spatial constraints, seated or static VR experiences may continue to be the most accessible content available to them 'in home'.

### *Friction 3: Time*

When might this new form of audience experience fit in to our busy home lives?

In a crowded media landscape, a novel medium that requires our undivided attention can seem at odds with our modern, multi-platform lifestyles. Carving out time in our daily lives just to experience VR can feel unmanageable or indulgent.

In a 2020 report, Catherine Allen points out that time scarcity or perceived time scarcity varies enormously depending on your personal circumstances. Class and gender are strong signifiers of whether or not you feel able or willing to engage with VR in your own home.

Allen reminds us that “When time is precious, mainstream audiences may not be prepared to risk it on new and strange digital things” (Allen, 2020)

She explains that in the UK, “People in skilled trades get almost eight hours less leisure time than the average” and that “women get five hours less leisure time per week than men.” Allen goes on to explain that “Two of the extra hours men get are spent on ‘computing and hobbies’” suggesting that this time may be more readily transferrable to installing and experimenting with VR. Allen also points out that “Women’s leisure time also tends to be more frequently interrupted” (Allen, 2020) inferring that it may be less readily compatible with headset-based VR which effectively blocks out or de-prioritises the visual and auditory features of the home environment in favour of those in the virtual world.

#### Out of home OR Location Based Experiences (LBEs)

This category encompasses a huge range of contexts, from theme parks and games arcades, to VR cinemas, art installations, shopping malls, conferences and festivals.

Pre-pandemic we saw a proliferation of LBE co-operative play experiences such as ‘The Void’ which invited groups of friends to ‘suit up’ and play games in VR based around well-known IP such as Star Wars or Ghostbusters in a large warehouse.

Often, experiences designed for Out of Home contexts are bespoke and particular to the venue or utilise specialist equipment, such as DIVR by Ballast, an underwater scuba diving experience that takes place in a swimming pool but gives the audience the sensation of exploring the depths of the ocean, or ‘Galactica’ at UK Theme Park, Alton Towers. The Galactica VR experience launched in 2016 and re-purposed an existing rollercoaster, mapping an epic virtual reality space adventure onto the predictable loops and twists of the rollercoaster’s rails. Interestingly, and seemingly unrelated to pandemic concerns, Alton Towers have since quietly decommissioned the VR aspect of this experience, officially due to “guest feedback” (Alton Towers, 2019) although some have speculated that it was a more commercial decision as the time it took to fit headsets for each audience member was making it less cost effective than had been hoped (Riderater, 2019).

Many festivals and cultural organisations around the world have chosen to develop ‘out of home’ virtual reality experiences more akin to art installations or immersive theatre, with elements such as tactile sets, interactive objects, or even live actors playing a role. In ‘Draw Me Close’ at the National Theatre, a performer playing the audience member’s mother is simultaneously physically and virtually present, even reaching out to offer a hug that is experienced visually as an encounter with a black and white hand-drawn illustration, and felt as a warm embrace from a living, breathing person. Some experiences such as Somnai or War of the Worlds by dotdot.london regularly switch between live performance and headset based

experiences, taking audience members in and out of VR as a means to expand and reveal the story world one scene at a time.

The guiding of audiences in and out of headset-based experiences has come to be known as 'onboarding' and 'offboarding' and is arguably one of the most important, and most neglected peculiarities of the audience experience in VR.

Bennett et al caution that "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." (Bennett et al, 2021). They also report that "LBEs where headsets are handed to the user with little or no guidance, supervision, or orientation receive much lower user experience rating" suggesting that audience member's enjoyment of content is likely to be contingent on the level of on- and off-boarding support that they receive.

## Onboarding

Experts in XR audience management, Virtual Umbrella recently published a tongue-in-cheek tool entitled 'Eliminating Unfortunate Events: A Checklist of Things to Think On When Delivering VR Installations' (Nalley, 2021) The tool is designed to assist in briefing invigilators and docents who will be looking after VR audience members in a range of scenarios. It includes practical tips such as "do they know how to accommodate glasses wearers, chair users, or large hairdos" and contains a reminder about "robust cleaning procedures" particularly in light of the Covid pandemic.

Limina Immersive, another globally recognised expert in XR audience strategy have shared multiple learnings about the importance of ensuring VR audiences are well supported out of home. Founder and CEO, Catherine Allen makes a particular case for audience privacy during virtual reality experiences. She highlights a tendency across the sector to use the spectacle of someone in VR amuse onlookers, to entice people to take part, and to give those who might be waiting in a queue something peculiar to look at.

"It is not fair to put people through a new experience they are likely to be nervous about and then expect them to simultaneously be a photo opportunity for strangers" Allen adds that in a recent survey "Being seen publicly wearing a headset was for many, a deal breaker." (Allen, 2020)

In 2018 I did a quick and highly unscientific straw poll, inviting people to share their biggest concerns about using VR in public places for a talk that I was preparing. I ended up with what I affectionately term 'The Out of Home VR, Big Map of Anxiety'



## Offboarding

For those that do decide to take part in Out of Home VR in the future, their experience as they come out of the headset may be as important as any support that they may have received before or during their experience. The 2021 StoryFutures report discusses challenges that may be experienced by the audience member. Challenges that “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).” (Bennett et al, 2021) Audience members often need to take a minute to reorientate, re-connect with their physical surroundings and to process their thoughts before returning to normality or speaking to anyone.

As audience members, we may be feeling the lack of an ending ritual for VR, something along the lines of watching the credits in a cinema. As the credits roll, the lights generally remain low and facilitate a soft transition back to everyday life. This kind of thresholding ritual can offer audiences a moment of calm to share a furtive glance with a friend, wipe away a tear, take a minute to check for ice cream on clothes and popcorn in beards, and to find bags and coats that have become jammed between the seats before stepping out into the cold light of day.

In venues such as their VR Theatre in Bristol, UK, Limina Immersive have offered one such possible ritual that might align with VR audience needs:

“users were allowed to remove the headsets in their own time, to readjust their senses to the real world where they sat, before having headsets collected and being invited to move to a ‘decompression zone’ where they could sit in a quiet environment, in low light, with access to water and comfortable seating, to transition at their own speed to the real world before heading back out to the busy Bristol waterfront.” (Bennett et al, 2021)

This can be a costly approach to audience care, requiring additional space, slowing throughput and making timings somewhat erratic. Allen, however asserts that it is not just reasonable, but necessary for audiences to expect a *pleasurable* experience at the end of their viewing, and that this will be integral if we are to develop new audiences and achieve scale in the XR industry.

“After a pleasurable welcome into tech-driven experiences, there is a whole world of content that awaits. It is important, however, that broader audiences are offered that first pleasurable gateway experience.” (Allen, 2020)

## Who is, and who isn't in the audience?

As has been hinted at a few times in this chapter, current audiences for VR do not follow the demographics of the overall population. In the UK, evidence suggests that “early adopters are still overrepresented by young, white males” (Bennett et al, 2021)

Allen tells us that “‘Upper socioeconomic group’ households are almost twice as likely to own a VR headset than ‘lower socioeconomic group’ households.” (Allen, 2020) And that “In terms of experiencing VR, rather than owning a headset, according to the Global Web Index 2019, 16% of women have tried it whereas 30% of men have done so in the UK and the US”. Allen goes on to explain that “Audiences of VR are also disproportionately younger, with only 18% of users over 45.”

In a recent interview (Newton, 2021), Mark Zuckerberg, CEO of Facebook talked about the “gender skew” observed in early adopters of VR, and has committed to addressing issues related to the harassment experienced by many women in social VR spaces (Cortese, 2019). Facebook’s approach, and that of several other social VR platforms has thus far been to give audience members more and more tools to limit contact with others in these spaces through ‘personal bubbles’ or filters, such as limiting who you can hear in a given space and personally blocking individuals whose behaviour you find objectionable.

Arguably, such tools whilst useful, put the onus on those being harassed, inhibiting their ability to participate on an equitable platform with other audience members. As conversations about a ubiquitous ‘metaverse’ gain momentum, some are calling for audiences and platforms “to critically reimagine social VR spaces as equitable, safe, and radical” before certain norms become entrenched (Ratuszynska, 2021) Artist and researcher, Tessa Ratuszynska further provoked this conversation by launching ‘Club XXY’ a space that “explores how systemic exclusion and oppression are built into the fabric of built and digital environments, and the critical resistance practices employed by space makers in order to centre and affirm the marginalised communities they serve.” (Ratuszynska, 2021)

Inclusivity in social VR is certainly a factor influencing who will choose to participate and in this early moment for consumer VR, and who will not, however this is far from the only consideration. If Zuckerberg and others are genuinely interested in addressing “the gender skew” in VR and inclusivity more broadly, many other factors, including the prominence and availability of content that speaks to diverse interests and tastes must also be on the agenda.

Publishing platform Steam (and its Steam VR function) is one of the main places people can look for PCVR content (headset-based virtual reality driven by an external computer). Steam originally launched in 2003, long before the current wave of consumer interest in VR, and has been designed and heavily specialised for audiences who identify as gamers. Steam’s approach to content classification and discovery has remained constant for VR content and it can be difficult for alternative content to break through.

When it comes to standalone headsets (with no external computer), one of the main content libraries is Facebook’s Quest store. Unlike Steam, this is a heavily curated space, and creators have to get through a stringent and somewhat opaque approval processes to get their work to audiences. The store gatekeepers take a very specific curatorial position on what is considered audience-ready, publishable content, and experiences that doesn't fit with Facebook's

interpretation of what the market is looking for are frequently rejected, regardless of the quality.

Interestingly, Facebook's own 'Gamer Segmentation' study (Oculus, 2020), acknowledges that the largest segment of the market (23%) is currently those they have classified 'Story Seekers'. They say "These players are patient, imaginative, and amiable. Story Seekers play games to escape and immerse themselves in a different world" They acknowledge that this group "is the single largest segment we have identified, and the most gender-balanced" however these users are deemed to be a "low VR Target" as they exhibit a "lower purchase intent". Instead, the advice to developers is to pursue a group which they have designated the 'Dedicated Gamer'. This group represents just 18% of the sample, but are described as "One of the most relevant groups for VR, these players are impulsive, boastful, and competitive" and "spend 2x more on games and devices than the average gamer".

Michel Reilhac, co-director of Venice Expanded, the XR branch of the international film festival, Venice Biennale has publicly criticised current platforms, suggested that they have inculcated "a very strict moral code with very strictly defined family moral values", and are encouraging creators to self-censor if they wish their work to reach audiences. As an example, he points out that "Nudity and sex are completely impossible to show on any of the platforms... which really contradicts the notion that VR is a new art form and that therefore new artists want to use the medium to express freely their story worlds" (MacNab, 2021).

These sorts of limitations and guidance early on about what content should and should not be prioritised for VR could have significant implications for who will choose to engage with and shape the industry as it evolves, both in terms of audience, and the process of content creation.

The challenge for the sector now, is how to build more diffuse infrastructure for the distribution and exhibition of VR experiences, moving beyond the specific curatorial positions of a handful of tech companies. Opening up new and more various ways for content creators to connect with their audiences.

## Conclusion

This is a transformative moment for VR. For perhaps the first time in its decades-long history, a voracious audience appetite for experiences in which they feel present, embodied and connected is being matched by technological innovation, corporate investment and a wealth of creative experimentation. The potential for a new paradigm in audience experience is tantalisingly close.

As we have explored, however, there are many known 'frictions', disincentives and assumptions being made about 'who VR is for' that could stymie this potential and limit the audience to a predictable few. My hope is that by focussing on the specific duty of care appropriate to VR audiences, by working to address known 'frictions', prioritising accessibility and user experience

design for both in, and out of home VR, and by actively addressing some of the structural inequities inherited from VR's predecessors, we might yet see a flourishing and a diversification of audience experiences in virtual reality that will allow it to take its place in shaping the cultural landscape for years to come.



## References

- Allen, C. (2017) With VR, publishers must focus on storydoing, not storytelling. *The Bookseller* [online]. 8 February 2017. Available from: <https://www.thebookseller.com/futurebook/win-vr-publishers-must-master-storydoing-not-storytelling-480356> [Accessed 6 September 2021].
- Allen, C. (2020) Beyond the early adopter: widening the appeal for virtual reality. *Creative Industries Policy and Evidence Centre led by NESTA*. [Accessed 10 August 2021]
- Alton Towers (2019) Alton Towers Resort. *Twitter* [online]. 17 March 2019. Available from: <https://twitter.com/altontowers/status/1107267874631098373> [Accessed 6 August 2021]
- Amarasuriya, T. (2021) Feeling Being. *Bristol+Bath Creative R+D* [blog]. 29 May. Available from <https://bristolbathcreative.org/article/feeling-being> [Accessed 6 September 2021].
- Bailenson, J. (2018) *Experience on Demand: What Virtual Reality Is, How It Works, and What It Can Do*. New York: Norton.
- Bennett, J., Dalton, P., Goriunova, O., Preece, C., Whittake, L., Verhulst, I., Woods, A. (2021) Audience Insight Report: The story of immersive users. *StoryFutures* [Accessed 10 August 2021].
- Biocca, F. (2006) The Cyborg's Dilemma: Progressive Embodiment in Virtual Environments. *Journal of Computer-Mediated Communication*. 3 (2). [Accessed 7 September 2021].
- Bloomberg (2021) Facebook Reality Labs VP: VR Will Transform Global Work. *Bloomberg.com* [video]. 29 March 2021. Available from: <https://www.bloomberg.com/news/videos/2021-03-29/facebook-reality-labs-vp-vr-will-transform-global-work-video> [Accessed 12 August 2012].
- Case, A. (2016) *Calm Technology*. Sebastopol, CA. O'Reilly Media.
- Connect4Climate (2017) VR: "It's not a storytelling. It's a story living". *Connect4Climate* [online]. 2 November 2017. Available from: <https://www.connect4climate.org/initiative/virtual-reality-it-is-not-storytelling-it-is-story-living-uniting4climate> [Accessed 6 September 2021].
- Cortese, M., Zeller, A. (2019) Designing Safer Social VR. *Immerse.News* [online]. 2 November 2019. Available from: <https://immerse.news/designing-safer-social-vr-76f99f0be82e> [Accessed 9 September 2021]
- Coppi, A. E., Freeman, J., Lessiter, J. (2014) Get in the Game: The influence of embodied play on presence and flow in videogames. In: *Interactive Technologies and Games Conference (ITAG)*. Nottingham. October 2014.

Demographia (2019) International House Sizes. *Demographia* [online]. Available from: <http://demographia.com/db-intlhouse.htm> [Accessed 4 September 2021]

Green, D.P., Rose, M., Bevan, C., Farmer, H., Cater, K., Stanton Fraser, D. (2020) 'You wouldn't get that from watching TV': Exploring audience responses to virtual reality non-fiction in the home. *Convergence: The International Journal of Research into New Media Technologies*. 27 (3), pp.1-25.

Heath, A., Varnham O'Regan, S. (2021) Facebook Revenue Grows 48% as Ad Prices Increase. *The Information* [online]. 28 April 2021. Available from: <https://www.theinformation.com/briefings/c85ea6> [Accessed 12 August 2021].

Houska, F. (2021) The creators of the game hit Beat Saber are already among the largest in the Czech Republic. The studio's revenue shot well over a billion for the first time. *CzechCrunch* [online] 9 August 2021. Available from: <https://cc.cz/tvurci-herniho-hitu-beat-saber-uz-patri-k-nejvetsim-v-cesku-trzby-studia-poprve-vystrelily-daleko-pres-miliardu/> [Accessed 9 August 2021]

Lang, B. (2020) Spurred on by Quest 2 Launch, 'VRChat' Hits Record 24,000 Concurrent Users, More Than Half in VR. *RoadtoVR* [online]. Available from: <https://www.roadtovr.com/vrchat-record-concurrent-users-traffic-quest-2/> [Accessed 8 September 2021]

Lee, K. M. (2004) Presence, explicated. *Communication Theory*, 14(1), pp.27–50.

Lessiter, J., Mitchell, S., Ferrari, E., Borden, P., Bakhshi, H., Freeman, J. (2018) *Evaluating Immersive User Experience and Audience Impact*. Digital Catapult. London.

MacNab, G. (2021) Freedom of expression issues clouding virtual reality world, according to Venice VR Expanded heads. *Screen Daily* [online] 3 September 2021. Available from: <https://www.screendaily.com/news/freedom-of-expression-issues-clouding-virtual-reality-world-according-to-venice-vr-expanded-heads/5162986.article> [Accessed 8 September 2021].

McIntosh, V. (2018) I Always Feel Like, Somebody's Watching Me, *Medium* [online] 16 December 2018. Available from: <https://veritymcintosh.medium.com/i-always-feel-like-somebodys-watching-me-d50f2db2694b> [Accessed 2 September 2021].

Milk, C. (2015) How virtual reality can create the ultimate empathy machine. *TED.com* [video]. March 2015. Available from: [https://www.ted.com/talks/chris\\_milk\\_how\\_virtual\\_reality\\_can\\_create\\_the\\_ultimate\\_empathy\\_machine](https://www.ted.com/talks/chris_milk_how_virtual_reality_can_create_the_ultimate_empathy_machine) [Accessed 31 August 2021].

Murray, J. H. (1998) *Hamlet on the holodeck: the future of narrative is in cyberspace*. Cambridge, Mass.: MIT.

Nalley, V. (2021) Eliminating Unfortunate Events: A checklist of things to think on when delivering VR installations. *Medium* [online]. 9 February 2021. Available from: <https://medium.com/virtual-library/eliminating-unfortunate-events-dd32b0ac68e5> [Accessed 31 July 2021]

Nakamura, L. (2020) Feeling good about feeling bad: virtuous virtual reality and the automation of racial empathy. *Journal of Visual Culture* [online]. 19 (1), pp.47-64. [Accessed 8 September 2021].

Nash, K. (2018) Virtual reality witness: exploring the ethics of mediated presence. *Studies in Documentary Film* [online]. 12 (2), pp.119-131. [Accessed 8 September 2021].

Newton, C. (2021) Mark in the Metaverse: Facebook's CEO on why the social network is becoming a 'metaverse' company. *The Verge* [online]. 22 July 2021. Available from: <https://www.theverge.com/22588022/mark-zuckerberg-facebook-ceo-metaverse-interview> [Accessed 22 July 2021]

Oculus (2020) How much space do I need to use Oculus Quest 2 or Quest? *Oculus Support* [online]. Available from: <https://support.oculus.com/1190192431422476> [Accessed 6 September 2021]

Oculus (2020) Understanding the VR Gaming Market. *Oculus for Developers* [online]. Available from: <https://developer.oculus.com/blog/understanding-the-vr-gaming-market/> [Accessed 6 January 2021]

Oculus (2021) Passthrough API. *Oculus for Developers* [online]. Available from: <https://developer.oculus.com/experimental/passthrough-api/> [Accessed 12 August 2021]

Ofcom (2018) Ofcom Nations & Regions Technology Tracker - H1 2018. United Kingdom: Ofcom. Available from: [https://www.ofcom.org.uk/data/assets/pdf\\_file/0015/113172/Technology-Tracker-H1-2018-technical-report.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0015/113172/Technology-Tracker-H1-2018-technical-report.pdf) [Accessed 8 September 2021]

Ofcom (2020) Ofcom Nations & Regions Technology Tracker - 2020. United Kingdom: Ofcom. Available from: [https://www.ofcom.org.uk/data/assets/pdf\\_file/0037/194878/technology-tracker-2020-uk-data-tables.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0037/194878/technology-tracker-2020-uk-data-tables.pdf) [Accessed 8 September 2021]

Ratan, R. (2012) Self-presence, explicated: Body, emotion, and identity extension into the virtual self. In R. Luppigini (Ed.), *Handbook of research on technoself*. New York: IGI Global, pp.332-336

Ratuszynska, T. (2021) Club XXY (Project Deck). *tessaratuszynska.com* [online]. Available from: <https://www.tessaratuszynska.com/work/club-xyy> [Accessed 2 September 2021]

Riderater (2019) Galactica: VR removed from Alton Towers rollercoaster. *Riderater* [online]. Available from: <https://riderater.co.uk/7438/galactica-vr-removed-from-alton-towers-rollercoaster/> [Accessed 12 August 2021]

Robinson, A. (2016) Where story-living happens: “Home – a VR Spacewalk”. *Autodesk – Journey to VR* [online]. 27 October 2016. Available from: <https://area.autodesk.com/blogs/journey-to-vr/where-story-living-happens-home--a-vr-spacewalk-based-on-a-conversation-with-sol-rogers-founderceo-of-rewind/> [Accessed 6 September 2021]

Rose, M. (2018) The immersive turn: hype and hope in the emergence of virtual reality as a nonfiction platform. *Studies in Documentary Film* [online]. 12 (2), pp.132-149. [Accessed 8 September 2021].

Sanchez-Vives, M.V., Slater, M. (2005) From presence to consciousness through virtual reality. *Nature Reviews Neuroscience* [online]. 6, pp.332-339. [Accessed 8 September 2021]

Slater, M. (2021) Beyond Speculation About the Ethics of Virtual Reality: The Need for Empirical Results. *Frontiers in Virtual Reality – Virtual Reality and Human Behaviour*. 12 August 2021. [Accessed 31 August 2021]

Steam (2020) What are the space requirements of the Vive? *Steam Support FAQs* [online]. Available from: <https://help.steampowered.com/en/faqs/view/14AE-8D60-24E6-AA67> [Accessed 31 August 2021]

Steamcharts (2021) VRChat. *Steamcharts: an ongoing analysis of Steam’s concurrent players* [online]. Available from: <https://steamcharts.com/app/438100> [Accessed 12 August 2021]

Switzer, R. (1997) Over-writing the body: Virtual reality and Cartesian metaphysics. *Philosophy Today*. 41 (4), pp. 507-519.

Thuakur, A. (2008) 33% of Indians live in less space than US prisoners. *Times of India* [online] 25 November 2008. Available from: <https://timesofindia.indiatimes.com/india/33-of-indians-live-in-less-space-than-us-prisoners/articleshow/3753189.cms> [Accessed 6 September 2021]

Wilson, M. (2017) Exclusive: Microsoft Has Stopped Manufacturing the Kinect. *Fast Company* [online] 25 October 2017. Available from <https://www.fastcompany.com/90147868/exclusive-microsoft-has-stopped-manufacturing-the-kinect> [Accessed 30 August 2021]

## Mediography

AltSpace VR [social VR platform] by Microsoft

Beat Saber [VR game] by Beat Games

DIVR [VR experience for waterparks] by Ballast Technologies Inc.

Draw Me Close [VR experience] by Jordan Tannahill, All Seeing Eye, Teva Harrison, National Theatre and National Film Board Canada

Facebook [social media platform] by Facebook, Inc.

Galactica [VR experience for roller coaster] by Merlin Entertainments

*Half-Life: Alyx* [VR game] by Valve

Keep Talking and Nobody Explodes [VR game] by Steel Crate games

LIV [media production tool] by LIV Inc.

Mozilla Hubs [social VR platform] by Mozilla

Ready Player One [book] by Ernest Cline

Somnai [immersive theatre] by dotdot.london

Spatial [social VR platform] by Spatial Systems

The Matrix [film] by the Wachowski sisters

The Collider [interactive story] by Anagram

The Void [VR experience company] by The Void (now owned by VR Exit, LLC)

Twitch [video streaming service] by Amazon

VRChat [social VR platform] by VR Chat Inc.

War of The Worlds [immersive theatre] by dotdot.london