

Four categories for meaningful discussion of immersion in video games

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Summary:

The term 'immersion' is used frequently by professional video game developers (in both the entertainment and serious/applied industries), academics, journalists, and players. However, this word can refer to a range of different modes of engagement for players and standardisation would improve discussion of the topic. This paper suggests and explains four categories:

- **Systems immersion** can be used to describe when players are deeply engaged with the mechanics, challenges, and rules of a game, and is similar to a state of 'flow'
- **Spatial immersion** is the sense of a player being present in, or transported to, the virtual world, and is linked to the concept of embodiment
- **Empathic/social immersion** describes the connection that a player may develop towards the characters (AI or human) and the social context of a game
- **Narrative/sequential immersion** can be used to describe a player's compulsion to see how a sequence of events continues, typically in a narrative, but this is related to any progression, such as exploring new spaces or evolving gameplay mechanics.

SYSTEMS IMMERSION	SPATIAL IMMERSION	EMPATHIC/SOCIAL IMMERSION	NARRATIVE/SEQUENTIAL IMMERSION
A high level of engagement with the systems and decision-making processes in the game, related to 'flow'.	A sense of 'presence' in a location. The feeling of being in that place, or of having travelled there.	An emotional connection with the characters or social context of a game.	A deep and compelling investment in the progression of events, locations, and/or abilities. The focus here will typically be 'what happens next?'
All types are likely to be non-discreet, with close relationships and overlaps of game-elements that contribute to (or subtract from) multiple forms of immersion.			

TABLE 1: THE FOUR CATEGORIES OF IMMERSION.

Keywords

Immersion, video games, gameplay, entertainment, serious games, applied games, commercial, systems, spatial, empathic, social, narrative, sequential, addiction, violence, VR, AR, research, open access, flow, presence, embodiment, community.

NOTE: This paper is Open Access, and has features that are intended to improve the readability. It includes bibliographic or complementary web-links to articles to make it easier for readers to continue exploring the topics and references. Footnotes are used to allow the reader to see sources without excessive scrolling, as well as a standard bibliography at the end. Paragraphs are broken more often than is typical in academic papers and it uses the Verdana font to make it easier to read from a screen. It is written for online distribution with the goal of easing dissemination and increasing the rapidity of academic discussion. It uses semi-formal writing to keep the content accessible to many levels of academia and broadly across society.

This paper builds on work previously presented at the following conferences:

Develop:Brighton <https://www.developconference.com>

Interactive Pasts 2 <http://interactivepasts.com/the-interactive-pasts-conference-2/>

GAME-ON®'2019 <https://www.eurosis.org/conf/gameon/2019/>

Introduction:

The ability to stimulate 'immersion' is one of the most noted characteristics of video games, but there are many definitions of this term. Toby Gard, one of the creators of the Tomb Raider franchise, argues that 'the power to immerse the player [...] is the common attribute of the greatest and most successful games.'¹ Gard believes that the narrative consistency of the virtual world is the primary influence on how immersive a game is, e.g. if a virtual temple has no space for worshippers it would make the game less immersive because it does not meet players' intuitive expectations of places for worship.

In academic studies, assumptions about immersion can be linked to the type of game, the player's perspective, or the interactivity of the world. Weger and other researchers report that '[participants played] an immersive game in which they played through the eyes of a virtual character (an avatar), by travelling through a landscape and manipulating the environment at their discretion.'² Here, unlike for Gard, the sense of immersion does not come from contextual-narrative consistency, but instead the writers argue it is heightened by controlling an avatar using a first-person perspective.

Other studies list immersion in a game's virtual space as a component of many other factors that make games compelling. Steinkuehler and fellow researchers argue that 'individuals play MMOs for a sense of achievement, a sense of immersion in another world, in order to socialize, in order to escape, to feel part of a group, because they like analyzing the game mechanics, and because they enjoy the competition'³ (based on previous work by Nick Yee⁴). In this use of

¹ Gard, T. (2010, May 7). Action Adventure Level Design: Kung Fu Zombie Killer. Retrieved April 15, 2020, from https://www.gamasutra.com/view/feature/4413/action_adventure_level_design_.php

² Weger, U. W., Loughnan, S., Sharma, D., & Gonidis, L. (2015). Virtually compliant: Immersive video gaming increases conformity to false computer judgments. *Psychonomic Bulletin & Review*, 22(4), 1111–1116. <http://doi.org/10.3758/s13423-014-0778-z>

³ Steinkuehler C. A., Williams, D., Where Everybody Knows Your (Screen) Name: Online Games as "Third Places", *Journal of Computer-Mediated Communication*, Volume 11, Issue 4, 1 July 2006, Pages 885–909, <https://doi.org/10.1111/j.1083-6101.2006.00300.x>

⁴ Yee, N. (2006). The Daedalus Project. Retrieved 15 April 2020 from <http://www.nickyee.com/daedalus/archives/001468.php>

immersion, there is greater emphasis on the sense of presence in the virtual world, regardless of perspective.

Immersion is also not unambiguously positive. While it does benefit the player's experience of the game, it has also been associated with negative social outcomes: 'a couple who were immersed in an on-line game ignored their 30 month old daughter to the point where she starved to death.'⁵ This tragic event is arguably due to 'addiction' rather than 'immersion', but immersion can be a factor in addiction to video games. The writers chose to frame immersion as the source of the behaviour rather than, for example, social conditions such as poverty, inequality, education, drug use, access to health and social care, or other elements that may have been involved and that are known to contribute to addiction and the resulting neglect.

For multiple reasons, 'immersion' has become a problematically ambiguous term when used without further context. When attempting to discuss this subject with professional game developers, academics, journalists, and players, I have found four categories of immersion allow a more meaningful discussion to take place. The four categories are systems immersion, spatial immersion, empathic/social immersion, and narrative/sequential immersion.

Systems immersion

Systems immersion is when a player is highly engaged with the decision-making activities and rules of the game. For example, a *Pac-Man*⁶ player is unlikely to feel like they are a dot-eating-disc in a haunted maze, but their mind and body may nonetheless react strongly to the systemic progression of play. While this example focuses on fast-paced gameplay, slower and strategic games can be equally involving for some players, as the balance of rules wholly occupies their thoughts. This form of immersion is closely analogous to Mihaly

⁵ Bavelier, D., Green, C. S., Han, D. H., Renshaw, P. F., Merzenich, M. M., & Gentile, D. A. (2011). Brains on video games. *Nature reviews. Neuroscience*, 12(12), 763–768. <https://doi.org/10.1038/nrn3135>

⁶ Namco. (1980). *Pac-Man*. <https://en.wikipedia.org/wiki/Pac-Man>

Csikszentmihalyi's concept of 'flow',⁷ where happiness is achieved from a pleasing progression of in-game challenge versus player-mastery.

Spatial immersion

Spatial immersion refers to a player's sense of presence in a virtual space. If a player feels like they are in a location, or have experienced being there, then they are discussing spatial immersion. The visual quality of a game is likely to be important at stimulating this form of immersion, but it will not be the only factor: a player may gain a huge sense of spatial immersion from a 2D maze game, and many players experienced a real stomach-churning feeling from early 3D spaces such as *Stunt Car Racer*⁸ that only used basic lines or blocks of colour to show the racetrack, but 3D spaces with a high sense of realism or cinematic visuals are likely to stimulate a sense of transportation to the virtual space for more players than less visually impressive virtual worlds. This taste for visual excellence is likely to increase over time as players come to expect higher-fidelity graphics as standard, resulting in less-detailed and lower-framerate worlds consequently appearing more artificial.

Virtual Reality (VR) benefits greatly from its intuitive head-mounted interface because this can give an almost effortless sense of spatial immersion, unlike standard 2D displays (i.e. television screens, monitors, smartphones, etc.) where the player is likely to need a higher degree of familiarity with the interface to experience a sense of spatial immersion in the virtual world.

When a player feels strong spatial immersion, they will often lose or lower their awareness of their physical surroundings and/or body. This is a common aspect of all forms of immersion, but it appears likely that it will be stronger for spatial immersion, although further research is needed.

Lowering a player's physical spatial awareness may have beneficial properties relating to relaxation, recontextualization of traumatic events, virtual holidays, pain/stress relief, etc. There are also potential negative consequences of

⁷ Csikszentmihalyi, M. (2002). *Flow: the classic work on how to achieve happiness*. London: Rider.

https://www.ted.com/talks/mihaly_csikszentmihalyi_flow_the_secret_to_happiness

⁸ Crammond, G. (1989). *Stunt Car Racer*. https://en.wikipedia.org/wiki/Stunt_Car_Racer

lowering physical awareness, particularly while moving and/or in public spaces. These risks will in particular be greater for players from groups where existing social problems can be amplified by reduced awareness of their physical environment, such as for women and/or marginalised communities.

Spatial immersion also is most likely to stimulate a sense of embodiment in the virtual world, because the player feels like they are transported to that space, but embodiment could also be linked to efficacy in the world, i.e. the player's ability to influence the game's systems to get the result that they desire, which would be more closely related to systems immersion. Research into stimulating a sense of embodiment will likely reveal multiple entwined factors that influence how much a player feels like they are inside a game's virtual world/system and which categories of immersion are most useful for discussing embodiment.

Empathic/social immersion

Empathic/social immersion is the player's connection with the personal and social context of the game. Stuart, while discussing immersion, argues 'the best games help us to build immersive emotional reactions through subtle human clues'.⁹ These bonds may be formed with a non-player character ('NPC') or with other players that participate in the game. This can be triggered live, i.e. while both or all players are in the game together, but also asynchronously, i.e. after one or more of the players have left but reminders of their former presence exist in the game.

Personal feelings of connection to the game's NPCs, human characters, and general society may be stimulated by events that are in-character for the game, such as a character that dies after fighting alongside the player for many quests, but they can also be stimulated by a sense of social connection that is facilitated by the game, such as a guild of players in a fantasy game that regularly meet in the virtual space and bond based their physical-world personalities and lives rather than engaging with the game's fictional setting. These in-game connections with personalities and social systems can build a sense of

⁹ Stuart, K. (2010, August 11). What do we mean when we call a game 'immersive'? Retrieved April 15, 2020, from <https://www.theguardian.com/technology/gamesblog/2010/aug/10/games-science-of-immersion>

community that stimulates either empathic immersion, social immersion, or both. This sense of friendship and community can be a powerful driving force that compels players to continue playing a game, and can have both positive and negative physical life outcomes.

Narrative/sequential immersion

Narrative/sequential immersion comes from a player's desire to see the next step in a sequence. Typically, this will be driven by traditional story-based events revolving around physical and/or emotional conflicts, but this can also be applied to seeing progressive ability upgrades for a character, or travelling through a region of a game and wishing to find the next area to explore.

In the latter case, there is a sense that the narrative is built through the ordering of events as they are perceived by the player, rather than necessarily through explicit pre-scripting by game developers, but the impact on the player can still be an identical compulsion and level of engagement. Although it is easiest to observe in narrative-driven games, this category of immersion is a factor in the success of most video game genres, from action-adventure through to football simulations and farming games.

Discussion

It should be highlighted that all of these forms of engagement will overlap, but there is not a set ratio between them: a player could complete exploration of a game's world and still feel spatial immersion without the need for exploration-derived sequential immersion; a game could have a blank-slate protagonist but still have very high sense of systems immersion, such as may be seen in classic first-person shooter games like *Doom*¹⁰; or a virtual space that has a convincing and consistent sense of the people who live there, such as in the game *Gone Home*,¹¹ will provide both a sense of empathic/social immersion and a strong sense of spatial immersion. In this last example, empathic immersion is felt even without other characters ever physically manifesting in the game because the

¹⁰ id Software. (1993, December 10), *Doom*. [https://en.wikipedia.org/wiki/Doom_\(1993_video_game\)](https://en.wikipedia.org/wiki/Doom_(1993_video_game))

¹¹ Fullbright Company, The. (2013, August 15), *Gone Home*. https://en.wikipedia.org/wiki/Gone_Home

emotional bond forms through a player's reading of social cues, but these US-centric cues may make its appeal vary globally.

It is hard to imagine a game, particularly if it has been successful, having only one type of immersion as a part of its appeal. It is likely that the majority of successful games and individual gameplay mechanics address different types of immersion at different times, and that they balance their types of immersion to create a pleasing overall effect for a large number of players.

When game developers create a game, they must balance factors such as visual fidelity, intuitiveness of interactions, cost efficiency, and more. Each choice will impact on the different categories of immersion, and it may be beneficial for developers to consider how they maintain a balance between the categories, or indeed if they wish to. For example, some developers may choose to entirely ignore deliberate stimulation of empathic/social immersion (such as by making a wholly or largely abstract game) and prioritise the systems immersion. Players may still find their own empathic/social link to the game, but this will likely be more individual per player than for a game where the development team made significant efforts to stimulate empathic/social immersion.

In 2016, the game development company 'Sassybot' and I released a game called *Fragments of Him*.¹² While making this, we focused entirely on maximising the empathic/social and narrative/sequential immersion of the game. Due to this, we deliberately chose to minimise gameplay mechanics that would block or distract the player, so we removed many of the systems that would typically feature in games such as puzzles, combat, high scores, timers, or fail-states.¹³ This resulted in a game that, for some players, was highly immersive in the desired categories and as a result also very impactful regarding the narrative's topic of coping with grief.¹⁴

Although developers can prioritise specific categories of immersion, different players can experience different forms of immersion from the same content.

¹² Sassybot, & Haggis-Burridge, M. (2016, May 3). *Fragments of Him*.

https://en.wikipedia.org/wiki/Fragments_of_Him

¹³ Haggis-Burridge, M. (2016, August 16). Narrative Experience First: Interaction Design in 'Fragments of Him'. Retrieved April 17, 2020, from <https://www.gdcvault.com/play/1023839/Narrative-Experience-First-Interaction-Design>

¹⁴ Frank, A. (2016, May 5). *Fragments of Him* offered me catharsis after the shock of losing someone. Retrieved April 15, 2020, from <https://www.polygon.com/2016/5/5/11601720/fragments-of-him-grief>

Some players may find the shooting mechanics and driving in *Grand Theft Auto V*¹⁵ stimulates systems immersion, others find the physical believability of the city stimulates spatial immersion most strongly for them, and others may find the storyline is highly engaging and so feel narrative/sequential immersion most strongly. Some players may either enjoy the company of the game's lead characters or find them repulsive, correspondingly raising or lowering their empathic/social immersion.

In a high-budget game, such as *Grand Theft Auto V*, this broad appeal across multiple forms of immersion was almost certainly intentional, even if the developers used different terminology while making it. As a single game, it can appeal to many different types of players and has had enormous success due to this. Games with an open-world setting, where players are free to explore the environment through non-linear paths, deliberately target multiple types of gameplay to keep players engaged with their world and, as a result, the spreading of activities across multiple categories of immersion is a core part of the business strategy of many large entertainment companies.

The Grand Theft Auto series of games have been a focus of controversy regarding problematic content in video games due to their potential for showing extreme acts of virtual violence. The categories of immersion give us a meaningful tool to discuss how different players may experience these gameplay events.

Many players will play *Grand Theft Auto V* with an approach that prioritises systems immersion. This allows them to see in-game representations of humans as components of fictional systems rather than as real people. Other players may feel a strong sense of social immersion in the game and take sadistic pleasure from the virtual violence. From an external perspective both sets of players may appear to be behaving in the same way in the game, but there is a radical and important difference in how they are engaging with the actions they are taking. For the first groups of players, the game may be a healthy way to relax and blow off steam without harming anyone in the real world, including themselves, but for the latter group it could potentially aggravate or heighten an

¹⁵ Rockstar Games. (2013, September 17), Grand Theft Auto V. https://en.wikipedia.org/wiki/Grand_Theft_Auto_V

unhealthy sociopathy. The nuances of how the same game may be pro-social for some and anti-social for others is beyond the scope of this paper, but future research may wish to consider categorising forms of immersion as a tool for exploring and discussing the relationship between games, players, and society.

Like genres of books or films, some game genres will possess more intrinsically appealing themes or gameplay styles for different players. This will impact on their ability to feel immersed in the game. A player that enjoys systems immersion in first-person shooters may not feel engaged if the narrative setting of the game is unappealing, even if the mechanics of the game match their preference. Likewise, two games set in the same fictional universe will not result in equal narrative immersion for a player if the gameplay mechanics of the games are radically different in their level of appeal to that person. Some players will have a preference for games that prioritise one category of immersion, almost regardless of other aspects of the game.

Further research

The appeal of different categories of immersion is likely to vary between individuals based on personal tastes, but there may also be gender, age, identity, responsibility, or other cultural and social conditions that underpin wider demographic preferences. Further research on how to study and understand immersion individually and in a social context would be necessary to understand these factors more clearly.

While these four categories are individually useful for discussion, they operate together to form a network of immersive effects. This network creates what a player experiences as immersion and plays a significant role in relation to their enjoyment of the game; it could even be argued that this network of immersion is the primary source of pleasure derived from playing video games. To say something is 'immersive' is to say that the network is operating successfully for the player, but it does not clarify how the network is achieving that result unless a more granular set of terms, such as these four categories, is used.

There are interesting borders in video games where the discussion of immersion using these categories becomes difficult. For example, do Augmented Reality

(AR) games automatically have spatial immersion because the player is experiencing a virtual overlay on their physical space? I do not think so, because the question is whether the player is immersed in the space of the game, and if the game's AR world is not compelling or does not adequately integrate with the physical world then it is unlikely to be spatially immersive. AR in 2020, when this paper is written, has barriers from the hardware that may lower all categories of immersion, but games such as 'Pokémon Go'¹⁶ show that AR can already place a pervasive layer of somewhat spatially immersive gameplay over physical environments. Future studies and games may reveal mechanics and viewing methods for AR that specifically heighten spatial immersion.

A similar difficult topic can also be found when considering virtual games played with participants in the same room. If the player is physically in the same space, how does this impact on the empathic/social immersion with the game? Arguably the 'magic circle'¹⁷ of the game has extended into the physical world and a form of empathic/social immersion will be present, but this is another subject that could be debated beyond the scope of this paper.

Beyond the time spent in-game, there can be consideration of the meta-game space, i.e. the way that the player relates to the game's activities outside of core gameplay, or when its influence extends beyond the time spent playing and into other parts of a person's life, such as discussing it with friends or making fan art. Arguably this is also a form of empathic/social immersion, but this may be too large a stretch for this categorisation system and other terms will be better at describing this, e.g. parasocial relationships.

Conclusion

Video games have become a significant medium for entertainment, art, and education. As an example of this, the World Health Organisation has recognised their impact on society by categorising 'gaming disorder' as a health threat during 2019 and then stating that games can also be beneficial during the COVID-

¹⁶ Niantic. (2016, July 6), Pokémon Go. https://en.wikipedia.org/wiki/Pok%C3%A9mon_Go

¹⁷ Stenros, J. (2014). In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play. Retrieved April 15, 2020, from <https://doi.org/10.26503/todigra.v1i2.10>

19 epidemic of 2020.¹⁸ Given this importance, it is useful to agree on the meaning of common terms such as 'immersion' to avoid confusion, both in public discussions and at the level of policy makers.

The four categories of immersion discussed in this paper were developed during a decade of teaching and two decades of game development. There will likely be other useful terms for discussing immersion, but these four have provided a meaningful lens for my own professional work as a consultant, game developer, researcher, and educator. I hope they will be of use to game developers, academics, journalists, policy makers, and players who wish to discuss video games in a way that reflects the diversity of actions and experiences that games can offer.

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