

# Virtual Realities and Immersive Technologies

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This Methods Futures Briefing focuses on immersive technologies. It first outlines definitions of immersive technologies and before highlighting some social science and humanities (SSH) fields that have used them. The following section discusses potential social research methods-related issues that arise from their development and deployment and closes with a brief consideration of the future of VR in SSH.

## What are immersive technologies?

Immersive technologies offer a digitally simulated environment that users participate in, moving or interacting (in some ways) as if it were a physical environment. This briefing focuses on VR and AR, although some video games and web 3.0 technologies might also be considered immersive technologies. VR can be defined as ‘a computer-generated simulation or interactive environment that immerses users in a 3D artificial world’. Scenes, actors, non-humans, objects, other avatars and so on can be viewed and interacted with through peripherals such as controllers and by using spatial and motion-tracking technologies’.

AR can be defined as ‘a technology that superimposes digital content onto a real-world environment’. Digital content might include any combination of sound, video, text or graphics’ (Thompson and Booth, 2023: 7). In practice, there is not a neat separation and immersive technologies can blur across these definitions (Jones et al., 2022). Immersive technologies include 3D renderings of environments as well as social environments where people can interact with each other and computer simulations. VR and AR futures have been frequently explored in science fiction media, including *Ready Player One* (Cline, 2011; Spielberg, 2018) and *The Peripheral* (Gibson, 2017).

## Immersive technology in social sciences and humanities

The social sciences and humanities (SSH) have empirically and theoretically considered immersive technologies for decades (Schroeder, 1994; Schroeder, 1997; Mabrook and Singer, 2019). Participants may understand VR as primarily a gaming tool (Florek and Lewicki, 2022). However, VR as a methodological option for SSH has had more limited coverage.

Immersive technologies ‘can be used both by researchers and their participants to explore a wide range of social and embodied experiences in both realistic and fantastic environments’ (Jones et al., 2022: 5). This means it is possible to explore reactions, interactions and processes in a range of simulated spaces – it is both computer-based and a creative expression. There are several potential ways that VR can be used in social research, including as a subject of content analysis, as a digital interactive social environment, as medium for showing different images, and more exploratory and generative environments using games engines (Jones et al., 2022). Specific applications will generate different possibilities and issues for engagement, interaction, and deployment.

VR has been used in [archaeology](#) to allow participants to explore sensitive sites and to reconstruct those that are temporally or physically inaccessible, such as sites that are ancient or currently underwater, like shipwrecks (McCarthy et al., 2019). [Journalists](#), and to a degree journalism studies scholars, have experimented with VR, mostly in the form of 360° video, to tell stories and

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give consumers experiences or understandings of the stock market, poverty, prison and war (Mabrook and Singer, 2019). There is also deployment in [psychology](#), [architecture](#) and [geography](#) and particular opportunities in [education](#), training and collaboration (Jones et al., 2022; Kyriltsias and Michael-Grigoriou, 2022; Trossman-Haifler and Fisher-Gewirtzman, 2022).

## Issues

VR development is typically orientated towards able-bodied participants without what are considered sensory or motor impairments, such as blindness or paraplegia. VR is primarily a visual medium that can be augmented with sound and, occasionally, touch (Jones et al., 2022; Thompson and Booth, 2023). VR can induce headaches, nausea and dizziness, known as VR or cyber sickness. Thus, design of VR including the ways that participants navigate the environment, and a sensitivity to diversity among participants' susceptibility to VR sickness need to be considered (Tanaka and Takagi, 2004; Lee et al., 2017). Researchers will need to be aware of sensory sensitivities and physical disabilities and ensure [accessibility](#) for participants.

In terms of [resources](#), VR is intensive compared to many other social research methods, requiring data, technical skills requiring a steep learning curve, computer processing power, hardware, software, prototyping, testing, and physical space, to ensure the technology runs appropriately (Mabrook and Singer, 2019; Deb et al., 2017; Hindmarsh et al., 2006). There are therefore many considerations in terms of [interdisciplinary collaboration](#) and resource management. VR can be 'fiddly and temperamental' (Jones et al., 2022: 137).

VR emerges in regards to particular versions of the relationship between science and culture where the two can be 'fused' (Schroeder, 1994). Dominant developers include Facebook's parent company Meta, meaning [power and privacy](#) require careful consideration in terms of who is constructing the VR experience, with which worldviews, and for what ends. [Representation](#) styles, norms and choices, within VR – the environment and the participants or actors in it – can shape how people interact and experience one another (Campos-Castillo, 2012; Kyriltsias and Michael-Grigoriou, 2022). In terms digital technologies broadly, the researchers' choice of visibility need consideration (Murthy, 2008), and such thinking applies to VR, too.

[Data collection and analysis](#) present particular challenges due to the complexity and volume of data that can be generated, especially when collecting multiple AV recordings of interactions in multi-user VR (Hindmarsh et al., 2006). To ameliorate this, researchers may choose more constrained data generation methods, such as questionnaires or eye-tracking data (Feng et al., 2022).

## Future

Currently, SSH research using VR methods is focused in a limited number of fields, mainly 'human-computer interaction, psychology, medicine and archaeology' (Jones et al., 2022: 136). The reduced travel and mobility during COVID-19, and subsequent views of tourists afterwards, presented an opportunity for VR development in tourism research (Florek and Lewicki, 2022). VR therefore develops as part of a changing socio-technical landscape of mutable priorities and values in terms of experience and communication. In this way, the emerging and evolving technology of VR, with many promises attached, mean that its potential for incorporation into SSH methods need iterative and contextual appraisal.

If you would like to contribute a Methods Futures Briefing to the series, or would like to give feedback, please get in touch by emailing [Robert.meckin@manchester.ac.uk](mailto:Robert.meckin@manchester.ac.uk).

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