

**A Grounded Theory of Emergent Benefit in Pervasive Game
Experiences**

By

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Declaration

Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

Signed:

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Abstract

The phenomenon of *pervasive games* is a relatively new and unexplored area of games research. These are games that, unlike card, computer, or board games, incorporate elements from outside the perceived boundaries of play, in order to blur the line between reality and fiction and make the game feel more ‘real’.

This thesis investigates the player experience of pervasive games, using a novel approach that is informed by the methodology of Glaserian Grounded Theory (Glaser 1978; 1998) in order to clarify understanding and explore issues that players of pervasive games would be likely to encounter. Following a discussion of various themes such as player interpretation, creative play, ambiguity in games and the ‘magic circle of play’, and guided by the preparatory work of the researcher, *SFO* (www.sf0.org) is identified as a particularly suitable example of a pervasive game to use for an in-depth study.

24 players of *SFO* are interviewed about the gameplay process, and their responses are analysed using the methods implied by Grounded Theory. A theory evolves regarding their experiences, namely that *SFO* is providing the means and motive to take part in everyday activities that they somehow could not, or might not, have done before. In particular, *SFO* is helping players to be artistic, outgoing and wise.

Informed by the methodology, no formal literature review is conducted prior to the main study, therefore the literature is mainly consulted after theory generation in order to more widely situate the results in the context of games literature.

Real-world benefit, such as that promoted by ‘serious games’, appears to be emerging from the gameplay in *SFO*, despite *SFO* not appearing to be marketed as a serious game. This unexpected outcome is discussed in terms of implicit rules (Salen & Zimmerman, 2004), player satisfaction, knowledge transfer, and emergence (Johnson, 2001). It is suggested that one explanation for this outcome is the positive attitude *SFO* holds towards

contradictions in *implicit rules* which occur from player-to-player. It is recommended that the future study of *emergent benefit* in games should not be limited to the games overtly-labelled as serious games.

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For Gena, Willow and Pabla.

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Introduction

This thesis is the culmination of a significant exploratory study into *pervasive games*. Pervasive games are a relatively new subset of games that, unlike board games or computer games, attempt to blur the boundary between “playing” and “not-playing”, rather than making the two domains easily distinguishable as would be expected for most games. This is often achieved by creating uncertainty in game rules or other instructional detail, such that the players are forced, to a certain extent, to decide for themselves whether or not their experiences are part of the game or part of their non-game life. A consequent aim of pervasive games is to give the player the feeling that the game is somehow permeating their everyday life, or that events in their everyday life have meaningful parallels in the game world. The overall aim of this study was to clarify understanding of the nature of pervasive games from the point of view of the players, by exploring some of the issues typically encountered during play.

The study is presented in two main sections, the first of which being a clarification of the problem space. Initially, because games can be examined from a multitude of research perspectives, the researcher’s own *systems* perspective is described in Chapter 1, so the reader can view the thesis in the appropriate context. Games are introduced as being complex, open systems of human interaction that are capable of unexpected outcomes and are subject to environmental influence. From this, a suitable working definition of *pervasive* games is developed following Montola’s (2005) model of spatial, temporal and social expansion. This model presupposes the use of the well-known term *magic circle of play* (Huizinga, 1970; Salen & Zimmerman, 2004) to describe the context via which game phenomena can be interpreted as separate from non-game phenomena, and advocates the blurring of the spatial, temporal and social boundaries of the magic circle to cause uncertainty for players during such interpretation. Examples from existing games are used to exemplify the many ways in which this blurring of the magic circle can be achieved.

Once the nature of pervasive games has been demonstrated and a working definition has been found, the subject is further clarified in Chapter 2 via several research threads, each being explored using one of the researcher's own preliminary academic papers.

The problem of temporal *granularity* is discussed, namely that game events could be classified differently depending on the length of the 'unit' of time used during observation, and that this has implications when deciding whether or not a game is described as pervasive. Using a second-by-second granularity during a game of chess, for example, it would seem easier for the player to ascertain whether or not they are playing than it would via an hour-by-hour granularity, as with a longer interval there are more opportunities for distractions, breaks and so on.

Next, it is proposed that Montola's model of pervasiveness might also be extended to include the possibility of an over-arching linguistic or *semantic* element (*Börje Langefors*, n.d.). When players ascertain whether or not they are playing, in addition to implicitly asking themselves "am I currently within the spatial, temporal and social boundaries of the game?", they also need to ask "does my interpretation of these boundaries *count*?". It is argued that through ambiguity in language, further uncertainty could be created in order to make a game feel more pervasive.

The distinction between 'pulled' and 'pushed' game content is also explained: pervasive games tend to either 'push' experiences by forcefully interrupting the non-game life of a player, or provide the opportunity for the player to 'pull' meaning via creative interpretation of everyday surroundings in terms of the game. A focus on the latter is declared, and explored using the phenomenon of *apophenia* (Conrad, 1958, cited in Brugger, 2001). From a cognitive science perspective, apophenia and creativity are very similar (Brugger, 2001), and therefore the topic of *creativity games* is also explored in order to begin understanding such similarities and the potential relevance of the existing body of knowledge on creativity. A model for a more-pervasive 'pulled content' approach to such games was piloted and analysed in previous work, in contrast to the 'pushed content' approach of other creativity games released around the same time.

Creative, *appropriated* play (Gazzard, 2012) arose in the form of *metagaming*, and this highlights the importance of using a relatively unrestricted design when investigating potential outcomes of play.

In summary of the first two chapters of the thesis, the convergence of these threads into a coherent understanding of pervasive games is then illustrated. The rest of the thesis, beginning with Chapter 3, comprises an in-depth qualitative study of the pervasive game of *SFO* (www.sf0.org), an appropriate example of a pervasive game according to the working understanding of pervasiveness, and featuring a relatively unrestricted design. *SFO* is a game played both online and in the physical ‘everyday’ world. Players must decide how to complete a series of ambiguously-described tasks, submitting documentary evidence to the *SFO* website in order to score points for their character and progress through the game. When viewing the evidence, other players can award bonus points if they are suitably impressed, so the most successful players tend to be those that are the most creative, ambitious or persevering with their tasks.

In order to investigate the player experience of pervasive games such as this, 24 players of *SFO* are interviewed and their data is analysed using an approach informed by the methodology of *Glaserian Grounded Theory* (Glaser, 1998) which is introduced and described in depth in the second part of Chapter 3. This is an inductive process that concerns the generation and evolution of a theory, ‘grounded’ in the gathered data, and accounting for much of the behaviour in the respective domain. In Chapter 4, the specific theory generation procedure used for this project is given, with intermediary versions of the evolving theory being presented, and the rationale behind decisions made when adding and removing sections of the theory being explained. Examples are given of the process of incident identification in the data, as well as the generation of concepts from groups of incidents. Furthermore, the process of participant recruitment is described, including an explanation of the ethical considerations, particularly when dealing with participants who were under 18 years of age.

A final working version of the theory is presented at the end of Chapter 4, and over 150 incidents from the data are used to demonstrate the various aspects of the theory and how they apply to the participants' experiences of playing *SFO*. The process of coding and generating concepts is clarified using a case study that tracks a single code from its initial appearance in the data to its place in the final working version of the theory.

In accordance with Glaser's approach (1998, p.67; 1978, p.31), a traditional literature review is omitted *before* the main study. Instead, the literature is consulted afterwards, throughout Chapter 5, in order to more widely contextualise the results. Themes of emergence (Johnson, 2001), player satisfaction, knowledge transfer, *serious games* (Michael & Chen, 2005) and implicit rules (Salen & Zimmerman, 2004) are confirmed using examples from the literature, and the main results of the study and contribution to knowledge are presented in the context of 'emergent benefit in games': Evidence is given that *SFO*, a strong example of a pervasive game, appears to be helping the players take part in activities that they would normally find difficult in everyday life, and in particular, effective external benefits such as learning, socialising and artistic stimulation have emerged. In other words, players of *SFO* have used the game framework as a starting point for self-directed games of extrinsic benefit. The parallels between the game-world and the players' everyday lives, one of the characteristics of pervasiveness, can be seen in the real-world lessons they learn as they interact with the game world.

This has some similarities to the phenomenon of *serious games* (Michael & Chen, 2005), however *SFO* could not practically be called a serious game as it is not overtly advertised in terms of a utilitarian reason such as education, awareness or fitness. It is also suggested that conventional approaches for knowledge transference through play in serious games are somewhat flawed: often, such games rely on the taught content being 'pushed' to the player as a result of the designer's view of how games *should* transfer knowledge, and how players *should* interact with the game. It is argued in this thesis that player behaviour cannot be controlled, and evidence is also presented of a non-serious pervasive game (i.e. *SFO*) in which significant amounts of real-world benefit are instead transferred through facilitated emergence, and through a more constructivist 'pulling' of content by the

players across the permeable boundaries of the magic circle of play. With this approach, the players can look for and create their own extrinsic benefits as and when they are required, rather than when they have been prescribed.

A focus on emergent benefit in games is therefore recommended in Chapter 6, concentrating on a more player-centric, self-imposed method of knowledge transfer via additional 'implicit rules' (following Salen & Zimmerman, 2004), and it is concluded that researchers should consider how games (serious or otherwise) are *used* for real-world benefit by the players, rather than how they are described by the designers with regard to intended purpose. Identifying instances of such games could be problematic due to their emergent nature, so the next step towards this end from a formative point of view could be to identify games with a relaxed approach to the use of implicit rules, as from the results of this study it would seem that the diverse playing styles afforded by the reliance on implicit rules in *SFO* has resulted in real-world benefit through emergence. Future problem spaces are identified with a view to furthering the scope of the conclusions of this study.

Finally, the appendices of this thesis include the full body of anonymised player data, all intermediary versions of the theory, the memos used in constructing the theory, the ethical documentation for the project, and a dissemination of the researcher's previous academic work.

Chapter 1: Games and Pervasiveness

A systems view of games

Researchers of games have at their disposal a range of different perspectives that can be applied to the subject. Depending on the research perspective, games might be framed as works of art, cultural artefacts, performances, lessons, mathematical formulae, narratives, exchanges of information, or tools for therapy.

In the case of this thesis, a formalist, *systems* view of games is assumed. A system is “a delineated part of the universe which is distinguished from the rest by a real or imaginary boundary” (Érdi, 2008, p.5). With regard to games, such boundaries distinguish what is part of the game from what is not. Generally speaking it is easy for players to tell whether or not they are playing a game, due to having specific information on, or being able to infer, the people, places and times that are included in the system.

Within this view, games are considered to be complex systems of human interaction. Érdi (*Ibid.*, p.7) states that complex systems contain characteristics such as feedback loops, unpredictability and emergence. Indeed it could be said that these are all elements which are common, if not *essential* in games. Players need to receive feedback on their actions, perhaps via an increasing or decreasing numerical score which reflects their success. An element of unpredictability is key in games because if the player could predict the entire outcome in advance there would be no need to play. Emergence in games allows a simple set of rules to produce many varied outcomes, and unexpected strategies, as will be discussed throughout this thesis.

The magic circle of play

The systemic identification of the elements of a game system is referred to throughout this thesis in terms of the “magic circle of play”. This is a concept originally used by Huizinga (1970, p.28) to describe the boundaries of gameplay. However, while the magic circle is briefly mentioned as one of a number of Huizinga’s physical and ideal “play-grounds”, the concept is not explored in any great depth elsewhere in the text. Instead, much of the modern discourse on the topic can be traced back to Salen and Zimmerman

(2004, p.95), who used the term to describe “a special place in time and space created by a game”. Salen and Zimmerman expanded on this concept by stating that in order to be truly playing a game, one must not just be inside the *physical* boundaries of play, but also the cognitive or ‘ideal’ boundaries of play, by adopting a “lusory attitude” towards the activity in question (Suits, 2005, p.49). The lusory attitude involves accepting and adhering to the limitations imposed by the rules for the duration of play, despite the presence of more efficient means of achieving the goal, in order to make play possible. While doing all of the above, the player is said to be *inside the magic circle of play*.

The work of Salen and Zimmerman has often been criticised for implying that the boundary between play and non-play contexts is inflexible and impermeable, such that the inside of the system is completely enclosed and separated from everyday life (Stenros, 2012). On the contrary, games would appear to be *open systems*, “dynamic structures maintained by permanent material, energetic and information flow within [their] environment” (Érdi, 2008, p.6). Within each game system a range of varying environmental and cultural factors are capable of influencing the nature of the game. For example, a game of *chess* will almost certainly be influenced by the identity, skill, personality and reputation of the players involved. The presence or absence of spectators would also contribute to the mood of the game, as would the location and the amount of concentration it afforded the players. In school playground soccer it might be acceptable to have 20-player teams, whereas in Premiership soccer it would not.

Zimmerman later clarified his previous position (Stenros, 2012), stating that the magic circle should be seen more metaphorically, perhaps as a framing device, or “a context from which meaning can emerge”. The boundaries of such a context still exist, but are open to interpretation. This brought the understanding more in line with Mäyrä and Lankoski’s (2009) use of *frame analysis* (following Goffman, 1974) to describe the different contexts between which players can switch in order to “locate, perceive, identify and label” phenomena from various stances. Using a ‘serious’ frame an empty cup might appear mundane, but to a child using a more ‘ludic’ frame the cup might be full of (imaginary) tea. Although Mäyrä and Lankoski agree that a particularly ludic frame is

very similar to the concept of the magic circle of play, as they are both non-physical, player-centric entities that change the way people perceive the real world, for this thesis the concept of the magic circle of play is preferred, given its tendency to bring into focus the permeable boundaries between game and non-game contexts.

Pervasive games

This thesis represents the culmination of an exploratory study of the phenomenon of *pervasive games*. Pervasive games are unlike card, computer, or board games, because they support a *preference* for ambiguity in the boundaries of the game context, and therefore the ‘openness’ of the game system. Through various methods, these games attempt to blur the distinction between playing and not-playing, so a player can feel that the context of the game is somehow pervading the context of his or her everyday activities, and vice-versa. According to McGonigal (2006, p.44) such games “encourage players to construct, consciously, a more intimate relationship between gameplay and everyday life”.

Examples of pervasive game techniques

Pervasiveness in games can be achieved in many ways. In some games, ubiquitous technologies such as global positioning, RFID and network cell information detect the real-world movements of players and use this data to affect events in the game, so the players’ actions are directly mapped to those of their avatar. This creates a stronger link between the real world and the virtual world, therefore making the boundary between the two less apparent. For example, in the pervasive urban exploration game *City Explorer* (2009), players try to discover as many real-world locations as possible, placing virtual markers via mobile phone to identify those locations as restaurants, bars and so on. Using the real-world as a virtual game board, players score points based on the number of areas they ‘capture’ during play. Similarly, the game of *Foursquare* (www.foursquare.com) allows players to share tips about real-world locations, for example good restaurants, by allowing them to “check-in” to a venue on their mobile phone. Playful elements are added to the process, as players can earn the “mayorship” of a venue if they are the most frequently checked-in person of that venue over the last 60 days. The game serves a dual purpose as the owners of such venues can offer discounts and deals to frequent visitors,

or otherwise promote their products using the word-of-mouth nature of *Foursquare* interactions.

In other pervasive games non-obvious information is gathered from the player via wearable technologies such as heart rate monitors, in order to attempt to trigger game events at appropriate times, matching the nature of the gameplay with the nature of the real-world (i.e. non-game) activity, therefore creating appropriate parallels between the real and virtual worlds. For example, Nintendo's recent 3DS handheld console includes a pedometer that tracks the number of real-world steps the player takes over the course of 24 hours. By hitting predetermined targets the player can exchange 'steps' for 'play coins' that can be used to progress in certain compatible 3DS games. In particular, the 3DS's pre-installed *StreetPass Quest* (2011) converts play coins into progress through a dungeon of ghosts and monsters, creating a more easily-recognisable parallel between real-world movement and game-world movement.

Pervasiveness in games is not necessarily governed by technology. Some games try to create parallels by staging game events in locations similar in nature or layout to those depicted in the virtual world, or by hosting extended gameplay sessions so players are forced to conduct their everyday affairs while theoretically still playing the game. Live-Action Role-Playing games (LARPs) such as *Amerika* (Fatland, 2009) often take place in city centres over several days, both to capture the authentic feel of permanence in an urban environment but also the very real reactions of the residents of that environment as they spectate and perhaps even decide to participate. Other games, most notably alternate reality games (such as those discussed at www.unfiction.com) introduce gameplay content across a variety of media in order to surprise the players when they least expect it: when watching television or reading a magazine for example. Here the intent is to provide a feeling of inescapable virtuality.

All of these techniques create difficulties in ascertaining where the real-world context ends and where the game-world context begins, with the excitement and surprise caused by elements of the game appearing at unexpected times being one aim of such techniques.

However, research into these pervasive techniques is often conducted from one of two very different perspectives, which could be seen as analogous to the distinct fields of games studies and human-computer interaction (HCI). In the following section, examples of common issues from these two viewpoints will be given.

Nieuwdorp's technical and cultural perspectives

Following an analysis on the discourse surrounding pervasive techniques, Nieuwdorp (2007) found that the perspectives adopted by researchers tended to be either technological or cultural. The technological perspective focuses mainly on the ways in which current ubiquitous technology can be used to facilitate such entertainment, for example by placing cameras and sensors in an environment in order for the application to react to the player when he or she moves around, as discussed earlier in the chapter. Examples of writing taking a technological perspective when discussing pervasive applications include proposals for RFID-driven *ambient games* (Eyles & Eglin, 2007), analyses of run-time issues in pervasive game implementations (Benford *et al*, 2003) and the exploration of pervasive systems which are intended or designed to be 'context-aware' (Loke, 2007).

The second research perspective discussed by Nieuwdorp is a more cultural perspective, dealing with issues such as gameplay, ethics, design, and player experience. Examples of writing from the cultural perspective include discussions of ethical and practical issues with non-players in public game spaces (as recommended by Montola & Waern, 2006), the power of collaborative problem-solving in an uncertain gameplay context (McGonigal, 2003) and the feasibility of gameplay within a real-world city (Flintham *et al*, 2003). As the title of this thesis suggests, the research interest concerns a more experience-based approach to exploring pervasive games, so the research perspective (within the systems approach) would be classed by Nieuwdorp as cultural rather than technological.

Montola's model of temporal, spatial and social expansion

While Nieuwdorp's study of pervasiveness in games describes two different viewpoints (cultural and technological) in terms of research, McGonigal's (2006) thesis suggests that pervasive games represent a *convergence* of these viewpoints. McGonigal discusses 'ubiquitous games' as a mixture of *ubiquitous computing*, which incorporates the technological methods for augmenting the perception of everyday life, and *experimental game design*, namely the activity of finding new platforms and contexts in which to situate digital play.

McGonigal (*Ibid.*) states that "the convergence of these two fields has produced a significant body of games that challenge and expand our notions of where, when, and with whom we can play". Similarly, Montola's (2005, and later, 2009), well-known definition states that pervasive games have one or more salient features which blur the contractual 'magic circle of play', temporally, spatially, or socially. Montola's definition of pervasiveness involves blurring the physical and cognitive boundaries of the magic circle in order to try to create ambiguity or uncertainty for the players. While the boundaries are uncertain, players cannot be completely sure at any given moment whether they are playing the game. This uncertainty is intended to create the feeling that the game is *pervading* their everyday life: unexpected gameplay events can happen to the player, making them feel as if the game has suddenly become more 'real' than is implied by its component parts.

It should be noted at this point, for clarity, that throughout this thesis the term 'real-world' will be used to describe anything that to the player is currently outside of the context of the magic circle of play.

Although Montola's expansions of the magic circle are described in three dimensions, it is not suggested that in order to be pervasive a game needs to expand gameplay along *all* dimensions – instead, pervasive gameplay only requires expansion along *at least one* of the three dimensions. Nevertheless, combined with the discussion on the magic circle of

play, this provides three dimensions across which pervasive games might be analysed, and illustrates a common model of pervasive games upon which this thesis can be based.

Temporal expansion in play

With *temporal* expansion in pervasive play, there is no clear boundary to some or all of the temporal aspects of the game. For example, in *Killer: The Game of Assassination*, one game can last from a few hours to months or years. Players are given a target (another player) who they must secretly ‘assassinate’ in a pretend fashion, for example by water pistol or stale biscuit, before they themselves get assassinated by their own secret predator. The game is over when only one player remains, but because of the potential longevity of the game and the creativity of the other players, a player must be on guard at all times if they want to win. This often means that players must go on with their everyday lives while playing the game, but be prepared for the game to re-enter their life when they least expect it. A player’s assassin might be their work colleague, or the driver of their bus, or their own brother. The game is ‘always-on’, which means that there is no clear distinction (to the player) between playing and not-playing.

Social expansion in play

If a game features social expansion, the identities of players in the game are not always certain. For example, in the pervasive live-action-role-playing (LARP) games of the *Prosopopeia* series (Montola & Jonsson, 2006; Stenros & Montola, 2009b) the players did not know the identities of non-player characters (actors), which led to conversations with everyday bystanders under the impression that they were part of the game. In one instance the actions of the bystander could have been interpreted as part of the game, so the players were unsure afterwards if the bystander had been playing or not (Montola & Jonsson, 2006, p.12). Similarly, in *Killer*, the normally innocuous actions of people in the street are perceived as suspicious because the player does not have sufficient information about the identity of their ‘killer’, and has no choice but to suspect everybody if they want to win the game.

Bystanders can also be incorporated into play as a result of pervasive role-play. Some LARP games such as *The White Road* (Pedersen & Munck, 2008) and games of *invisible theatre* (Stenros & Montola, 2009a) require the players to act in character within everyday life, in order to experience certain emotions and public reactions realistically.

McGonigal (2011, p.168) illustrates an example of social expansion in the game *The Comfort of Strangers* (www.comeoutandplay.org). In this game the players are split into two teams, called Lovers and Dancers, and at the start of the game the players do not know which team they are on. The players' mobile phones and PDAs use Bluetooth to detect whether other Lovers and Dancers are in the vicinity. If so, the players in question are alerted through their earphones that either a Lover or a Dancer is nearby, but are not told who it is. Encountering someone on the same team 'heals' the player, and encountering someone on the opposite team 'damages' them. This causes significant uncertainty, because pedestrians using earphones are fairly commonplace in a busy environment, and players have to try to ascertain their own status before moving too close to others, potentially asking questions and risking awkwardness in order to find other people on the same team.

In extreme cases, social expansion can be problematic, as it can create ethical issues for unaware bystanders if they are included in play. For example, in *Vem Gråter* ("Who Cries"), a live-action ghost story with haunting audiovisual elements, embedded in the buildings of Gotland University College (Montola & Waern, 2006), many of the players were unaware that they were part of the game as it was not made explicit to them beforehand. The potential problems were twofold: first, because the university buildings were the workplaces and study areas of staff and students, they could not easily avoid the game if they didn't wish to play. Secondly, if they believed in ghosts they could have been psychologically harmed by the experience, particularly if they were not aware that (because it was not real) they could escape it. *Vem Gråter* was an extreme example of social expansion, however, and the ethical implications of the game were analysed and recommendations made to prevent such problems occurring in future (Montola *et al*, 2006).

Spatial expansion in play

If the spatial boundaries of play are blurred in a game, the players are unsure which physical locations are part of the game. Many alternate reality games (ARGs) such as *ilovebees*, *Perplex City*, *Cloverfield* and *Chasing the Wish* attempted to be as pervasive as possible by utilising many different media for the purpose of delivering game content. In ARGs, a mixture of websites, emails, television advertisements, film sets, SMS messages, radio broadcasts, computer games, telephone calls, facsimiles, video clips, magazines and live action events is typically used to make the location of the next game event unpredictable and to give the impression that nowhere is out-of-bounds.

Spatial expansion can also be achieved by using real-world locations to represent in-game locations. This is particularly evident in LARP games, where a busy Sunday market could be used to represent a medieval market, for example. Although there are obvious physical and superficial differences, to aid player imagination and storytelling it would certainly be considered more suitable for the general atmosphere than an empty room.

Another common sub-genre of pervasive games which features high levels of spatial expansion is *location-based games*. These games are typically played on mobile phones, which use the locative functionality of the handset to translate real-world movements into game-world movements. For example, *Botfighters* (Sotamaa, 2002) allowed players to move around their everyday environment, pitting their virtual robots against other players who were in the surrounding area. Here the locations of nearby players were determined via GPS, so real-world movements were capable of affecting the game state on screen. Similarly, *Insectopia* (Peitz, Saarenpaa & Björk, 2007) used Bluetooth identification numbers on nearby enabled handsets to procedurally-generate virtual insects for the player to scan and collect. Again, the location of nearby people in the real world affected the player's success in the game world, so players could be more successful by moving to crowded areas in order to collect the most insects.

Spatial expansion used to track the whereabouts of players in real time can be problematic when combined with social expansion. In the location-based mobile game *Mogi*, players' real-world locations were used to control their avatar in the virtual world (Licoppe & Inada, 2009). Their avatar was required to collect a number of virtual objects, which meant that the player needed to move around in their everyday environment to allow it to do so. Success in the game could be facilitated by trading virtual objects with other nearby players, and therefore the real-world location of players was made visible to others in order to help them track each other down.

An undesirable effect happened when a player of *Mogi*, sat at home (because *Mogi* allowed PC-based interaction such as inter-player communication), became alarmed when it appeared that another player was closing in on her location, and therefore would find out where she lived. It is unclear whether the other player intended to cause alarm, and although there is always the option to cease playing, the affected player felt that she could not play without the fear of being harassed or "stalked". Retrospectively, she could have used the in-built option to change the locative method of *Mogi*, from accurate GPS to less-accurate cell triangulation, as many players did this to avoid such unwanted encounters (although it is not clear whether this was intended to be used for the avoidance of social interactions rather than for effective location of players with poor GPS signal). However, the affected player was only made aware of this custom after talking to a more experienced player, and the potential for such alarm to be caused was nevertheless not mitigated for future players. This highlights the importance of considering player safety in pervasive games, particularly in games that feature anonymity such as *Mogi*.

A typical player

Because social expansion in particular causes the distinction between 'player' and 'non-player' to be blurred, it is difficult to provide a profile of a 'typical' pervasive game player, as the potential for bystanders of all ages (for example) to easily become involved in play is a lot more significant. However, it would seem that much of the pervasive games literature is not very concerned with gender or age classification. In a review of 19

publications from the pioneering, EU-funded *Integrated Project on Pervasive Gaming* (<http://iperg.sics.se>), only one reference to average age and gender balance could be found (Flintham *et al*, 2007), and even in this example the figures are not particularly representative: Of the 141 players, only 24 responded to give their details.

This does however highlight an interesting point regarding whether it is at all helpful to entertain the notion of a 'typical' pervasive games demographic. If the aim of pervasive games is to surprise the player with unexpected content, an old-age pensioner should be considered as likely to enter the game as a web developer in their twenties.

Summary

This chapter has explained the cultural systems approach taken towards the magic circle of play, and has outlined the nature of pervasive games by identifying common pervasive techniques, and discussing a working definition of pervasive games following Montola's (2005, and later, 2009) model of spatial, temporal and social expansion in play.

The next chapter of the thesis will examine how the researcher further explored the subject of pervasive games through original academic work, tracking the development of several research threads and how they converged to inform the main study conducted for the PhD programme.

Chapter 2 – Research Background

To aid with contextualisation throughout this chapter of the thesis in particular, the researcher's own papers can be found in full in Appendix F.

Problems with Montola's model of pervasiveness

A criticism of Montola's expansive model, particularly in the idea of temporal expansion, is that it is sometimes difficult to classify games. The notable *non*-pervasive game of chess has a longer-term counterpart called play-by-mail (PBM) chess, where the players send moves to each other in the mail, with each game potentially lasting months or years. This requires the players to go about their everyday life during play, particularly while contemplating their next move or when waiting for the opponent to respond, and the game can re-enter their life via the mail when they do not expect it. With Montola's model this might result in PBM chess being classified as pervasive, because the temporal aspects of play sessions are uncertain.

However, the only significant difference between chess and PBM chess (temporally speaking) is the sense of what can be achieved in between interacting with the game. It is suggested here that the extended thinking and waiting times associated with PBM chess do not make the game sufficiently different from regular chess, as players can in theory still go about their everyday lives (for example, getting a drink) during downtime in regular chess. Furthermore, regular chess can re-enter players' lives when they do not expect it, as a particularly slow opponent might surprise them with a relatively quick move. Therefore there is confusion as to whether PBM chess is pervasive or non-pervasive.

A similar problem has been discussed before in terms of the temporal *granularity* of a game. In a conference paper written at the beginning of the study (Eglin, Eyles & Dansey, 2008) a model was described which classified player actions as either *generating data*, *receiving feedback*, *engaging with the game culture*, neither of these, or any combination thereof. An issue arose when discussing the unit of time used to discern

particular actions. Looking at a game of chess at a granularity of 1-hour ‘chunks’, the players would normally appear to be generating data, receiving feedback and engaging with the culture simultaneously – in other words, actively playing the game (rather than spectating without generating data, for example). However, at the closer 1-minute or 1-second granularity, it would seem that player actions could be broken into separate chunks of strategising, spectating, non-playing, active playing and so on. From this, one granular view would conclude that there was no break in active play, where another would disagree.

It would therefore appear that the perceived temporal pervasiveness of a game could be affected by the temporal granularity at which it is viewed. A game of PBM chess might appear to be more pervasive than regular chess if viewed at the same granularity, but at suitably-scaled granularities they are very similar. Despite the apparent flaw in this model of pervasiveness, Montola (with colleagues Stenros & Waern) is considered to be a leading researcher of pervasiveness in games, having recently co-written one of the only dedicated texts on the subject (*“Pervasive Games: Theory and Design”*, 2010) and having worked on pioneering pervasive game research projects such as the iPerG Project (www.pervasive-gaming.org). There appeared to be no other authors who have covered the subject in as much depth, with as much focus on the cultural aspect of pervasiveness with regard to games, so Montola’s model was used as the starting point for the project.

Extension of Montola’s model

It would seem that while Montola’s definition of pervasiveness concerns the spatial, temporal and social limitations of gameplay and how they are blurred, a more general issue exists in games with regard to exactly how such limitations are defined in terms of language. For example, a rule that states “if the ball crosses the goal line, a point is scored” is ambiguous because the notion of ‘crossing the goal line’ could mean:

1. Any part of the ball has to cross the near edge of the goal line
2. The whole ball has to cross the far edge of the goal line
3. Anything in between

This could result in a point being scored or disallowed, depending on the particular interpretation of the rule employed at the time.

Building on Montola's model of pervasiveness in games, it was proposed in a conference paper for *DiGRA2009* (Dansey, Stevens & Eglin, 2009) that in addition to spatial, temporal and social boundaries, the semantic or *contextual* dimension of the rules could also be explored. With spatial expansion in pervasive games, players might need to ask themselves "is this *place* part of the game?"; with temporal expansion they might ask "am I playing *now*?"; with social expansion they might ask "is this *person* playing too?". The paper proposed that introducing contextual ambiguity would require the players to ask themselves "does my *interpretation* of the rules count?".

It could be said that symbolic systems used to communicate rules (i.e. languages) are inherently ambiguous, because a signifier can signify more than one signified (Chandler, 2009). This feature is often exploited in punning, or "zeugma" (Cruse, 2004, p.106), where the multiple signifieds are used for comic effect. More specifically, for a reading to be considered ambiguous it should cause *antagonism* in that more than one meaning will compete for interpretation by the listener, causing further contextual information to be sought (*Ibid.*). The approach that the researcher recommended in previous work (Dansey, Stevens & Eglin, 2009) was to use ambiguous words such as *bank* (meaning either a place to store money or the edges of a river) to cause antagonism, but then to avoid providing contextual help so the player is forced (or permitted) to decide for themselves whether or not their reading was appropriate. However, it is pertinent to the discussion to investigate the theoretical underpinnings of ambiguous communication further, in order to explore the scope of such techniques in full.

Lanfours' infological equation and Cruse's model of communication

The interpretation of rules or other gameplay phenomena can be understood as an act of communication between a game's creators and the player. However, as noted in the "infological equation" put forward by Lanfours (*Börje Lanfours*, n.d.), it is extremely

unlikely, if not impossible, that the recipient of a communication receives the information exactly as transmitted, as the data to be interpreted is affected by “prior knowledge” and issues regarding interpretation time. Cruse’s (2004, p.5) understanding of the various stages of communication is used here to illustrate specific ways in which a message is susceptible to distortion:

First, *the original message as intended by the author* is the ‘perfect’ form of the message that the players would be expected to receive – this is analogous to the “data” element of Langefours’ infological equation. It is difficult to imagine this being distorted in any way, unless the message itself is nonsensical in which case such non-corrigibility (Cruse, 2004, p.42) would be intended by the author. In terms of games, it will be assumed here that this is the ‘true’ meaning of the message, that is, the author’s own interpretation of the game rules, fiction, dialogue, optimum strategy and so on.

Next, the message is *encoded*, that is, transformed into some linguistic form, and as such is open to issues of translation, including the limitations and ambiguity of the language, and simple encryption errors such as spelling mistakes. Furthermore, although Langefours’ notion of issues resulting from “prior knowledge” are described in terms of the recipient of the message, it is conceivable that the previous experience of the individual doing the encoding could also be an issue. Indeed, there may even be deliberate efforts to mask the true message, playful examples of this being *ciphertext* (Katz & Lindell, 2008, p.4) or, as in the alternate reality game *Perplex City* (<http://perplexcity.com/>), fragmenting the message in order to give the impression of interrupted communication.

Once the message is encoded into a signal, the *channel across which it is transmitted*, including the act of sending and receiving, is open to ‘noise’. Thus, a face-to-face conversation uses a channel of transmission from mouth, through air, to ear. Each of these could become distorted by background noise, intoxication, diversion of attention and so on. Furthermore, as Langefours suggests, the time available to process the message could be a factor. In games, for example, fast-paced gameplay could lead to miscommunication via rushed interpretation.

After the message is received, the *decoding* is open to the same kinds of distortion as the encoding, albeit somewhat reversed. For example, the message might change due to the listener selecting an unintended interpretation from an ambiguous situation (either deliberately or unintentionally), misreading the signal, or failing to read the entire message. This process also relies upon Langefours' idea of the "prior knowledge" of the recipient (*Börje Langefors*, n.d.): previous communicative experiences would without doubt inform the recipient's decoding behaviour.

Deliberate ambiguity

In terms of rules and gameplay phenomena, as stated in the previous work of the researcher (Dansey & Stevens, 2008), one cannot control the interpretations, attentiveness or ability of the player. Furthermore, it would seem that little can be done about unintended noise during the transmission of the signal. For example, if the rules of a game were intended to be clear and the persons responsible for printing the rulebook used ink that was too feint, a miscommunication of the rules could occur.

However, it would still seem that there are several ways designers can deliberately incorporate ambiguity in game materials in order to increase uncertainty and therefore augment the feeling of pervasiveness. Although these methods include making the original message nonsensical, transmitting it in an unreliable manner (such as mumbled or non-chronological) or making sure the channel is particularly noisy (such as a busy nightclub or interference-laden frequency) the stage of communication at which these methods are most abundant is usually the point of encoding, where the choice of language to use affects the communicative process.

With *generality* (Cruse, 2004, p.49), phrases can be made more general by choosing words that denote "more inclusive" classes, such as the word 'reptile' instead of 'snake' to describe a snake.

Nouns can be made *abstract* (*Ibid.*) rather than concrete, to give them a more ideal quality and therefore place the emphasis on the interpretation of the observer. For example, in the researcher's previous work (Dansey, Stevens & Eglin, 2009) the notion of 'conflict' was used to encourage players to more creatively interpret their surroundings, whereas if the noun 'snake' was used, the players would be able to find literal or concrete examples more easily.

Shifting grammatical voice from active to passive (Cruse, 2004, p.292) can be used to add an element of ambiguity to a phrase. For example, rather than saying that 'the woman opened the door', the message could be rephrased to 'the door was opened' so the listener is given the responsibility of inferring exactly who or what opened the door.

Through vagueness, messages can be made *ill-defined* (*Ibid.*,p.49), such that further information is required to classify phenomena. For example, the notion of 'being middle-aged' would depend on the 'typical' lifespan of a species, and whether or not one was using the typical lifespan in this case. It also assumes that life is split into three portions of equal size (as opposed to five of varying sizes, for example), and so on.

Also through vagueness, the laxness of a phrase can affect the meaning of a message (*Ibid.*). People are often said to be standing 'in a circle' when geometrically they more closely resemble some arbitrary polytope, for example. This is related to *impoverishment* (*Ibid.*,p.120), where phrases such as 'sort of', as in 'a sort of scarf', increase and placed emphasis on the vagueness of a word.

The problem of *viewpoint* (*Ibid.*,p.51) can be exploited to cause ambiguity based on relative position. For example, if something is 'behind the camera' this often implies that the situation is described from the viewpoint of the camera's subject. However, the viewpoint could quite reasonably come from a photographer describing their subject, as the subject would be behind the camera from the photographer's point of view. Similarly, the camera tripod would be behind the camera from the viewpoint of a bird hovering above, and so on.

Syntax can also be exploited (*Ibid.*,p.108), as in ‘Mary saw the man with the telescope’; where ‘with the telescope’ can either refer to the man’s possessions or the method by which Mary saw him.

In designing a game one has the relative luxury of being able to control the nature of many of the objects in the system (for example, the personality traits of characters, the sound effects, the appearance of the game materials) which means that ambiguity can also be introduced into the *signified* where in real life it might be more challenging. Cruse (*Ibid.*,p.128) discusses research on ‘fuzzy boundaries’ in colour, where subjects found it difficult to reliably and consistently categorise colours which fell on the “borderline of natural categories”, such as a colour halfway between purple and blue. In games, elements could be situated around such boundaries so the appearance of a more specific signifier (i.e. unambiguous language) can be used to disguise the upcoming uncertainty with an unexpectedly ambiguous signified. For example, telling players to ‘follow the red car’ seems like a specific instruction, but subsequently seeing a car whose hue was halfway between red and orange would likely cause uncertainty.

Metaphor and metonymy

A powerful tool for creating ambiguity is the use of metaphor (*Ibid.*,p.198) and making the *vehicle* of the metaphor, the “items used metaphorically”, ambiguous using the techniques described thus far. For example, in the phrase ‘the bank of dreams’, the word ‘bank’ is the vehicle. Given that the word is ambiguous (i.e. it causes antagonism) the metaphor could either refer to the edge of a dreamlike state (as in the bank of a river) or the accumulated memory of previous dreams (as in a memory bank). Cruse (*Ibid.*,p.204, following Lakoff) lists several *image-schemas* that often appear in metaphor, and can therefore be used to inform the design of playful ambiguity through metaphor:

- More is ‘up’; less is ‘down’ – for example output is said to have ‘risen’ when really it has increased.

- Paths for linear scales – people are said to be ‘ahead’ when they score highly in a game.
- Movements or distances for time – people are said to be ‘approaching’ a certain day, or the day is said to be ‘approaching’. There are said to be ‘gaps’ between generations.
- Transitive verbs for state changes or actions – people are said to be ‘driven to drink’ or ‘set up for disappointment’.
- Agents for events – the notion of ‘death’ is often personified as a reaper or coachman (*Ibid.*,p.207).

Closely related to metaphor as a way of “extending word meanings” is the use of *metonymy*. This differs from metaphor in that it is based on a relationship of association rather than resemblance (*Ibid.*,p.209). To illustrate, the phrase ‘England won the World Cup’ could be seen as using metonymy, because the entire nation did not win the cup, it would have (mostly) been the work of the English national soccer team. In this form of metonymy, a represented entity (the country of England) is associated with the representative (the English national team). In contrast, a metaphorical reading of the phrase ‘England won the World Cup’ might assume the winners took on the stereotypical qualities of an English person, or that England won something that has analogous qualities to the World Cup.

Deixis

As a final example of methods to promote contextual ambiguity in game design, the use of deictic statements (*Ibid.*,p.332) can cause the meaning of a message to change depending on the situation in which it is interpreted. For example, statements containing *spatial deixis* require contextualisation based on the physical location of the persons involved, such as ‘here’, ‘there’, ‘near’, ‘far’, ‘this’ and ‘that’. This is not to be confused with *discourse deixis*, which uses ‘this’ and ‘that’ to refer to previous and upcoming utterances, as can be seen from the difference between ‘pick this up’ (spatial) and ‘listen to this’ (discourse).

Temporal deixis involves temporal events relative to the time of the message, such as ‘now’, ‘then’, ‘yesterday’ and ‘tomorrow’. *Social deixis* manifests itself clearly in English with the pronouns ‘you’, which could be singular or plural, and ‘we’, which could either be in a representative (“we are not amused”), supportive (“how are we today?”), or demonstrative (“two plus two gives us four”) sense. In certain languages where the pronoun is dropped during everyday use of verbs (such as in Spanish), social deixis could also be used in the third person, where the same conjugation might be used for ‘he’, ‘she’, ‘it’, ‘one’ (as in ‘society’) and ‘you’ (polite), and therefore has a greater potential to cause ambiguity.

Spatial, temporal and social deixis (in particular) seem to fit very well with Montola’s (2005) view of pervasive games blurring the spatial, temporal and social aspects of the magic circle of play. Therefore, these could be a particularly appropriate starting point for further investigation into introducing ambiguity into pervasive games. This could result in pervasive games feeling more ubiquitous and easily accessible without the addition of potentially expensive ubiquitous technology and run-time game mastering.

Conference papers on granularity and contextual ambiguity

Figure 2.1 shows the various concepts discussed so far in terms of their connection to a working understanding of pervasiveness, based on Montola’s model of spatial, temporal and social expansion.

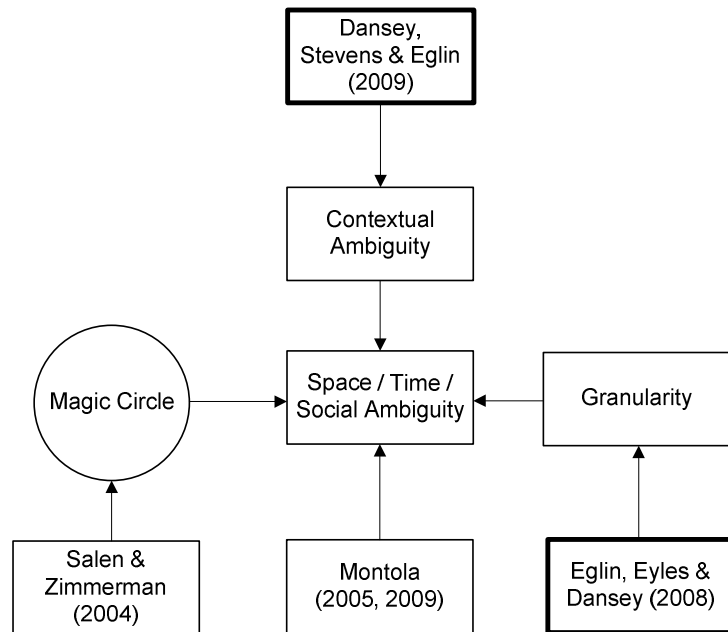


Figure 2.1: Working understanding of pervasiveness following conference papers on granularity and contextual ambiguity

‘Pulled’ versus ‘pushed’ game content

Pervasive content generally manifests itself either as an appearance of the game in the player’s everyday life, or as the mapping of some aspects of the player’s everyday life onto the game. For this project, the appearance of the game in everyday life was of primary importance to the researcher.

Within the researcher’s systems view of games, when elements permeate the boundary of the magic circle to appear in the context of everyday life, they are seen to be either *pushed* by elements of the game system across to the player, or *pulled* across the permeable boundary from the game context by the player. For example, if in an alternate reality game (ARG) the player receives a recorded message in the middle of the night via telephone, this would be an example of pushed content: the event has been instigated by other elements of the game system and the player has little control over the interruption to their everyday life caused by the game. Pushed events would generally be pre-scripted by the game designer, or at least would arise as a result of interactions that would give the impression that they had been pre-scripted.

In contrast, pulled content is the phenomena that the player chooses to accept as game-related, consciously or subconsciously, without being explicitly required to do so by the game. For example, a player of *Killer* might spend an hour wondering who their ‘assassin’ is, interpreting the normally innocuous actions of his or her work colleagues as potential signs of danger. Here, the player is not necessarily *required* to interpret their everyday life in terms of the game to such an extent, but chooses to do so (or not) because of their level of engagement with the game.

Focus on pulled content

During this project the researcher focused on pulled content, mainly because of an interest in the psychology of interpretation covered in the early stages of the programme. Inspired by the writing of Strindberg (1979) the researcher began by exploring theories of biased interpretation and faulty logic in humans. For example, a general weakness in human probability evaluation (Piattelli-Palmarini, 1994) has been cited as one reason for the success of astrological profiles and horoscopes (Fichten & Sunerton, 1983; Svensen & White, 1995).

Similarly, Kurtz (1986, p.430) asked:

How accurately do horoscopes analyze personality? A number of researchers have randomly distributed horoscopes in order to test their fit. The French astronomer Paul Couderc advertised in a French newspaper that free horoscopes were available for those who wished them. Every respondent was sent the same bogus horoscope. It included such phrases as “You have inner conflicts... life has many problems... you sometimes upset people,” etc. He asked for comments and received them from 200 persons. A large number of people claimed that the account fit their personalities perfectly.

It is generally suggested that readers of horoscopes, perhaps subconsciously, interpret the text creatively in order to forge connections between the profile and their everyday lives. In other words, they pull specific meaning from a set of rather ambiguous statements that could apply to almost anyone. This process is well-documented as both the *Forer effect* and the *Barnum effect*, and was first explored using profiles taken from an astrological book (Forer, 1949).

Kurtz (*Ibid.*) explains a potential motivation for such effects is the *transcendental temptation*, a human longing for significance in a seemingly mundane, futile or uncertain existence. This need for significance affects the ability, or desire, to examine texts such as horoscopes more objectively, and connections are made due to *confirmation bias* (Mynatt, Doherty & Tweney, 1977).

However, as Kurtz suggests (*Ibid.*), the real value of such texts might even be to fulfil a cultural role as providers of comfort rather than predictive accuracy: “whether astrology is empirically true or false is not the central issue. Whether it works – or is made to work – by fulfilling a hunger is of vital significance”. Therefore next phase of the research investigated the possibility of using horoscope-like techniques in pervasive games, in order to create a feeling of *apophenia*.

Apophenia

In the film *The Number 23*, the character played by Jim Carrey becomes fascinated with a novel in which the number 23 is deemed to have significant numerological properties. From this point, he sees manifestations of the number 23 wherever he goes, obsessively using the most tenuous explanations to find the number in many places where everyday people would not. Similarly, in the film *The Game*, the character played by Michael Douglas receives a present from his brother, which transpires to be a pre-written game-like experience woven into his everyday life by an elaborate cast of actors. He experiences elements of the game wherever he goes, to the point of interpreting non-game events as potentially part of the game.

Inspired by these two films (and others, such as Darren Aronofsky’s *Pi*), the researcher investigated whether the inherent ambiguity in pervasive play could lead to the perception of non-game events as game-related. It was predicted that this would lead to the “unmotivated seeing of connections” accompanied by a “specific feeling of an abnormal meaningfulness” associated with the cognitive-psychology phenomenon of apophenia (Conrad, 1958, cited in Brugger, 2001).

A conference paper (Dansey, 2008) was written for the *Breaking the Magic Circle* seminar at Tampere University, highlighting the potential of pervasive games to sensitise players to imagined affordances (following McGonigal, 2006, p.43), and therefore apophenia. It was also suggested (Dansey, 2008) that apophenia experienced in ambiguous situations could be used to make pervasive games more personally meaningful and ubiquitous via content that was pulled by the player rather than pushed by the game, meaning a lesser requirement for potentially expensive pervasive technology, pre-scripted events and live game-mastering personnel.

A potential example of apophenia had previously been observed in the pervasive Live-Action Role-Playing (LARP) game *Prosopopeia* (Montola & Jonsson, 2006):

Believing that [a] stranger might have been involved with the game the players spent a considerable amount of time discussing game-related issues with him. Even though the discussion never dropped a critical clue to the players, they were afterwards extremely uncertain on whether the encounter was staged or coincidental.

When the players reportedly attached game meaning to a person who was not deliberately pre-scripted into in the game, their experience was augmented. It is this augmentation of experience that led the researcher on to an interest in the experiential side of pervasive gameplay and the desire for enjoyment and for games to feel ‘real’. The researcher’s work on apophenia was subsequently cited in a core text on pervasive games (“*Pervasive Games: Theory and Design*”, 2010) and in a journal article on pervasive game research paradigms (Montola, 2011). Other early work by the researcher (Dansey, Stevens & Eglin, 2009) was considered recommended reading by reviewers at the *MindTrek 2011* conference.

Conference paper on apophenia

Figure 2.2 shows the connection between interpretive bias (resulting in the conference paper on apophenia in games) and game content that is pulled across the boundaries of the magic circle into everyday life, therefore contributing to the working understanding of pervasiveness.

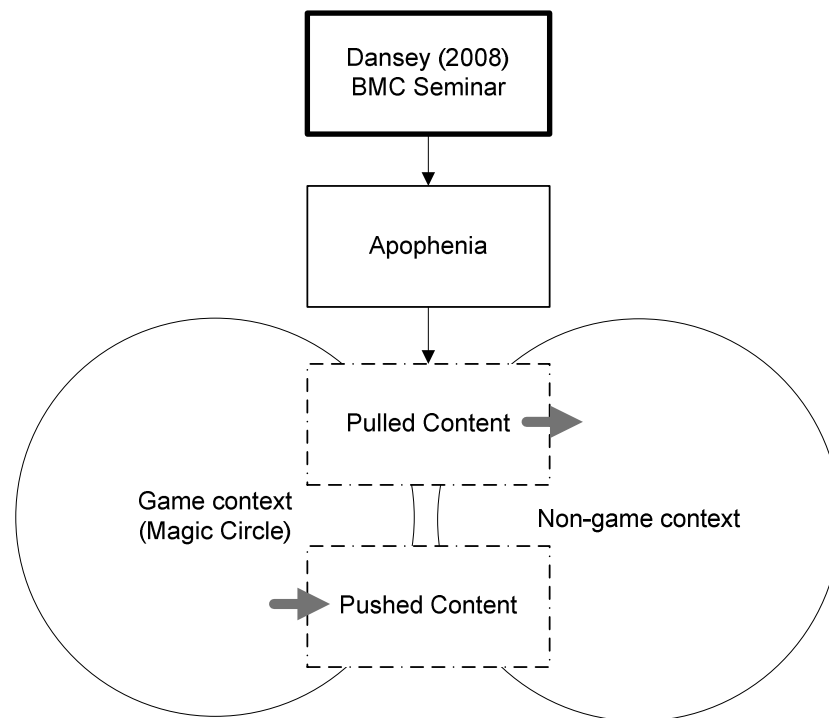


Figure 2.2: Connection between apophenia and pulled content in pervasive games.

Emergent creativity in game systems

During the research on apophenia it was noted that from a cognitive psychology point of view, apophenia is very closely linked to creativity, as both feature the same “disinhibition of semantic processing” (Brugger, 2001). Promoting apophenia in games had already been demonstrated as a valuable topic for investigation, so the exploration of creativity in games was also deemed pertinent.

Given the systems approach taken to the research, the creative play that happens so often in games was explored in terms of *emergence*, one of the key elements of a game system as discussed earlier in the thesis. Following the work of Johnson (2001), Sweetser and Wiles (2005) and Sweetser (2007), emergence in a system could be described as the evolution of an output which is greater in magnitude or significance than that sum of the elements that were input. In game systems, emergent creativity can be evidenced by the

unexpected or novel outcomes that often arise during play (Campbell, 1982, cited in Salen & Zimmerman, 2004, p.158). A few brief examples are presented here:

In the karting computer game *Mario Kart DS*, the player's kart receives a temporary burst of speed as a reward for performing a successful 'power-slide' during a race. Some players found that by performing many power-slides in quick succession, therefore "snaking" from left to right along the track in a seemingly non-optimal way, their kart was propelled forward more quickly than could be achieved by driving in a straight line (*Mario Kart DS Snaking FAQ*, 2005).

In the multiplayer computer game *Quake*, players discovered they could 'rocket jump' by aiming and firing an explosive weapon directly into the ground. The recoil of the weapon and the force of the explosion would propel their character into the air higher than was possible with the standard jumping provided in the game, which allowed them to more easily reach the higher areas of the game map that would provide a tactical advantage (*Rocket Jumping Techniques...*, n.d.).

In the team-based multiplayer online game *Counter Strike* (2004), when players are eliminated from the game they are prevented from communicating with any of their team members that are still in play, to prevent them from revealing the locations of the remaining enemy players. However, astute players noticed that voting to ban a player from the game was allowed at all times, and would cause a message (naming the target of the vote) to display on every player's screen. By voting for fictional players such as "UNDER TUNNEL TOM", the 'dead' players could easily warn their teammates of the locations of enemies (Kücklich, 2007).

To explore such emergent creativity in games, the researcher proposed an emergence-focused creativity game (Dansey & Eglin, 2008) based on the notion of *group support systems* (Satzinger *et al*, 1999). A group support system (GSS) is a method for generating ideas in which the participants have complete access to all of the ideas generated thus far on the current problem, and potentially other problems from the past. This pool of ideas is

presented via a database, the intention being that participants will be inspired by existing ideas, and effective solutions will evolve via emergence rather than mundane solutions being re-invented because of lack of information or communication.

The proposed game relied on the agreed-upon facilitators of emergence, including a densely-interconnected system of simple interactions (Johnson, 2001) in the form of a paper version of a GSS idea database. The outline of the game was as follows:

Play happens over a number of sessions, each of which involves a period of idea generation and a short review and rest period. During each idea generation period players are required to submit as many ideas as possible, scoring a point for each idea submitted. Ideas must consist of between 3 and 5 points, and do not have to be good, serious or feasible, as long as they are theoretically possible. Players can submit as many or as few ideas as they wish, but are encouraged to submit at least one idea per idea generation period. [...] Once the idea generation period is complete, the ideas are collected up and presented to the players. The players then have some time to rest and browse the pool of ideas. After this time, a new idea generation period begins, and so on. After a predetermined number of iterations, players vote for the ideas they would actually support. Two winners are declared: the person(s) who submitted the most ideas and the person(s) whose idea received the most 'good idea' votes.

Conference paper on creativity and emergence

The proposed 'GSS-game' was outlined in a conference paper for the *UK Systems Society Conference 2008*, and tested and reviewed in a later conference paper. Figure 2.3 illustrates how the concepts of emergence and GSS are connected to this paper.

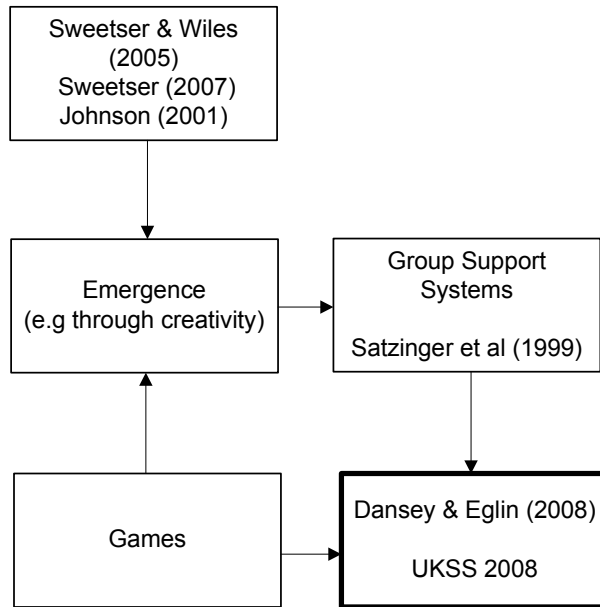
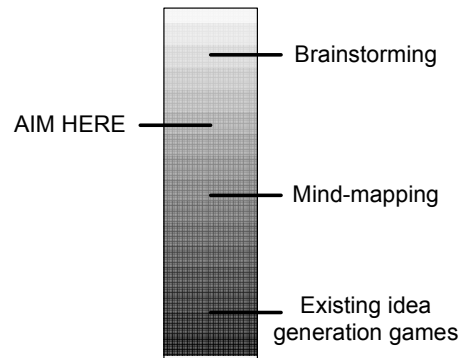


Figure 2.3: Research paper following the subjects of emergence and GSS in games

Analysing the prototype game

For the *MindTrek 2008* conference a paper was presented (Dansey & Stevens, 2008) that discussed the testing of the prototype GSS-game. The paper also described two approaches to creativity in terms of Johnson-Laird's (cited in Eysenck & Keane, 1996, p.393) distinction between *Neo-Darwinian* (ND) and *Neo-Lamarckian* (NL) models of creativity. Briefly speaking, the ND model of creativity describes generating lots of ideas without constraints before applying a conceptual 'filter' to remove non-viable ideas. An example of ND creativity is promoted by free-thinking exercises such as brainstorming. In contrast, NL creativity involves applying the filter from the outset, so *only* viable ideas are generated. It appeared that idea generation exercises could be placed on a scale (Figure 2.4) based on the relative amounts of NL and ND creativity they promoted, and the researcher's prototype GSS-game was intended to aim more towards the ND end of the scale.

ND Model – Think before constraining



NL Model – Constrain before thinking

Figure 2.4: Scale between Neo-Darwinian and Neo-Lamarckian creativity styles.

Kultima *et al* (2008) had also recently discussed several ‘ideation games’ with the same purpose of using gameplay to foster creativity. It was suggested (Dansey & Stevens, 2008) that the game ideas presented by Kultima *et al* promoted NL creativity over ND creativity, as in their games players were often restricted to submitting ideas which contained particular elements, at particular times, depending on the current game state (which cards they held, whose turn it was, and so on). Furthermore, these ‘restrictions’ were imposed via rules by the games’ designers, who would have inevitable prejudices about which elements a successful game should contain.

Therefore, such games were criticised by the researcher for being too deterministic and restrictive towards thinking, and it was proposed that the relaxed ND style of creativity and peer-review implied by the researcher’s own prototype would allow players to more freely submit ideas, and would increase the likelihood of novel, surprising ideas via emergence albeit at a cost to efficiency and control.

The perceived conflict in design styles identified in the *MindTrek 2008* paper draws parallels with Sweetser and Wiles’ (2005) distinction between scripted and emergent game content, both of which had their advantages and disadvantages. However, the

authors of the NL-style games clarified their position through email communications and conversations at the conference. In particular, a conversation with Janne Paavilainen, one of the authors of the paper, revealed that the researcher's interpretation of the authors' games (as stated in Dansey & Stevens, 2008) was not entirely as was intended. Despite the restrictions laid out by the game rules, players were free to break the rules or halt play if a particularly good idea arose, as this was the aim of the exercise after all.

Nevertheless, the results of testing the prototype game were presented in the paper, and from a qualitative point of view the participants certainly enjoyed "messing around" with the game, trying to submit ideas which were extremely non-viable or inappropriate but contained elements that stated (for example) that the idea should never be used, thus keeping it within the ethical confines laid out by the researcher. Furthermore, an instance of *metagaming* arose: one player submitted an idea that stated that whoever read his idea must immediately buy him a drink from the bar. This could be seen as a form of *appropriated play*, described by Gazzard (2012) as "acted out by aberrant players in an attempt to appropriate the game's world to their own individual means". Gazzard cites two types of appropriated play as *perverse play* and *spoil-sport play*. Perverse play involves disruption of the game state without breaking the rules, whereas spoil-sport play seeks to break the game rules and disregard the influence of the magic circle of play. In the above example of the prototype game, the players were clearly taking part in perverse play, making a conscious effort to remain inside the rules the researcher had written, while trying to bend the outcome of the game to their own extra-lusory benefit. The ideas generated during this time were not particularly serious or viable, but the players certainly demonstrated the uncontrollable and unpredictable nature of emergence.

Convergence of research threads

The *MindTrek 2008* paper also saw the convergence of many of the threads of investigation that had been explored thus far in the project. Figure 2.5 illustrates how the conference papers written on apophenia, creativity and emergence are connected.

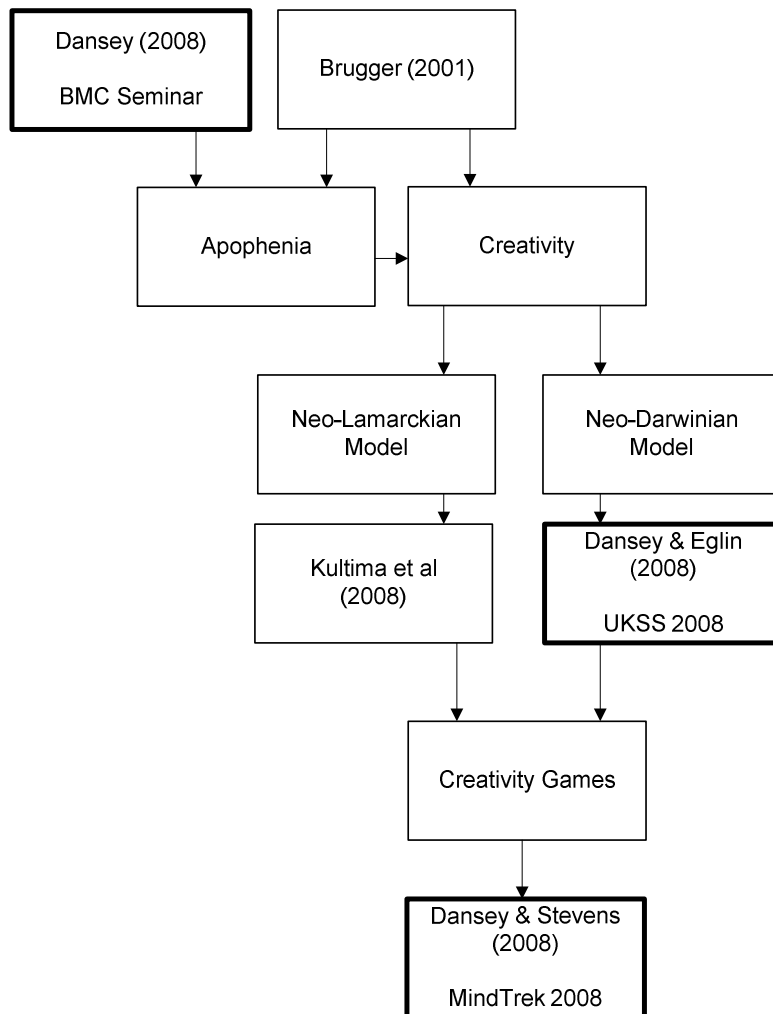


Figure 2.5: Convergence of apophenia, creativity and emergence.

Problems with ‘event games’ for research

In a more recent article Montola (2011) describes pervasive games as belonging to one of three categories: *event games*, *service games* and *product games*. Many pervasive games are classed as event games, as they typically take place at “defined social events where people go to play”, as opposed to being delivered via long-term subscription or alongside a bought game product. For research, event games would seem to be very useful as they are more abundant, and provide a dense, controlled and focused environment, and efficient use can be made of hardware that is expensive or difficult to obtain. However,

problems arose in the researcher's own studies, where many participants felt that the game used for testing were not fun enough for them to consider playing them of their own accord, outside of a research environment (Dansey & Stevens, 2008; Dansey, Stevens & Eglin, 2009). Montola (2011, following Apter) provides an explanation for this, suggesting that as players are briefed about a research or technology-oriented game, a *telic* or 'serious' mindset towards the game might be imposed, whereas if the players approach the game "spontaneously or out of their own initiative", they are more likely to be in the more playful *paratelic* mindset. The researcher was keen to get as natural a result as possible, and studying a successful existing game, rather than creating a potentially flawed purposive game, was believed to be more conducive to natural results and an enjoyable setting for the players, and the results could still be analysed using the contexts of the previous studies if required. Therefore, for the main qualitative study into the experiences of pervasive game players, and guided by the researcher's work to date, a popular and thriving non-'event game' was chosen in order to facilitate the preferred research environment. This game, along with the methodology used for the study, will be introduced in the next chapter.

Chapter 3 – A Grounded Theory of *SF0*

This chapter provides an introduction to the game used to gather data for the main study of this thesis, namely the free-to-play highly-pervasive game of *SF0*. An overview of the rules, gameplay and ethos is provided, before the methodology of Glaserian Grounded Theory is discussed, including an outline of the intended theory generation process. Following on from this, the researcher's most apparent assumptions during this project are highlighted, in order to aid the reader in interpreting the main study using an appropriate context. These assumptions include preconceptions held about the nature of reality and games, and the cognitive biases held as a result of the researcher's personal background.

It should be reiterated here that throughout this thesis, the term 'real-world' is used as a shorthand adjective for phenomena which the player perceives as being outside of the magic circle of play. The term is not intended to interfere with any discussion on methodological worldview and the nature of reality.

The problem space: *SF0*

The pervasive game of *SF0* is both a collaborative and a competitive endeavour, based on the internet (at www.sf0.org). Despite being based online, the game is played mainly in the physical world, and does not require specialist hardware to play. The game originated in San Francisco and much of the early gameplay was based on the local environment, although more recently the game has been played all over the world. To join the game, players must create an account on the website, which involves uploading a profile picture and choosing a screen name, both of which represent the player's character in the game. It is emphasised on the website, for the purposes of role-playing, anonymity and legality, that although the player is the character, the character is not necessarily the player (www.sf0.org/about):

What does it mean to create a new character in SFZero? Your character looks exactly the same as you. Your character will have all the same skills and attributes as you, and even the same memories and feelings. "Isn't my character, just, well, me?" Good question.

Your character has several important things that you do not have. First, your character has a Score. Its Score is a barometer of its progress. You may find that your own willingness to interact with the city in new ways varies linearly with relation to your Score.

[...] Last, and most importantly, your character is able to do things that you may be unable or unwilling to do yourself. Your character doesn't recognize the artificial boundaries that prevent non-players from doing what they want to do. Things like fear, lethargy and the police don't deter your character from achieving his or her goals. Your character never misses a connection - it will get you Score.

Once the player has created a character, they may take part in any number of *tasks* that are available at their character's current level. The nature of each of the tasks is such that the player (under the guise of their character) must go and take part in a particular activity in the physical world, documenting the activity well using the appropriate means, such as photography, sound recording, video, or diary entries. The evidence is then uploaded to the *SFO* website in order to register the completion of the task, at which point the player receives the points allocated to the task by the game organisers. Other players may look at this evidence, discuss it, and award bonus points if they are suitably impressed by the player's efforts. Therefore, it is in the interests of success (but not mandatory) that players try to impress others with their task submissions.

As tasks are completed and points are scored, passing predetermined score totals increases the character's level. As their character's level increases, further tasks become available. Tasks of a higher level are usually more difficult, but are usually worth more points. *SFO* encourages players to work together by also providing collaboration-only tasks, and these tasks tend to be worth more points on completion.

Figure 3.1 shows the *SFO* homepage. From here, players can sign in to complete tasks, view the most recently completed tasks, submit their own ideas for tasks, form teams, visit the homepage of each of the game-world groups, and explore the profiles of other registered players.

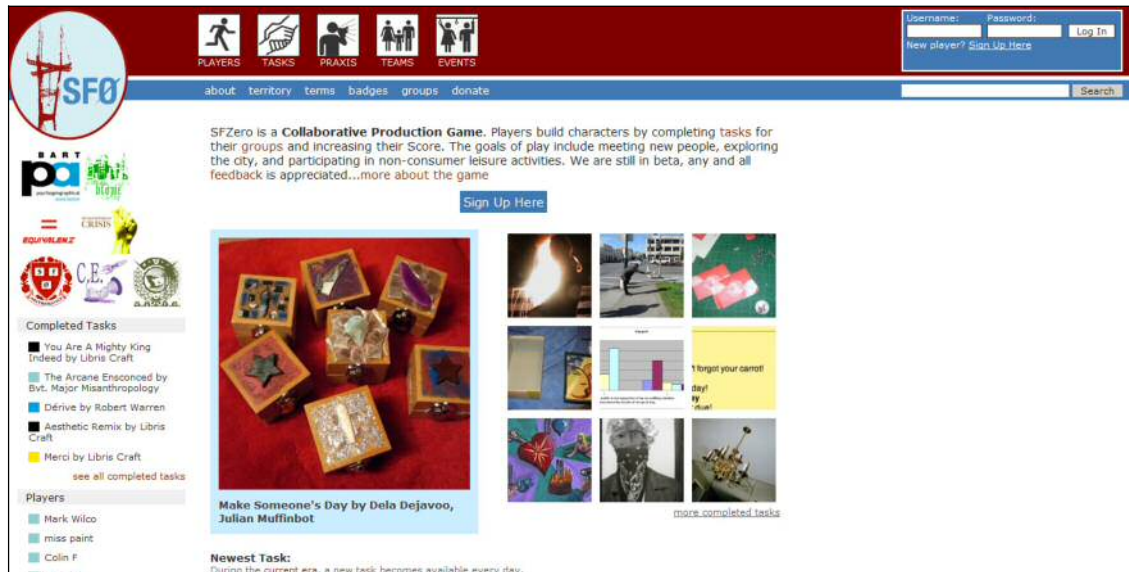


Figure 3.1: The SF0 homepage

Most of the tasks in the game are associated with a game-world group, similar to a faction. The different groups of the game represent different interests and themes. The *Chrononautic Exxon* group, for example, avoids the conventional idea of time, and therefore tasks associated with this group involve interacting with time in unconventional ways. The *Chrononautic Exxon* task “CTRL-Z”, otherwise known as the Windows keyboard shortcut for the command “undo”, has the following instructions:

The law of entropy: a system tends to degenerate over time.

It is easy to shatter glass, but difficult to put it back together.

It is easy to create toast, but almost impossible to turn it back into bread.

It is easy to make mistakes. Destroy relationships. Regret choices.

But we know that time is flexible. Now undo.

Similar to the above example, each task in the game has a set of simple instructions, and often these instructions are deliberately left open to many different interpretations. For example, the task ‘Saint George’ features the instruction “Slay a dragon. Celebrate in verse, song, or painting”. Obviously the players cannot slay a real dragon, so they must find another way to fulfill the requirements. A player might interpret the task

metaphorically by confronting a bully at work, or they might take a more artistic approach by creating a *papier mache* dragon to fight. Either way, they would receive the points for completion, plus extra points if they impress others.

To illustrate the potential possibilities for task completions, a quote from one player's completion of the "CTRL-Z" task is given below. This particular player recently had complications with a vasectomy, resulting in a serious hematoma, and violent vomiting due to the drugs he was prescribed. The task submission was a fairly graphic retelling of this story, ending with the following paragraph:

My wife has had two c-sections. So she'd had nine months, with nausea, followed by surgery, ending with babies.

So I suddenly realized I was going through an unpregnancy:

- 1. Have abdominal surgery**
- 2. Go through violent nausea and exhaustion**
- 3. Nine months go by**
- 4. The end result is I can't make babies anymore**

CTRL-Z

The instructions of the game imply only that players should select a task, document its completion as creatively as possible without harming anyone, and upload the evidence in exchange for points. Apart from occasional restrictions given in particular tasks, there are often no limitations posed on the social, spatial and temporal boundaries of gameplay, as shown in the list of examples in Table 3.1:

<u>Task Name</u>	<u>Instructions</u>
Things you can run through	"Find some."
The speed of time	"Accelerate or decelerate an aging process."
Keep marching on	"Destroy a piece of your past."
Leave clues	"Leave clues."

Table 3.1: Example tasks from SF0 (www.sf0.org/tasks)

Because of the general nature of the tasks in SF0 it is possible for players to experience spatial, temporal *and* social expansion during play, seeking inspiration for their task

completions almost anywhere, at any time and with anyone. McGonigal (2006, p.43) describes an effect of pervasive or ubiquitous games as "...sensitizing participants to affordances, real or imagined. That is to say, they increase perception of opportunities for interaction". Furthermore, "many, if not most, of their distributed elements are not clearly identified as part of the experience. Thus active investigation of, and live interaction with, both in-game and out-of-game elements is a significant component of the experience".

SFO was therefore considered to be a very strong example of a pervasive game in terms of Montola's expansion-based model, and in terms of McGonigal's sensitisation to affordances and requirement for investigation. It was also identified as a natural and potentially rich source of data on the whole range of pervasiveness, particularly given its relative popularity and already well-established web presence (4114 registered players as of 4th July 2011).

Bliin* – a similar activity to *SFO

The mobile travel-sharing website *Bliin* (www.bliin.com) is in some ways similar to *SFO* in terms of spatial expansion. Users go out into the real world with a GPS-enabled device, punctuating their journey with "shares" consisting of images, passages of text, video and so on, that can be viewed and commented on by other users of the service from the comfort of their PC. Thus, the virtual world of *Bliin* is a socio-technical abstract of the geographic real-world, based solely on phenomena that are of interest to its inhabitants. In this sense, users can take a tour of an area of the globe and compare their own experiences with the experiences of others. Furthermore, there is potential for social expansion, as non-participating bystanders could be the reason that a user finds a particular location interesting, for example if a protest took place in a city centre.

De Lange (2009, p.67) makes some interesting points regarding the "geo-tagging" of locations for others to see. Being able to view a location via the experiences of others in advance of physically travelling there can allow people to prepare themselves for "surprising new perspectives of places" and give them a motive to deviate from the usual experiential path trodden by tourists. However, in contrast de Lange also notes that this

has the potential to remove the romantic wonder from discovering new places, as users are made much more aware that “almost every place is [already] suffused with human experiences and stories” having been frequented many times before. While activities such as *Bliin* (and indeed *SFO*) could augment our environment by giving us new insights, they could also limit the motivation to explore.

How *Bliin* is different from *SFO*, however, is in its complete lack of explicit rules. While users are free to invent their own restrictions or rules as to how they will travel, this is not a requirement of *Bliin*, and there are no points to be scored or levels to be beaten. As de Lange (*Ibid.*, p.58) notes, there is no specific purpose beside the one you create for yourself. In contrast, within *SFO* players are explicitly required, even at the very basic level, to interact with the game by completing tasks to score points, even if those tasks are open to further interpretation with regard to how they are completed.

***SFO* as an urban game**

De Souza e Silva and Sutko (2009) agree with Montola’s (2005) definition of pervasiveness, but would also classify *SFO* as an *urban game*, as it primarily uses the urban environment as the game board. Urban games are not necessarily pervasive games, as a game of soccer played in an alleyway would also be classed as an urban game. As discussed earlier, however, *SFO* is a pervasive game in that the spatial, temporal and social aspects of the game are expanded. De Souza e Silva and Sutko describe a sub-type of urban games, *location-based mobile games*, which are distinguished from other urban games by their use of mobile technology with locative features such as GPS or network cell triangulation. Xiong, Ratan and Williams (2009, p.47) state that such mobile gaming can lead to “...trust and collective action among communities. It provides a playful experience that can become the basis for shared interest and ad-hoc group activities”. Although *SFO* would not be classified as such a game it is interesting that such trust and activities have nonetheless arisen. This can be evidenced by the many teams of people that have come together based on shared interest and physical proximity as a result of finding like-minded individuals through *SFO* (www.sf0.org/teams). Norms have also developed regarding language, which is particularly evident in the list of metadata-style

tags that has been developed (www.sf0.org/terms), often with unusual combinations of words (e.g. “awesomefirst”) or invented terms (e.g. “schplank”) that have unique meaning to the community, in order to help them discuss task submissions. The observations of Xiong *et al* might therefore be extended to include other types of urban games rather than just location-based mobile games.

The methodology of Grounded Theory

Throughout the early stages of the project in particular, the researcher was assumed to be taking an experimental scientific approach to the problem space, and until an understanding of knowledge and research methods developed this assumption went unchallenged. However, while the scientific method is very appropriate for making predictions about causal relationships, based on observation of past events, to within a certain degree of probability, it could be argued that deductive, hypothetical approaches are not as appropriate for the relatively unexplored domains of phenomena such as pervasive games, particularly when richer data about complex interactions among a smaller group of participants is preferred. The research interest in the complex, cultural side of games led to a more inductive, holistic methodology which could be used with qualitative, anecdotal data.

Grounded theory (GT) can be described as “discovery of theory from data systematically obtained from social research” (Glaser & Strauss, 1968, p.2). According to Glaser and Strauss, logically deduced theories derived from a priori assumptions are often opportunistically “tacked on” in order to conveniently explain results in a wider sociological context, after the results have been generated (*Ibid.*, p.4). In contrast to this, a grounded theory is derived from the actual data, during the process of generating the data, so it is “grounded” in the data via a much more inductive approach.

Generally speaking, in order to generate a theory via the GT methodology, one must induce conceptual categories or properties of categories from data, and then use incidents within this contributing data to illustrate each category or property and provide a “relevant theoretical abstraction” of the area studied (*Ibid.*, p.23). From this, hypotheses

regarding the relationships in and between categories and their properties can be developed. The lifespan of a category is believed to be much longer than that of the evidence used in its creation. For example, if a category is abstracted from many pieces of evidence, the disproving of one of the pieces of evidence will not have a drastic impact on its parent category. As Glaser and Strauss noted, “the discovered theoretical category lives on until proven theoretically defunct for any class of data, while the life of accurate evidence that indicates the category may be short” (*Ibid.*, p.24).

It would seem of importance that generated theories should be verified in order for them to be used with confidence. With GT, however, the emphasis is on theory generation rather than verification, and although Glaser and Strauss advocate some verification of a theory while it is being generated, verification should not overtake generation as a primary concern. According to Glaser and Strauss, “accurate description and verification are not so crucial when one’s purpose is to generate theory” (*Ibid.*, p.28). The aim of this study was primarily to produce a theory which explains what is happening in the data from the players of *SF0*. The theory should be sufficiently grounded in the data to reliably represent a particular way of explaining the data. The complete verification or triangulation of the theory is beyond the scope of this study: it is believed that a workable theory from a rigorous research procedure constitutes a sufficient contribution to knowledge, as theories cannot be destroyed – only revised. However, the discussion chapter of this thesis will more widely contextualise the results of the theory generation process with regard to pervasive games design, in order to inform possible avenues for future research with a view to verification and triangulation.

Choice of GT ‘style’

It is apparent that numerous styles of Grounded Theory research exist, with those of Glaser, Strauss and Charmaz being the three most commonly-cited. O’Neil Green *et al* (2007, p.473) describe the differences between the three styles, which can be summarised as follows:

Strauss focuses more on a systematic paradigm to use when coding data (see also: Kelle, 2005), in order to help the novice researcher avoid becoming overwhelmed. This paradigm includes the consideration of *conditions, interaction among the actors, strategies and tactics*, and *consequences* within the data, in order to guide the generation of conceptual codes either implicitly or explicitly. However, Bryant and Charmaz (2007, p.9) state that preconceived methodological tools such as coding paradigms should earn their place in a research project through emergence, rather than being assumed appropriate from the start. It is also suggested (*Ibid.*, p.18; Charmaz, 2006, cited in Hildenbrand, 2007, p.557) that coding paradigms undermine the advantages of Grounded Theory as an open-minded method. Glaser agrees with this, adding that using such a coding paradigm could cause researchers to ‘force’ categories onto data where they otherwise might not have emerged, making the resulting Grounded Theory more influenced by preconceived ideas. To this end, Glaser urges the researcher to persevere and trust in emergence to guide the study, advocating the use of *ad hoc* codes created on the basis of a “more or less implicit theoretical background knowledge” (Kelle, 2005), although in stating this, Glaser’s method makes assumptions about the validity of *ad hoc* coding, particularly by a relatively inexperienced GT researcher.

Rather than focusing on “methodological rules, recipes and requirements”, Charmaz (2006, p.9) seeks to embrace the presence of the researcher, its subsequent effects on the data, and the construction of meaning while influencing and being influenced by the people around us. It is emphasised that “...we are part of the world we study and the data we collect... My approach explicitly assumes that any theoretical rendering offers an *interpretive* portrayal of the studied world, not an exact picture of it” (*Ibid.*, p.10).

The problem of choosing a GT style is further compounded by the different levels of literalness that researchers apply when interpreting Grounded Theory recommendations. Bryant and Charmaz (2007) ask, “to what extent are statements about methods prescriptive, advisory or heuristic?”. In addition to this, difficulties are encountered when attempting to interpret the specific steps involved in *generating* a Grounded Theory. Glaser’s texts in particular do not contain much in terms of specific instruction, and

Covan (2007, p.66) notes the confusion that can ensue as a result: “I wanted a script, a sequential list of what to do first, second, third, etc... but for us [Glaser’s] text provided a philosophy rather than a detailed description of how to *do* Grounded Theory”. Covan also notes that comparing texts from Grounded Theory practitioners illustrated that there were many differences in the personal interpretation of the method provided by each. Dey (cited in Stern, 2007, p.119) agrees, noting the irony of an interpretive method being so difficult to interpret.

Bryant and Charmaz (2007, p.10) suggest that it is difficult to determine whether the three main styles of GT are different enough to become separate methods, or whether they are a “family of methods” (*Ibid.*, p.11) based on shared characteristics. All three would rely on the interpretations of the researcher when coding the data, but it was of extreme importance to the researcher that the results of the study reflected the experiences of the players as honestly as possible, and Glaser’s version of the methodology seemed to allow more freedom for concepts to emerge naturally if and when it was appropriate, albeit at the risk of data overwhelm resulting from poorly-defined codes.

It was therefore decided that the Glaserian Grounded Theory methodology would be used to inform the thesis, although it would not be a significant concern if it strayed into the territories of Strauss or Charmaz in places. The project would focus more on a rigorous research procedure that is clearly informed by the reading, without becoming too preoccupied with whether or not the approach was exactly as intended.

Glaserian Grounded Theory

In order to best describe the methodology that informed the research procedure, Glaser’s own writings and the researcher’s field notes from a Glaserian Grounded Theory seminar (personal communication, J. Holton, H. Scott, & A. McCallin, co-organised by Glaser, February 22, 2010) will mainly be used. Attending such training seminars is a key part of learning the Grounded Theory methodology (Glaser, 1978, p.33), so it would be

appropriate to reference them as 'literature' during this section, albeit not with the same significance as Glaser's writings.

Glaserian Grounded Theory is a general methodology which can be used on qualitative *or* quantitative data (Glaser, 1998, p.11), despite Glaser implying at times that it is a strategy for *qualitative* research (Glaser, 1978, p.2). The generated theory is grounded in systematically-collected data (Glaser, 1998, p.44), and is conceptual, not verifying or descriptive (Glaser, 1978, p.93). Furthermore, it is an analysis of important ongoing social *processes*, rather than *units*, from the point of view of members of a particular group (*Ibid.*, chapter 6). Literal 'incidents' are identified in the data, which indicate higher-level conceptual 'codes'. These codes in turn are grouped into conceptual 'categories', relationships between and inside which are described in terms of a 'core category' to produce the Grounded Theory.

According to the Glaserian Grounded Theory seminar (February 22, 2010), the full Glaserian methodological process must contain specific key elements. Firstly, the researcher should maintain *theoretical sensitivity*, which is the ability to conceptualise from data and trust in the eventual emergence of such concepts, even at times of confusion and regression. Confusion tolerance is the hallmark of the GT researcher, as is a trust in 'preconscious processing': Glaser notes the potential for theoretical progress being made even when the researcher is not actively thinking about the project (*Ibid.*).

The second facet of Glaserian Grounded Theory is *conceptualisation*, as opposed to description. Conceptualisation is a process that involves constantly comparing incidents to incidents to spot differences and similarities on which concepts can be based. As concepts emerge, these are compared with incidents in the data, and also with other concepts (Glaser, 1978, p.62), in order to maximise the identification of underlying patterns. The more these comparisons are made, the more 'conceptual' the concepts become. During this time the researcher undertakes 'theoretical sampling' (*Ibid.*, p.36), by changing focus to certain groups of participants based on their perceived relevance to the emerging concepts and theory. This means that the methodology is deliberately biased

towards the interpretations of the researcher, but acknowledges such bias in a similar way to Action Research – the researcher’s impact in the study is unavoidable, so the researcher is included in the substantive area to be studied. “Getting conceptual” can be a problematic process for novice GT researchers (Scott, 2009), and this project was no exception, as will be discussed later in the thesis.

The constant comparison process is carried out until comparisons in the data yield no more new discoveries, at which point ‘theoretical saturation’ (Glaser & Strauss, 1967, p.61) is reached. It could be argued that the presence of further data would yield more discoveries, and therefore a stronger conceptual foundation. However, the intention is to develop as good a theory as possible given the time and financial constraints, not to develop a “perfect description” of an entire area (*Ibid.*, p.30). One criticism of this part of the process is that the researcher could be unknowingly reinforcing a flawed theory, but Glaser reassures the reader to trust in emergence.

Throughout most of the Grounded Theory process the researcher should also be writing theoretical memos. This involves recording thoughts about the emerging concepts, categories and theory *as they occur*, as fully as possible, with no deliberate regard for aesthetics (Glaser, 1978, p.85). Memoing helps with forming of ideas, and while memos start off short, descriptive and obvious, with experience they become more conceptual and insightful. Towards the end of the project, memos are sorted in order to aid the theoretical development.

The third element of Glaserian Grounded Theory regards the *substantive coding* of the data. The view is taken that ‘all is data’ (Glaser, 1998, p.8), and as open a mind as possible is maintained towards all potential data and its sources. It is recommended that a literature review is avoided prior to the study in order to minimise preconceptions on the part of the researcher (*Ibid.*, p.67; Glaser, 1978, p.31). Instead, the literature is consulted after the theory is generated in order to aid discussion with regard to wider contextualisation of conclusions. It could be argued that preconceived ideas are unavoidable, as people cannot help being influenced by their past experiences, and

potential preconceptions have already been discussed in this chapter. Indeed, these preconceptions could extend to the understanding of Glaser's methodology, and as such the research approach may unavoidably differ from that intended by Glaser. In order to help identify preconceptions the researcher has the option of conducting a self-interview about the research topic. Furthermore, because 'all is data', and also because the researcher had previously been a player of *SFO*, the results of a self-interview were also used as data for the study (participant SF013 in Appendix A).

During coding, patterns in the data are coded conceptually, but only if there is more than one indicator of a code in the data. It is also important that the theory represents the interpretations of the researcher, so it is vital that the coding process is *carried out* by the researcher. If possible, field notes rather than transcripts are conceptually coded, to prevent data overwhelm, although it is possible to use transcripts if necessary (if data was gathered via another project, for example). The researcher should pay attention to when the participants are energetic in their answers, as this is more likely to be an indicator of important issues, the analysis of which is the purpose of the research. In this way, the interviews are participant-led, in order to further limit unwanted preconceptions. Researchers are advised to 'instil the spill' by listening to the participant and pursuing avenues of questioning which appear likely to foster energetic discussion.

The fourth hallmark of the methodology is the *emergence of a core category*. The core category represents the main concern that is being resolved by the participants in their situation, such that it accounts for much of their patterns of behaviour (*Ibid.*, p.93). It is central to the theory, recurring frequently in the data and related to as many other categories in the theory as possible, both meaningfully and easily. As the core category emerges it enables the researcher to delimit the data by identifying incidents and codes which are no longer needed in terms of the current study via selective coding (*Ibid.*, p.61). Because the methodology relies on emergence through constant comparison, accidentally delimiting data which could be of use to the study is not critical, because if the correct research process is followed the indicated concepts will emerge again elsewhere if they were important.

The final main facet of the methodology is the process of *theoretical coding*. This involves assembling the theory with regard to the core category, and illustrating the theory by re-coding all of the data from the point of view of the theory. This stage is done after the concepts are saturated, using the written memos as guidance.

To summarise using Figure 3.2 (extremely simplified and not necessarily indicative of the theory generated in the research), the first stage shows how incidents are identified in the data and grouped into codes according to conceptual themes. The second stage shows how through further comparison between the codes, and between codes and data, codes can be grouped into conceptual categories via the memoing process, with *intra*-category relationships (codes inside a category which affect each other) described as appropriate. The third stage shows the *inter*-category relationships (how different categories affect each other), constructed via further comparison and memoing, in terms of the overall theory, and from the point of view of a core category as it emerges.

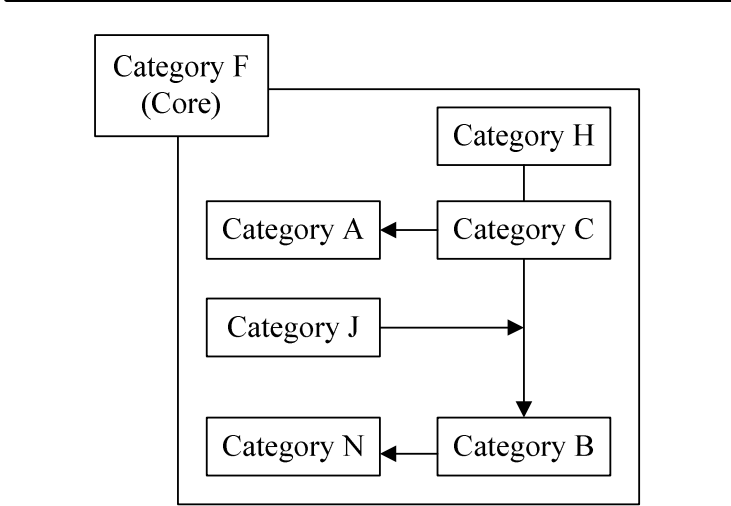
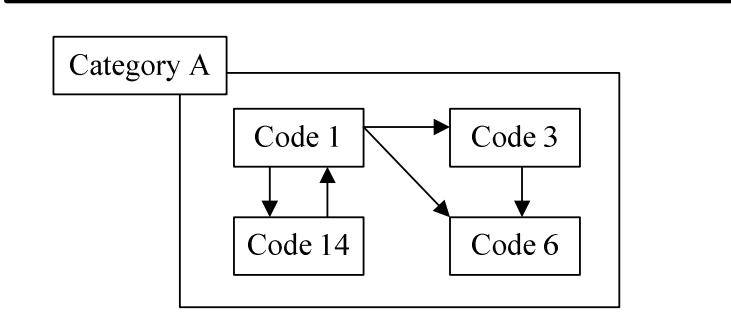
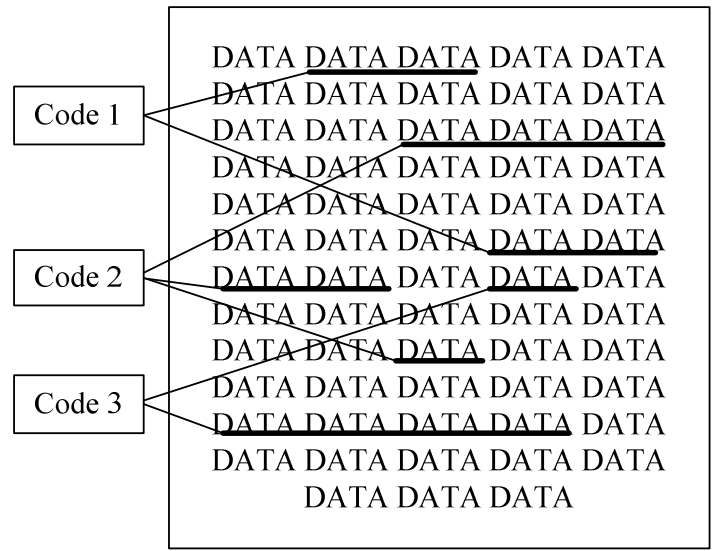


Figure 3.2: Summary of Glaserian Grounded Theory process as 3 separate stages.

Bacon's 'Idols'

While a significant part of the Glaserian focus is on the avoidance of preconceptions, it would seem naive to state that these can be completely removed, and therefore the remainder of this chapter will discuss preconceptions identified by the researcher both before and during the project.

Bacon (cited in Carlin, 2009) listed four types of unavoidable inductive preconceptions, called idols, described as follows.

Idols of the Tribe describes the human tendency to perceive more order or regularity in a situation than there is. As discussed in the background to this thesis, phenomena such as *apophenia* and *confirmation bias* led the researcher to an interest in the interpretive aspects of pervasive games. However, it follows that the researcher is not exempt from the risk of such errors, and therefore, there is a risk that patterns agreeing with the researcher's own opinion might be favoured over patterns that indicate otherwise.

Idols of the Cave describes a similar tendency, but one that differs from person to person based on their individual experiences thus far in life. The researcher is a keen player of games, including *SFO*, and therefore such games are likely to be seen in a favourable light. In addition to this, the researcher's limited experience with Grounded Theory (GT) will inform the overall conclusions on the suitability of such a methodology for future study. If the experience is not positive, this should not be taken as a reliable indicator that GT is unsuitable for future projects of this kind.

Idols of the Marketplace include problems stemming from the ambiguous nature of a "common" vocabulary that does not describe phenomena in sufficient detail, or semiotics, where different meanings for a signifier can be applied. The data from participants will no doubt contain such language, and therefore there is a risk of meaning or accuracy being lost.

Idols of the Theatre are the learned theories in philosophy that are assumed to be true despite the risk that they are somehow flawed. Elsewhere, such idols arise when results are overly-extrapolated from a contrived environment. In previous work the researcher has been careful not to over-extrapolate from data (see Dansey, Stevens & Eglin, 2009), and this is something that will be continued in this thesis. With regard to the “learned theories”, it is likely that Grounded Theory is a flawed methodology, particularly as it relies so much on the subjectivity of the researcher as will be discussed later. However, with the relatively new problem space of pervasive games, a flexible qualitative method is required to allow the freedom to adapt as necessary in order to generate data. Moreover, even with the most rigid and objective of methodologies it is very unlikely that a researcher would follow the ‘recipe’ exactly as planned by its author. Furthermore, the interpretation of a research methodology might be based on interpretations put forward by other researchers in the past.

Preconceptions about reality

The researcher’s worldview is closely aligned with the fallibilist worldview (Shaffer, 1971). Fallibilism suggests that one can never be certain that everything experienced is not part of some kind of ‘dream’, from which one could suddenly wake at any time. Even if one does experience this awakening, one can never be “theoretically certain” that the awakening was not *also* part of the dream. Because of this worldview, from a philosophical point of view the researcher values subjective knowledge over objective knowledge, hence the focus on the aesthetic and experiential aspects of games described during earlier chapters of this thesis.

Given the fallibilist worldview, the implication that attempts at objectivity are not useful or important is not intended. Indeed, from a pragmatic day-to-day point of view scientific thinking helps many people (including the researcher) avoid dangerous situations and make informed decisions. Nevertheless, in a philosophical project such as this thesis it is important for the researcher to outline and take into account their worldview.

Preconceptions about games held during the study

A key assumption held is that all games have explicitly-stated rules. These rules are usually defined in a pragmatic context, as illustrated in the discussion of *operational rules* by Salen and Zimmerman (2004, p.130). Such practically-defined rules facilitate the relatively quick learning and maintenance of a game, and assume the players understand certain basic or common actions. For example, most people know (or could quickly learn) how to ‘roll the dice’, so there is usually no need to define the rule any more specifically than this each time a game is designed.

Following on from the previous assumption, a second assumption is that for a game, additional rules exist which are not stated explicitly by the rulebook (such rules might explain the process of ‘rolling the dice’ as discussed in the previous example). These rules are known implicitly by the players (*Ibid.*), and do not normally need to be discussed. However, if there is ambiguity in the explicit rules which threatens to halt play, the players are forced to consider the relevant implicit rules in order to resolve the situation. Implicit rules are potentially infinite, because it seems possible to think of an infinite number of things that players should not do during a game of soccer, for example.

A third assumption made about games is that the set of *potential* rules is infinite. Because numbers are infinite, it would follow that rules of a game would also be infinite. A game of soccer could last 90 minutes, or 1000 minutes, or 346789467 minutes, and so on. It could be argued that this is merely altering a parameter of a rule, namely ‘a game of soccer lasts for a predetermined amount of time’. However, it is the researcher’s assumption that in this case there would need to be another rule for clarification for play to be fully possible, such as ‘the predetermined time in this case is 90 minutes’, even if it is an implicit rule.

Because of the existence of a potentially infinite amount of implicit rules for each game and an infinite possibly space for rule definition, a further assumption follows that no two games can certainly be the same. Two players might agree that they are playing soccer, and could agree on the explicit rules of soccer, but on some undiscussed level their

implicit rules could differ and a contradiction which might never be encountered would mean that they are playing two different games. It would therefore follow that the common name for a game (*Monopoly*, soccer, *Grand Theft Auto* etc.) is also practically-defined, to allow players to share and enjoy the common ground during play.

Given the assumptions discussed thus far, this research takes the approach that games are dynamic, social constructs, much in the same way as languages. While there might be an agreed 'official' way of speaking English, many variations and dialects exist such that it could be argued that it is impossible to create a definitive guide. From the discussion above, it appears that there would be an infinite number of potentially subtle variations to any particular game. If this is true, it would be extremely difficult – if not impossible – for two players to know from a formal perspective whether they are indeed playing the same game. No matter how long the list of agreed rules becomes, one could always think of another rule to be discussed. Therefore, the players explicitly agree on the boundaries which are deemed to be most pertinent, while the rest of the rules are assumed to be implicit in the hope that significant ambiguity is not encountered during play.

This research will not attempt to make universal conclusions about what all pervasive games are. Rather, examples will be given of pervasive games fulfilling certain roles in player experience, such that it can be said with confidence that for some players certain experiences have happened at least once, and therefore pervasive games are capable of providing a particular kind of experience.

Preconceptions addressed for the main study

Although many of the researcher's unavoidable preconceptions, and the potential problems that could arise because of them, are discussed later in the thesis, some preconceptions were identified before the study was conducted. However, while preconceptions such as those described here can be identified and addressed, as with all preconceptions it is likely they cannot be completely removed.

Firstly, following the writing of previous conference papers (such as Dansey, Stevens & Eglin, 2009) it was assumed that apophenia and contextual ambiguity were the core elements of pervasive games design to be studied. However, the Grounded Theory methodology advocates an open approach to making sense of a complex problem space, letting the data speak for itself, rather than concentrating on a predefined particular aspect of a problem space when examining the data. This had the potential to cause problems, not only with confirmation bias, but also with confidence because the researcher was being encouraged to lose focus on an interesting research topic, contrary to the normal process of “narrowing down” required for PhD study. Nevertheless, the methodology was followed and the researcher made efforts to remain aware of potential biases caused by previous work. If contextual ambiguity were indeed important to pervasive games participants it would become obvious over time via recurring concepts in the data. The previous focus on contextual ambiguity was nonetheless useful as a starting point for the interview questions and ethical approval documentation, particularly as it was discussed in previous academic work. During data analysis, the researcher made efforts to ensure that contextual ambiguity was valued no more highly than any other concept, although this cannot guarantee that the preconception was completely avoided.

The second prior assumption avoided for the main study was that the rules of *SFO* were assumed to be contextually-ambiguous. It is impossible to guarantee that a given person would perceive a particular stimulus as ambiguous. This is because an interpretation requires more than one implied meaning to be ambiguous, but the nature of interpretations (and therefore the number of implied meanings) varies from person to person. This might require placing rules on some objective scale of ambiguity so they could be classified, for example, which was beyond the scope of this research.

Chapter 4 – Research Procedure and Theory Generation

Ethical considerations

The main study was approved by the University of Portsmouth Faculty of CCI Ethics Committee before any interviews were conducted. Documentation of this process, including correspondence with the Faculty Ethics Committee and players of *SFO* can be found in Appendix D.

The interviews conducted for the main study involved a combination of face-to-face and email communications with players of *SFO*. Therefore, participants have been given participant numbers in the format *SFOxy*, where *xy* is an incremental number given to reflect the order of recruitment. The duration of face-to-face interviews ranged from 5 to approximately 20 minutes per participant, depending on how talkative they were during their interview.

For the face-to-face interviews in particular it was expected that some of the participants would be under 18 years of age. It was important not to exclude these players from the study, as the researcher wanted to gather data in as natural a situation as possible. Thus, arrangements were made for another adult to be present whose regular employment as a teacher involved being approved by the Criminal Records Bureau to work with minors.

With regard to the email interviews, a clause was included in the participant information sheets that participants must be at least 18 years of age, because the requirement for a responsible adult to be present could not be upheld with such a method of communication. In order to avoid generating unnecessary data the prospective participants were contacted in groups of approximately 30 people, with sufficient time left in between batches to wait for replies. This also prevented data overwhelm and would have allowed the researcher to adjust the nature of the correspondence if there were any problems.

Overview

This research was not as concerned with generating a repeatable, broadly-applicable theory regarding the nature of pervasive games, or indeed *SFO*, in general. No attempts were made to secure a representative sample of players, or a statistically-significant amount of data. The grounded theory explains the experiences of a particular subset of players, at a particular point in time, in order to induce conclusions about the gathered data for future research. Intermediate versions of the generated theory are included in this chapter as the processes of theory generation and discussion are somewhat interwoven in the Grounded Theory methodology.

In total, data was gathered from 10 face-to-face interviews, and from the 132 recently-active players contacted via the *SFO* website, 14 responded with data. The process of generating the Grounded Theory in this instance consisted of four main phases, each culminating in a revised version of the theory. Versions were often revised as new data arrived, and records of previous versions were kept for the purposes of discussion and reversion in the case of a dead-end being reached. In each of the interviews, regardless of communication method, players were asked some or all of the following open questions:

- What are the tasks like in *SFO*?
- What is it like to do the tasks?
- How do you feel about the tasks?

It was of great importance that the questions did not prompt the participants for particular answers. Further sub-questions were asked to help clarify uncertainties, but care was taken to try to keep these further sub-questions neutral, by asking things such as “Can you tell me more about that?”.

During the evolution of the theory, various subsets of the data were tested for fit in order to ensure that the theory was robust. The process is summarised in the Figure 4.1, but will be discussed in depth during subsequent sections.

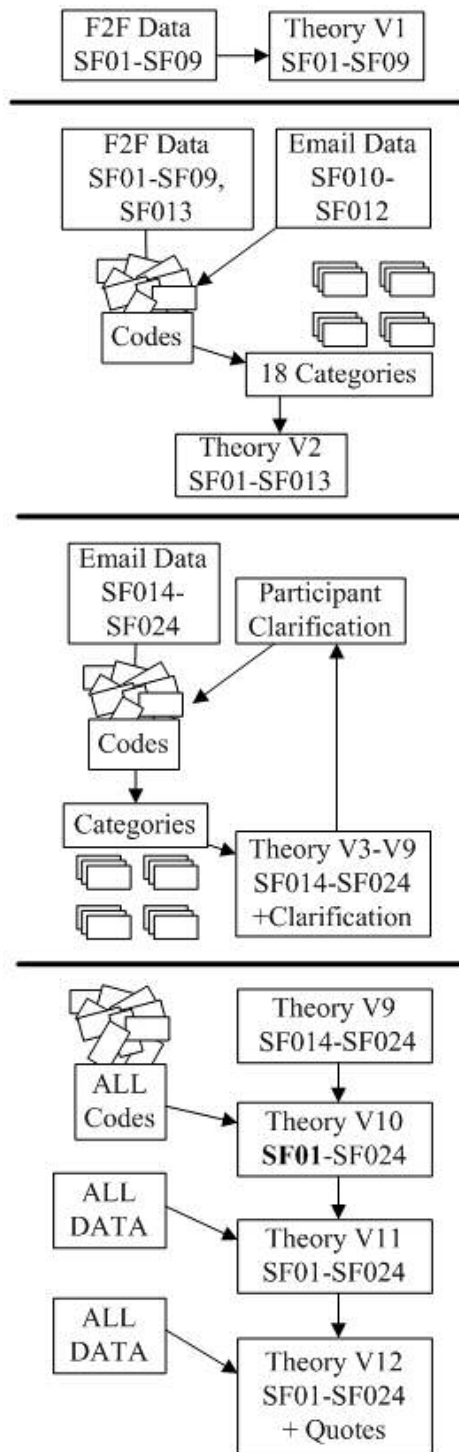


Figure 4.1: The four main stages of theory generation

Participants SF01-SF09: Face-to-face interviews

A UK-based *SFO* team were holding their annual meeting, at which they would be participating in group tasks. Interviews were conducted with 9 players during this weekend, and written notes were taken for each, and typed up immediately.

This data was studied, and an informal diagram was produced to summarise what was perceived to be occurring in the game (Appendix B, Figure B.1).

The main focus of this diagram is the journey the player makes from being a new player to becoming experienced with the game. As the player becomes more experienced, a community expectation develops so their task submissions need to become more creative or metaphorical, and it becomes easier to upset the community by providing too underwhelming a task submission. Making the effort to read about and understand the game and its community can help the player stay on the 'correct' side of this boundary of tolerance. In addition to a creative expectation, as the player gains experience, an expectation of effort also develops, meaning that a creative task submission with minimal effort will not impress the community either. Nevertheless, players receive various kinds of rewards from playing the game, from enjoyment to a portfolio and a sense of pride. Elsewhere, there is tension between players and non-players. The non-players perceive 'weird behaviour' when they see play happening, whereas the players feel anxiety or apprehension at being observed by non-players.

Unfortunately the diagram was deemed to have been affected too much by researcher preconceptions about the game based on experiences as a player. This became apparent upon consultation with a Grounded Theory specialist (Dr Helen Scott of *Grounded Theory Online*) who describes having experienced difficulties with this in her own thesis (Scott, 2009, p.91). While some aspects of the diagram could be linked to particular incidents in the data, others had not been mentioned directly by the participants. In accordance with the Grounded Theory methodology the explicit data alone should be paramount (Glaser, 1998, p.81), so although the diagram was useful in recording *thoughts*

about the data (a visual version of the GT memo), in terms of a finished theory this was not sufficient, meaning that the data would need to be re-coded and further data gathered.

Participants SF01-SF013: email interviews and open coding of data

In order to be able to interview more players and gather more data, the *SFO* website was searched for recently active players. Potential participants were contacted individually in blocks of approximately 30 per session, using the *SFO* messaging interface. Responses came slowly so the data from the first three replies was coded (participants SF010-SF012), along with the re-coding of the original 9 interviews. On advice from the Grounded Theory specialist (Glaser, 1998, p.120, cited in Scott, 2009, p.91) the researcher conducted a self-interview (SF013), following Glaser's (1998, p.8) theory that "all is data", and an understanding that in Grounded Theory one must embrace their presence and inevitable effect in the research pool in order to be able to evaluate the quality of their results appropriately.

All existing data was studied at a much lower conceptual level than before. Rather than coding for entire sentences, sentences were often sub-divided for coding, where they contained more than one potential incident. For example, one participant stated that:

"Whenever we decide to do a task, we don't always decide before."

Previously, this might have been viewed as indicative of a code such as *disorganisation*, which could have been affected by experience of playing *SFO* and the organisational mayhem it can cause. However, for this second attempt at coding, the data was examined much more closely:

"Whenever we decide to do a task, we don't always decide before."

Here, the data indicated four separate codes. First, "we decide" indicated a *voluntary activity*. The verb "to do" indicated *engagement*; "don't always" indicated *inconsistency*; "decide before" indicated *planning*.

This process was carried out on every sentence of data for all 13 of the participants.

Cue cards representing codes

The next stage involved taking all of the codes indicated by the data and transferring them to cue cards. For each *unique* code a cue card was written, which listed each incident in the data that indicated the respective code, the exact wording used, and the participant reference number to maintain a paper trail. For example, the cue card for the code *weird behaviour* is shown in Figure 4.2.

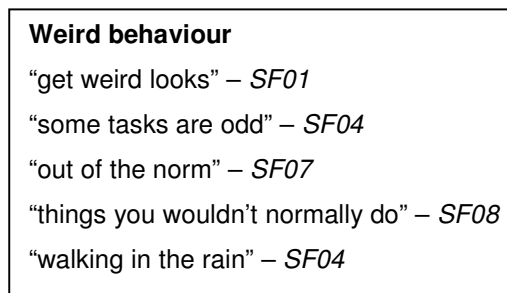


Figure 4.2: Cue card for *weird behaviour* concept

It should be noted that these short quotes on the cue cards were mainly for the purposes of keeping a paper trail. Alone they might not appear to indicate *weird behaviour*, but in the higher-level context of the interview it was clear that the concept of *weird behaviour* was implied.

Creating categories

The cue cards were then arranged into groups based on how they appeared to be related, with each group representing a category (or property of a category) in the evolving theory. This was done deliberately in an *ad hoc* fashion, based on the “more or less implicit theoretical background knowledge” described by Kelle (2005) as part of the Glaserian GT process. For example, the cue cards for *facilitates*, *provision*, *opportunity* and *excuse* were grouped together into a category called *facilitation*, based on the observation from the data that *SFO* seemed to be providing players with a situational or cognitive opportunity to do something; in other words it was *facilitating* something.

Through a comparative process, cue cards were merged if they were pragmatically the same, for example if the researcher had accidentally used different names for codes

which indicated the same concept. Codes were also renamed if they were badly-defined or could be more clearly expressed. This gave rise, within each category, to two separate lists of codes: the first was a list of the original cue cards as they were, and the second was a list of the same codes after they had been merged or renamed. For clarity within memos the second list was called the *derived properties* of the category. In some of the categories, the list of cue cards and the list of derived properties were the same. Again, this step was not suggested by Glaser, but was implemented by the researcher in order to keep a paper trail.

Participants SF01-SF013: Memos

A Grounded Theory memo was written for each category (i.e. each group of cue cards), listing the date, the name of the category, the list of the original cue cards used, the derived properties from these cue cards, the potential relationships between properties within the category, the potential relationships between the category and other categories, and any other thoughts which occurred at the time.

To illustrate, the memo for the category of *work vs. play* is shown in Figure 4.3. The memo has been edited and extended for clear presentation here, as the original version was written very quickly and erratically in order to ‘capture the moment’ (Glaser, 1998, p.178).

In total, there were 18 categories, and all of the memos can be found in their raw format in Appendix E. These memos led up to the evolution of version 2 of the theory. However, because of the complex network of interactions happening amongst the categories, the diagram was very complicated, as can be observed in Figure 4.4.

23rd September 2009

Name of category: *work vs play*

Notes: This category illustrates a perception of tasks in the game with regard to a spectrum between work and play. Some tasks seem to be more of an effort than others to complete, so a player would perceive them more towards the 'work' end of the spectrum. There are factors which can modify the player's perception of the task, such as the player's level of motivation. Similarly, the perception of the amount of work versus play in a task can affect other aspects of the experience, such as enjoyment.

Codes [cue cards] used: *work vs play, effort, chore, play*

Properties derived from the codes: *work vs play, play, required effort*

Internal relationships [relationships among properties]:

- *work vs play* is a spectrum between *play* and *required effort*

Potential relationships of this category to other categories:

- Nature of task requirements (from *player community*) affect the position on the spectrum
- Level of *personal evolution* affects the position on the spectrum
- Position on spectrum affects nature of *enjoyment*
- The relative amounts of *work vs. play* in the game affect the nature of *fruits of labour*
- Position on spectrum is affected by amount of *motivation*
- Position on spectrum is affected by amount of *organisation*

Figure 4.3: Category of *work vs. play*

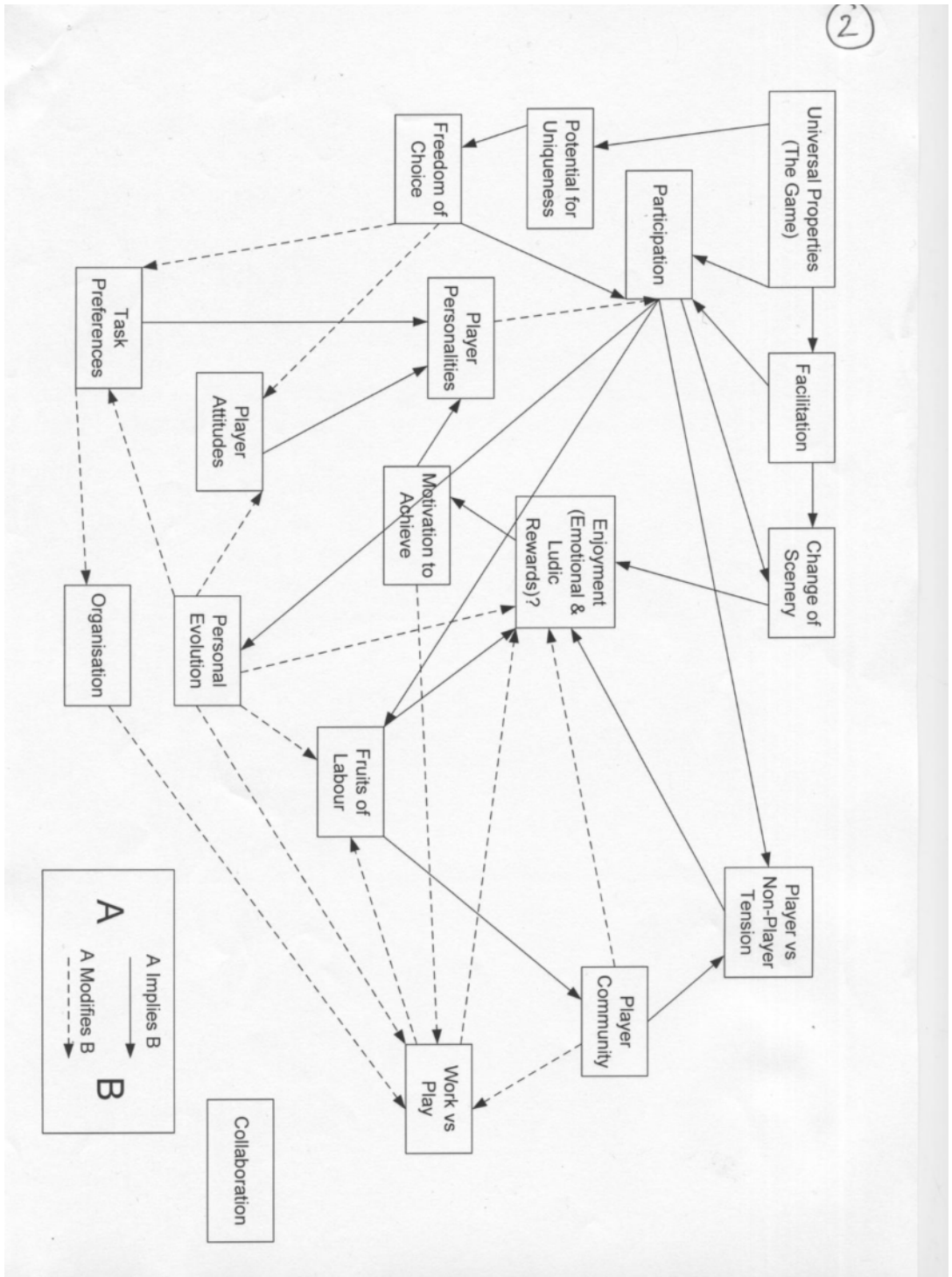


Figure 4.4: Theory version 2 (SF01-SF013)

During a further personal communication with the Grounded Theory specialist (Dr Helen Scott of *Grounded Theory Online*) it transpired that the approach to conceptualising the data had been too descriptive. Many of the categories (for example, *fruits of labour*, *player personalities*, *motivation*) were describing ‘static’ things rather than representing ongoing social processes. The researcher’s initial efforts seemed to be overly-concerned with describing the systemic structure of the theory rather than its social relevance, and were similar to Scott’s (2009, p.98) experiences with the same problem. As the Grounded Theory methodology is concerned with discovering how actions are resolved in a given substantive area (Glaser, 1998, p.115), the approach would need to be refined in order to reflect this.

Participants SF014-SF024: A more conceptual approach to coding

From this point onwards the process was much quicker, as a less reductionist approach was taken. Written memos were replaced by a frequently-evolving diagram, to better illustrate the refinement of the theory, and also because symbolic arrows and boxes were much more effective at communicating a dynamic point of view, and therefore what was *happening* in the system, rather than merely what was *present*. At this point responses had been received from a further 11 participants (SF014–SF024). This data was coded using the new dynamic perspective, with the same cue-card method as before, but excluding data from the original 13 participants. The reason for this was because some potentially leading language had been identified in the introductory materials given to the face-to-face participants (the difference between the face-to-face briefing sheet and the email briefing sheet can be seen in Appendix D), and because the data from participants SF010-SF013 had already been coded using the previous method. Therefore, by excluding the data from the first 13 participants, the newly-generated concepts would not be affected by this possible effect.

During coding, it became apparent that many of these 11 participants shared similar views to each other on a particular aspect of *SF0*. They reported that the game encouraged, caused, or gave them an opportunity to take part in a particular activity. The activities that were being encouraged varied greatly, from getting out of the house, to

being creative, to making people think differently. However, the implication was that the players were somehow unable to take part without the help of *SFO*.

Below are some of quotes from the participants that illustrate the previous point:

- I love the tasks on SF0.org because they require me to be creative. It gives me a reason to be creative & explore arts & crafts from a new perspective... A new reason to spent countless hours being silly with my son... (SF014)
- [*SFO* encourages me to] overcome the natural social disinclination to separate ourselves. Normally, I do not strike up conversations with random strangers... (SF015)
- *SFO* gives you an opportunity to be a person you normally aren't are. Heck, it's practically a requirement! I'm normally a laid back individual, and *SFO* has really helped me to open up. (SF016)
- the most significant aspect of *SFO* is the way it encourages players to do things they would not normally do, experience things they would not otherwise experience, learn strange skills and surmount social anxieties (SF018)
- I had had the idea for this art piece in my head for a while, but would probably never gotten round to executing it, if not for the motivation garnered from playing *SFO*. (SF019)
- It lends a sense of purpose. It gives you an excuse to do things you wouldn't normally do but want to. (SF021)

This pattern had been previously noted in research memos:

30th July 2009

Why do the players need external facilitation to get up and do something different? They could do the sort of things they do without *SFO*...

Is it inspiration that is provided? Or a scapegoat? Or a tangible focal point for effort?

9th September 2009

It seems as if players need an excuse to go out and do something different or crazy. Why is this? [...] Also, I think this is linked to *change of scenery* [concept] - they need an excuse to make a change of scenery. Is it boredom?

10th September 2009

There are a lot of people talking about the game as "something to do", which suggests that they might be bored, or fed up, or lonely. [...] Players keep saying that the game "gives them an excuse" to go out and do something different. [...] Lack of confidence? No opportunity? No inspiration?

Although this might not necessarily be a feature unique to *SFO*, this provided the researcher with evidence of an emerging core category. From the coding of the data from these 11 participants it was possible to create a new version of the theory based on the emerging core category of *SFO* as a facilitator. During this time, theoretical sampling appeals were made to 6 of the existing participants for more information regarding this facilitation (SF07f, SF010f, SF012f, SF014f, SF016f, SF021f), based on things that they had originally said which might have been able to contribute to further developments. Quotes were used from the original responses in order to aid the participants' memories. These contributed to the evolution of the diagram throughout versions 3-9. As the theory evolved, concepts were added, removed, made provisional and confirmed as the understanding of the data grew, and as replies were received from all 6 of the participants who were re-questioned.

At this point it had become apparent that the theory was starting to focus on what *SFO* provides the players which they did not seem to be able to obtain elsewhere. This seemed to be very appropriate for Glaser's (1998, p.115) discussion on GT describing the actions of participants in a substantive area, such that the generated theory is based more on what the players are *doing* with the game, rather than general properties of the game as observed by a player.

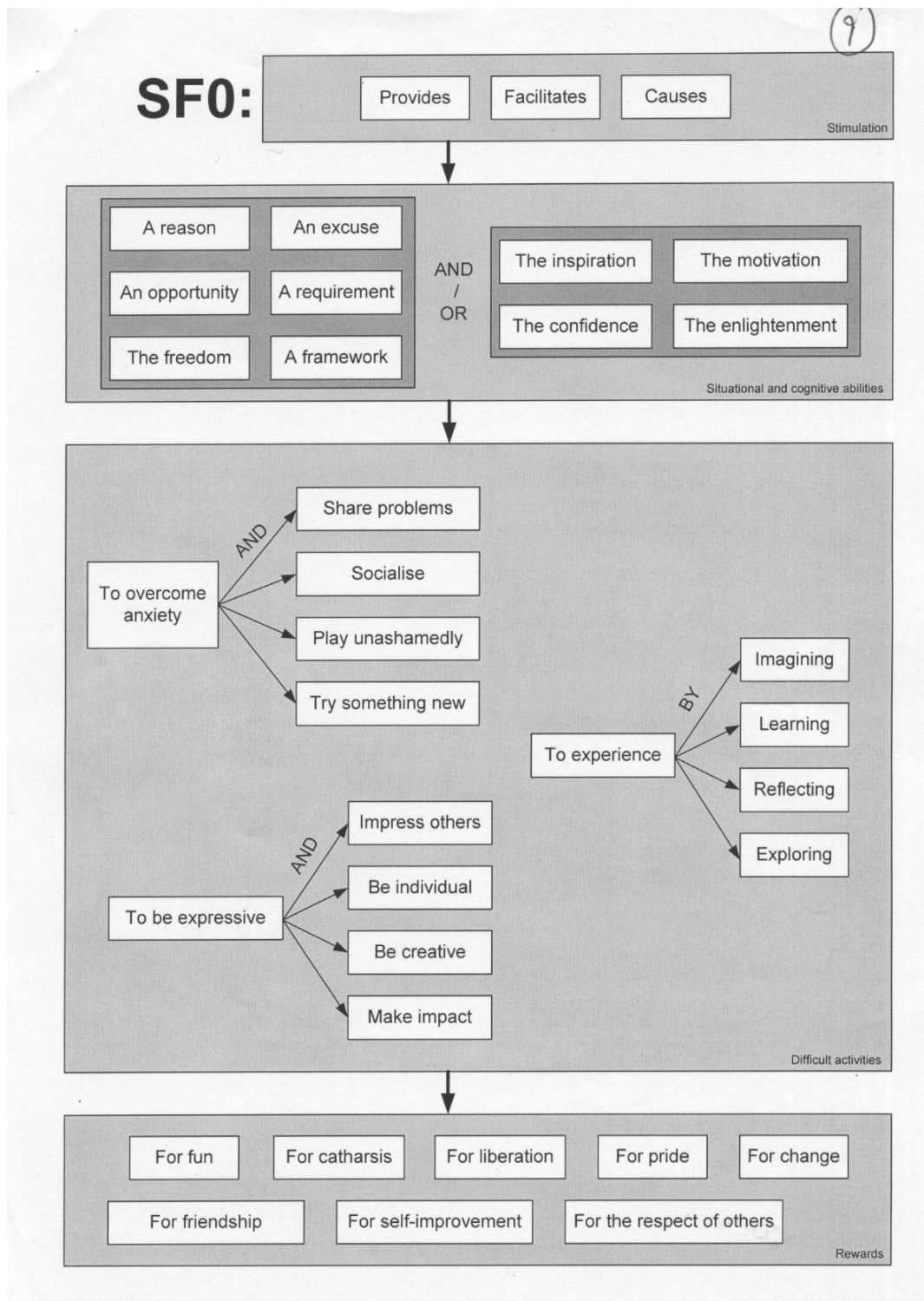


Figure 4.5: Theory version 9 (SF014-SF024)

Re-conceptualising of entire data set

The cue cards from all 24 participants were gathered up and re-examined in order to verify the current version (version 9) of the theory. They were grouped according to sections in the diagram in order to identify conflicts, redundancies, ambiguities and areas for potential further development. Changes were made as follows.

Originally, the first section of the theoretical diagram dealt with the ways in which *SFO* stimulates an activity, through *provision* (giving the players something), *facilitation* (helping them do something), or *causation* (making them do something). However, because games are voluntary experiences (Caillois (2001), Suits (1990) and Avedon/Sutton-Smith (1971), cited in Salen and Zimmerman, 2004, p.76) it cannot be said that the players are forced to take part in certain activities. With this in mind, when participants had said "the game makes you..." it would seem that they meant "the game provides an expectation that you...", and '*provision*' of a '*requirement*' is already covered elsewhere in the diagram. Therefore the '*causation*' section of the theory was removed.

In the last section of the diagram, the common reasons for playing the game are listed, such as '*for pride*', '*for friendship*' and '*for liberation*'. It was decided that '*for change*' be removed, as this does not fit with the emotional nature of the other rewards. Furthermore, only one participant described playing the game '*for change*', and on re-examination of the data it is evident that this is in the context of 'making people think differently', which could be classified under '*make impact*' in the previous stage of the theory.

Further to this verification, another version of the theory was produced in order to summarise the total research progress so far. This is shown in Figure 4.6.

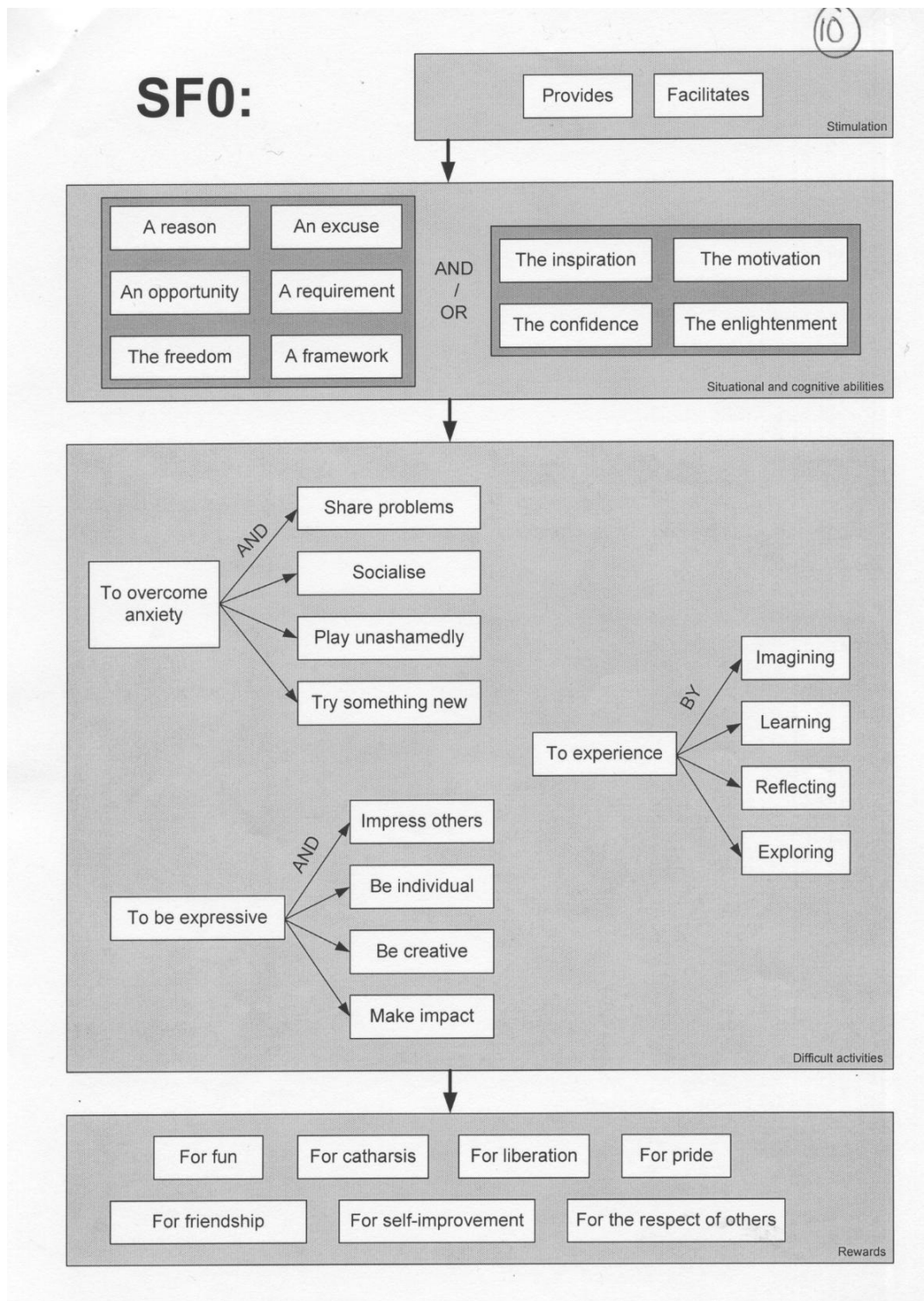


Figure 4.6: Theory version 10 (SF01-SF024)

Selective re-coding of all data: Attempt 1

The next stage of the research was to re-code all of the data (SF01-SF024) based on the newest version (version 10) of the theory, in order to be able to illustrate the theory using examples from the data. This would demonstrate that the theory is sufficiently 'grounded' in the data, in accordance with the Grounded Theory methodology. However, this process was not finished because it was apparent that the theory was still unnecessarily complicated. Firstly, one cannot really be sure if particular abilities are provided (from scratch) or facilitated (made easier) by the game, as opposed to by the player or from elsewhere. This is illustrated in the following excerpt from a memo:

29th October 2009

For example, if they say "SF0 gives me the confidence to...", are they saying that they had 0% confidence before? I'm sure they mean "SF0 increases my confidence in..."

Secondly, with regard to the final section of the theory, the vast majority of the elements unnecessarily echoed elements from previous sections. For example, '*for liberation*' is implied by '*the freedom to*': if something is liberated, it is given freedom, which suggests that the concept (becoming free) is repeated unnecessarily in the diagram. Similarly, '*the respect of others*' comes from '*impressing others*', '*friendship*' is a result of '*socialising*', and so on.

Thirdly, the notion of situational and/or cognitive abilities was simplified to '*means and/or motive*'. It seemed more useful from the point of view of social processes to distinguish between those who *wanted to do something but couldn't*, and those who *could do something but didn't want to*. This better reflected the different ways in which the game helped players in their everyday lives, and made the theory more parsimonious overall. For example, the previous section of situational abilities included the '*excuse*' to do something (means) and the '*reason*' to do something (motive). Similarly, the cognitive abilities contained the '*confidence*' (means) and the '*motivation*' (motive). With the reorganised section, this distinction is more apparent.

The final modification was to shift the grammatical tense such that actions are continuous rather than infinitive. Rather than '*to be expressive*', the players were now '*being*

expressive', which better suited the notion of ongoing active behaviour. This also allowed the theory to be expressed more clearly.

Selective re-coding of all data: Attempt 2

After these modifications were made, a new version (version 11) of the theory was generated and verified by re-coding all of the data gathered thus far, using different sections of the theory for guidance, as was planned for the previous version. Some minor superficial changes were also made, mainly for clarity and brevity, but also to better represent the entire data set. This resulted in the final version (version 12) of the theory, which is presented on the following pages.



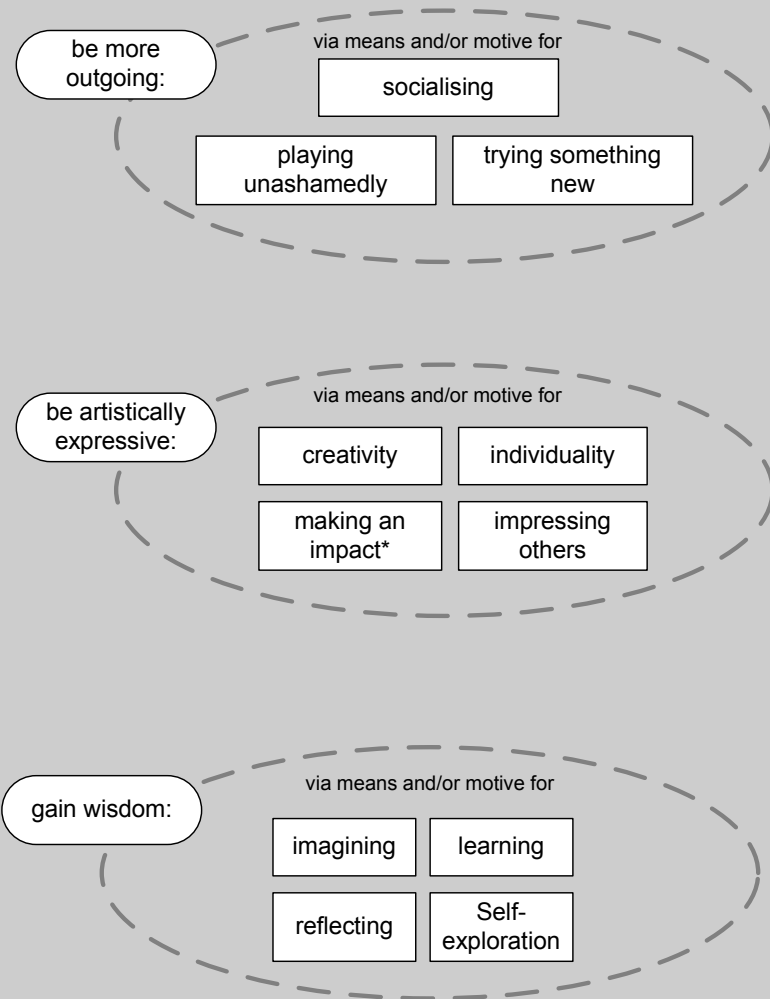
Figure 4.7: Over 350 cue cards were used for coding data during the Grounded Theory exercise for *SF0*

The Grounded Theory

Figure 4.8 shows the most recent working version of the theory, and an explanation of the various aspects is given. For clarity, this is accompanied by a case study of a particular code, *friendship*, as it is tracked from the data through to the final version of the theory. A list of quotations from the data which illustrate that each section of the theory is 'grounded' can also be found in Appendix C.

SFO is allowing players to:

Any combination of these:



*There is currently no evidence for "the motive for making an impact".

Figure 4.8: Theory version 12 (latest working version)

First, *SFO* allows certain processes, which means that there are no rules against using the game as a vehicle to participate in these processes. The processes represent the social actions of being outgoing, being artistically expressive, and gaining wisdom, and a particular player might use the game for any combination (or all three) of these processes. Within each process, means or motive (or both) are provided for particular activities. In the act of being outgoing, the data suggests that players have been using the game to make and spend time with friends ('socialise'), enjoy themselves without worrying what people think of them ('play unashamedly'), and try something that they had not tried before. In the act of being artistically expressive, means and motive were provided for creative endeavour, expressing individuality, encouraging other people to notice ('make an impact'), and impressing others. Finally, through the process of gaining wisdom, players receive the means and motive to role-play or fantasise ('imagining'), increase their knowledge ('learning'), consider and learn from their past actions ('reflecting'), or explore their personal limits and opinions ('self-exploration').

The ways in which the three main processes provide the means and motive for such activities are exemplified in Appendix C. As discussed in the previous chapter, some people are *able* to do an activity but do not *want* to, whereas others *want* to do an activity, but are *prevented* from doing so. 'Means' and 'motive', in terms of the grounded theory presented here, distinguish between (and cater for) these two types of people.

It should be noted that there is currently no evidence for the "motive for making an impact", and this has been highlighted as a single footnote in the theory rather than by creating its own section in the main structure, purely for reasons of elegance and readability. There is ample evidence, however, for the "means for making an impact".

Case study: The conceptual code of *friendship*

This code was first induced from the data for various participants as follows:

- **Discovering new things and “being friends a lot”** (SF05)
- **“Sometimes all that planning turns into a brilliant time with you and some friends”** (SF010)
- **“Some tasks are bonding experiences”** (SF010)
- **“I’ve made a lot of close friends”** (SF022)
- **“All the tasks I’ve done have been fun and I’ve done most of them with friends”** (SF023)
- **“SF0 fills my quota for friends”** (SF016f)

These references are transferred to a cue card representing the researcher’s perception of the concept of *friendship* inside the data. These references appeared across three separate *friendship* cards because of the way the data was coded in chunks, and they have been amalgamated into one card in Figure 4.9 purely for brevity:

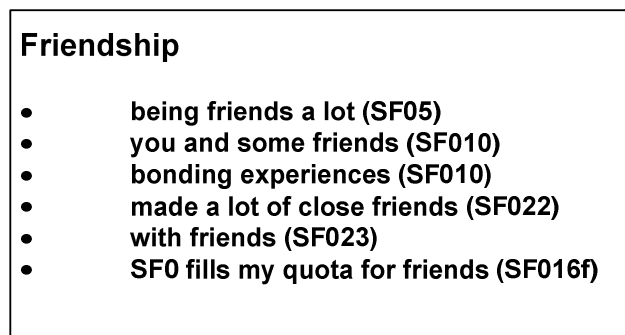


Figure 4.9: Cue card for *friendship* concept

For version 2 of the theory, before the more conceptual and dynamic approach was taken to the analysis of the data, the code of *friendship* was listed as belonging to the higher-level concept of *positive emotional rewards*, and therefore the even higher-level category of *Enjoyment*, as illustrated in the memo for *Category 3 (Enjoyment)* in Appendix E.

From within this memo, the pertinent excerpts are presented here for convenience:

- **Enrichment, pride, friendship, involvement, catharsis and feeling wanted are kinds of positive emotional reward.**
- **Emotional rewards and ludic rewards form the enjoyment in the game.**

The diagram illustrated in Figure 4.10 accompanied the memo in order to more easily represent the relationships between concepts inside the category:

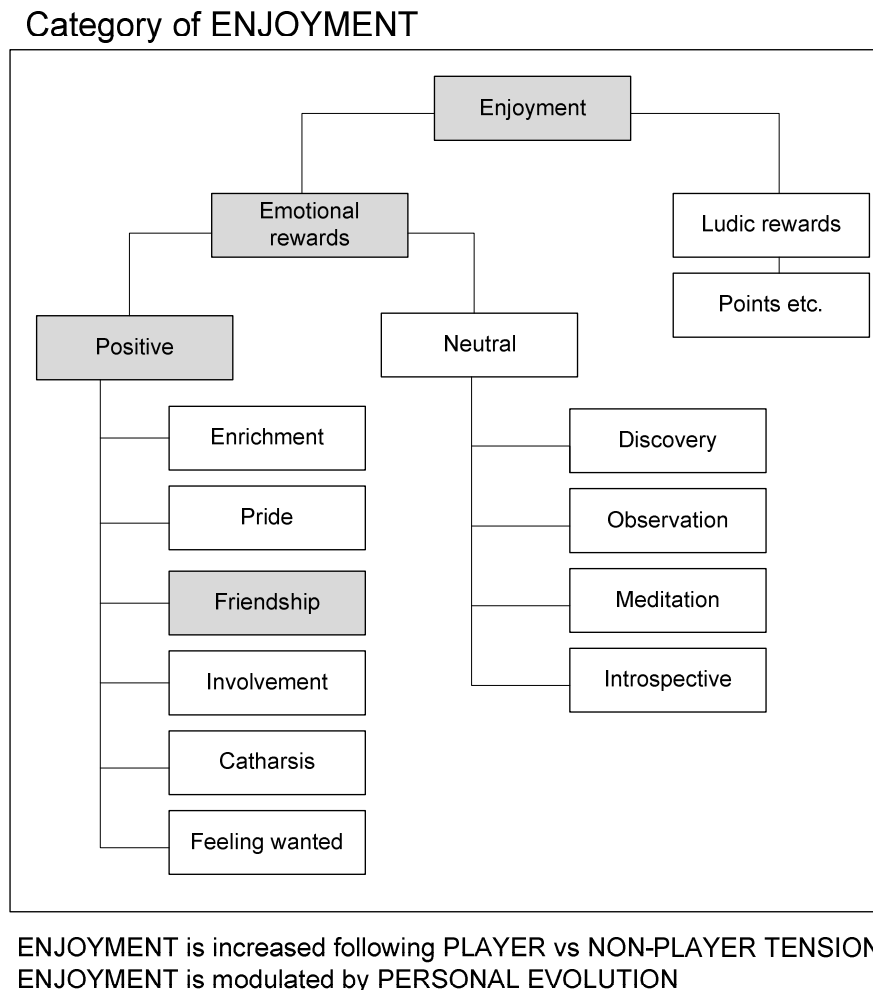


Figure 4.10: Diagrammatical representation of *enjoyment* category

As discussed previously, from this point onward the more dynamic social approach was taken to the interpretation of data during coding. Therefore the concept of *friendship* was placed inside a category that was more indicative of an ongoing social process, changing from *friendship as part of enjoyment*, to *getting emotional enjoyment from friendship*, to the more concise *socialising*, in many cases with the additional outcome of *for fun*. This can be seen throughout versions 3-5 of the theory (Appendix B), with the common purpose of *socialising* being the *overcoming of social difficulties*. Through versions 6-10,

however, the common purpose of *socialising* changes to the more general *overcoming anxiety*, as illustrated in Figure 4.11:

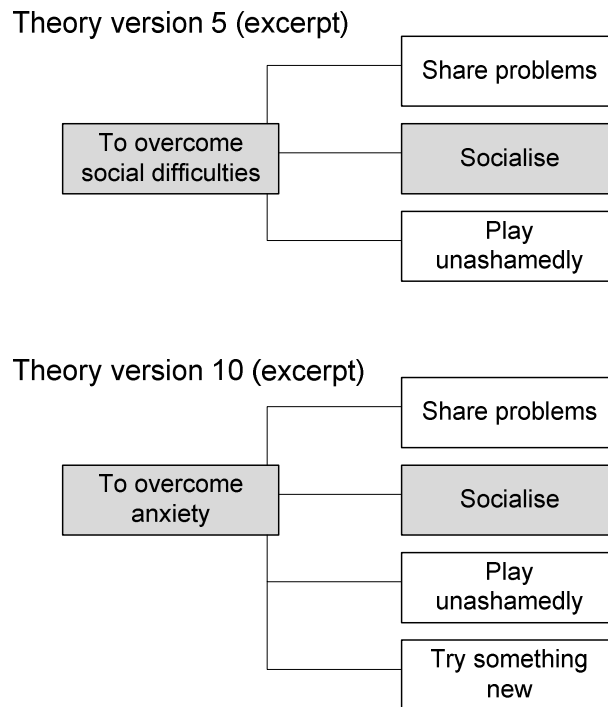


Figure 4.11: The purpose of *socialising* becoming more inclusive and conceptual

This demonstrates that between versions 5-10 the theory has become more conceptual, not just because of the way the categories are described, but because categories can contain a larger number of sub-categories due to their generality.

In version 11 of the theory the section related to *rewards* was omitted completely, as discussed earlier in this thesis, because many of the subcategories were unnecessary repetitions of elements elsewhere in the theory (*impress others – for the respect of others; share problems – for catharsis* and so on). This saw much of the remainder of the *friendship* category reduced to simply *socialising*, rather than having the additional information of *for fun* in many places, which in retrospect was not a problem as it did not contribute anything significant to the theory, given that ‘fun’ is such a nebulous concept.

Finally, the category of *socialising* can clearly be seen in the theory from version 11 until the current version, therefore the code of *friendship* is traceable from data to final theory.

Summary

This chapter has described the ethical considerations, participants, procedure, intermediary stages and results of the main study, namely the analysis of the experiences of 24 players of *SFO*. Broadly speaking, *SFO* is allowing players to be outgoing, artistically expressive and wise, by providing the means and motive to take part in challenging activities. To illustrate the procedure more clearly, the specific code of *friendship* was traced from its initial appearance in the data, through conceptualisation, to its place as part of *socialising* in the final version of the theory.

Chapter 5 - Discussion

Introduction

This chapter is separated into two main sections: First, the results of the study and the potential meaning and outcomes will be discussed. Second, methodological issues that arose during the study will be covered. The study omits a traditional literature review in accordance with Glaserian GT methodology, therefore it will be more widely contextualised here, informed by the writings of authors such as Jane McGonigal, Johann Huizinga, Bernard Suits and Roger Caillois, in order to aid the reader in identifying where the thesis is situated amongst the general landscape of games literature.

The results of this study comprise an evolved Grounded Theory of player experiences of *SFO*, along with over 150 supporting ‘incidents’ taken straight from the data (see Appendix C), that exemplify the various aspects of the generated theory. Broadly speaking, the theory states that the pervasive game of *SFO* is allowing players to be outgoing, to be artistically expressive, and to gain wisdom, by implicitly providing the means or motive to take part in rewarding activities.

It would appear from the results that players are finding support from *SFO* for doing things in their real-world lives that they somehow felt they could not, or might not have done beforehand. *SFO* has provided some players with the opportunity to engage in at least one activity which they perceived to be difficult, and such benefits of overcoming difficulty could be helpful with regard to personal development in the non-game world, in a way that has similarities to *serious games*.

Serious games

A recent review of the literature surrounding serious games (Susi *et al*, 2007) concluded that while a high-level definition of serious games exists and is generally agreed upon, further clarification is very problematic. Broadly speaking, serious games are games that are used for purposes other than entertainment alone (*Ibid.*; Michael & Chen, 2005, Chapter 2). From this definition, examples of serious games could include *Wii Fit* (Nintendo, 2008), which promotes fitness by encouraging regular physical activity, *3rd*

World Farmer (3rd World Farmer Team, 2006), which raises awareness of “hardships and dilemmas faced by the poor”, and *Where in the World is Carmen Sandiego?* (Brøderbund Software, 1985), which is intended to teach geography to children. Serious games have a wide applicability in areas such as education, healthcare, defence and marketing (Sawyer & Smith, 2008), covering activities such as training, advertising, simulation or education (Susi *et al*, 2007).

While many agree on the general goal of mixing knowledge transfer and entertainment, it is unclear which of these should be paramount. One view (Zyder, 2005, & Prensky, 2011, cited in Susi *et al*, 2007, p.4) is that serious games are defined by the addition of pedagogy, and therefore knowledge or skill transfer, but in a way that is subordinate to entertainment: “Games should be fun first and then should encourage learning”. Here it would seem that the player’s enjoyment is valued more than the goal of the exercise. However, another view (Michael & Chen, 2006, cited in Susi *et al*, 2007, p.5) is that serious games should teach a lesson first, with players having fun if possible in the meantime. A detailed taxonomy of serious games provided by the Serious Games Institute (Sawyer & Smith, 2008) classifies the games by activity and sector, “games for healthcare training” and “games for corporate production” being two such examples. In contrast with the first view it would seem here that the benefit of the game for the implementer is stressed more than for the player.

Often, definitions of serious games cite the “achievement of a defined purpose” (Susi *et al*, 2007, p.5), such as a lesson being taught or a skill being developed. It is argued here, however, that there are several factors that might compromise the intended design of a game.

First, a prescribed design for real-world benefit does not guarantee real-world benefit. Players might use a game in ways that the designers had not anticipated. For example, a GPS mobile phone game that rewarded players for travelling on foot in the real world, and therefore getting exercise, could be ‘cheated’ by playing it inside a train carriage as it travelled at high-speed. The only way to ensure the players were ‘playing properly’, if

such a thing exists, would be to monitor them, which might not be feasible with a large, online or mobile player base.

Second, despite best intentions for real-world benefit, there is no guarantee that the game will be 'fit for purpose'. The skill of the designer at designing games, as well as the skill of the implementation team at realizing that idea, can affect whether or not the game succeeds. A serious game, just like any other computer, board or card game, might fail because of a lack of quality or fun. As Bogost (2012) explains, "There just aren't enough high-quality games that also serve serious purposes effectively. Making games is hard. Making good games is harder. Making good games that hope to serve some external purpose is even harder."

Third, and following on from the second point, the discourse on serious games has been recently revitalised through *gamification*, a process described by Zichermann (www.gamification.co) as "using game thinking and game dynamics to engage audiences and solve problems". However, Bogost (2011) states that Zichermann, having been a significant figure in the gamification movement,

...makes his readers believe that points, badges, levels, leaderboards and rewards are "key game mechanics". This is wrong of course – key game mechanics are the operational parts of game that produce an experience of interest, enlightenment, terror, fascination, hope, or any number of other sensations. Points and levels and the like are mere gestures that provide structure and measure progress within such a system.

The managing director of the *Hide and Seek* game studio, Margaret Robertson (2010), agrees with Bogost:

What we're currently terming gamification is in fact the process of taking *the thing that is least essential to games* and representing it as the core of the experience. Points and badges [...] are the bit that has the least to do with all of the rich cognitive, emotional and social drivers which gamifiers are intending to connect with.

By simply adding game-like elements to everyday activities such as exercise or shopping, one misses the key essence of what it is to *play* games. If the people responsible for

developing serious games, or gamified activities, do not sufficiently understand the core elements of games design, their output is likely to not be as reliable as intended.

Lastly, according to Juul (2003) the definition of a game requires that a *variable* outcome stems from the process of play. Sometimes the player will win, lose, draw, or have major or minor victories or defeats. So if meta-game effects such as health rely on a certain outcome, it could be argued that for serious games, the player might not receive the real-world benefit intended for the game.

In addition to the problem of unpredictability with prescribed outcomes in game design, the authors of the review (Susi *et al*, 2007) conclude that even “off the shelf” games could be used for benefit if players defined the purpose themselves based on their own self-analysis. It could therefore be argued that choosing to play *any* game in a certain way could have the potential to foster some form of real-world benefit. This further complicates the definition and identification of serious games in contrast to non-serious games, and therefore an alternative approach might be considered.

An emergent view of real-world benefit in games

The clear description of serious games is problematic, so with regard to real-world benefit in games it is suggested here that an alternative approach should be to examine *evidence* of when existing games (either labelled ‘serious’ or otherwise) have unexpectedly been beneficial. The researcher had previously called *SFO* an ‘emergent serious game’ due to the nature of real-world benefit emerging from the design rather than apparently being intended by the designers. *SFO* does not appear to be *intended* as a serious game, at least in that such intention is not made explicit or obvious anywhere on the game’s main website. However, one criticism of this approach, as discussed earlier, is that *all* games could have the potential to provide real-world benefit if players choose to play them in a certain way. There is nothing to prevent players achieving similar outcomes in other games, therefore the semantics used to describe the subject of study were tightened to ‘emergent benefit in games’, with all games considered to have *some* potential for real-world benefit.

***SFO* as an effective tool for knowledge transfer**

Gee (2007) agrees with this notion of the inherent potential of all games to be educational, and although his work focuses on video games it is clear that many of the recommendations would apply to cross-media digital games such as *SFO*. Gee notes that much of the educational value in games comes from the identification of a “semiotic domain” (*Ibid.*, p.17) such as biology or sport, and allowing the player to not just “read” from a domain (i.e. absorbing the content and culture) but also to “write” to the domain, by constructing meaning within the domain as a result of their engagement (*Ibid.*, p.20). An example is provided (*Ibid.*, p.24) of many physics students that could memorise a written equation but could not successfully use it in a discussion of the forces it described, because they had never taken the equation and produced their own individual meaning via some kind of real-world experimentation. Instead, this might have been achieved using a physics-based game environment such as *Garry's Mod* (Newman, 2012) for example.

SFO by its very nature is a very flexible and experimental game. Players not only have to identify their own semiotic domains when they decide to do a task, but they often put their ideas, beliefs and assumptions under scrutiny when they plan, carry out and evaluate the success of their task submissions. One participant (SF019) commented that “for me it is more fun to plan out and really think over a task before completing it”. Given the notion of “writing” to the domain via real-world interaction, it could be argued that *SFO* is a very good example of learning through doing, and is particularly inclusive due to its flexible subject matter. Furthermore, because the evidence is documented it provides a (practically) permanent method for reflection over time. The type of learning promoted by *SFO* is very different to the didactic methods one would expect from educational games. The players can ‘pull’ learning from the game as required in the context of the current task and their real-world needs. The learning is much more self-directed and constructivist, and in terms of the grounded theory, is not limited to the “learning” section of “gaining wisdom”: it is likely that learning is supported in other activities in *SFO*, such as imagining, reflecting, trying something new, being creative, and so on.

While Gee notes the importance of both reading from and writing to a semiotic domain to promote active learning, he discusses an additional need for learners to be engaging with both the internal and external “grammars” of the domain (Gee, 2007, p.28). The internal grammar comprises the more literal content of the domain – the information to be absorbed and so on. Typically this is covered by traditional approaches to learning in schools (*Ibid.*, p.22). However, for each semiotic domain there also exists an “affinity group” (*Ibid.*, p.27) of like-minded individuals who understand the social practices, identities, and the typical ways of thinking, acting, interacting, valuing and believing in the domain. Engagement in discourse with the affinity group constitutes interaction with the “external grammar” of the group, which Gee believes is essential for active learning. In other words, being able to understand what it is to be a physicist is just as important as learning the content that physicists should learn.

Again, *SFO* is a strong example of a game with plenty of interaction among the affinity group. Players frequently interact and discuss task completions, or plans, and an unwritten set of values has evolved out of the community to which players are gradually expected to adhere. To illustrate community expectation, the field notes for one participant (SF07) indicated that:

There are standards of completion for tasks, but these have developed out of the community, and are often unwritten [...] It's interesting to watch someone evolve. They start with the specific, easy tasks, then get more adventurous, even with the easy tasks [...] A bit of an expectation develops once you get established.

Assuming that active learning is taking place, Gee notes that a deeper type of learning is possible in games. This “critical learning” (Gee, 2007, p.32) involves being able to understand the internal and external grammars at a meta-level, not only so the underlying patterns and similarities between semiotic domains be seen, and therefore lessons learned being useful outside of the game via “transfer” (*Ibid.*, p.126), but also so players can manipulate the domain to produce “critique, novel meanings, or transformation”. The meta-level thinking allows the players to view the game as a system of interacting parts,

and better understand its limitations and affordances, in order to play creatively for example. Theoretically, *SFO* is effective at promoting this, as the lack of substantial or detailed instruction encourages the players to examine the possibility space while adding their own temporary rules, and there are ludic rewards – namely in-game points and community recognition – for being able to produce novel meanings.

Gee (2007, p.221) provides a list of 36 slightly-overlapping principles that, when used in games, have the potential to promote learning. The following list shows the most relevant to *SFO* (the other principles generally apply but have been omitted for brevity), therefore providing a strong theoretical case that *SFO* is facilitating knowledge transfer, despite generally not being considered a serious or educational game. Evidence for this can be found throughout Appendices A, B, C and E.

- Principle 1: “All aspects of the learning environment [...] are set up to encourage active and critical (not passive) learning”. The application of this principle in *SFO* has been discussed earlier in this section.
- Principle 4: “Learning involves mastering, at some level, semiotic domains, and being able to participate, at some level, in the affinity group or groups connected to them”. The communication between players is essential to the success of *SFO*, particularly as players create their own tasks and can reward each other points for impressive completions.
- Principle 5: “Learning involves active and critical thinking about the relationships of the semiotic domain being learned to other semiotic domains”. Players have reported beneficial effects that have helped their real-world lives.
- Principle 6: “Learners can take risks in a space where real-world consequences are lowered”. The ludic atmosphere of *SFO* provides players with the means and/or motive to try things out that real-world limitations (shyness, laziness, lack of friends and so on) would have otherwise prevented.
- Principle 7: “Learners participate in an extended engagement [...] as an extension of their real-world identities in relation to a virtual identity to which they feel

some commitment and a virtual world they find compelling”. In *SFO* the players have a virtual avatar that, due to social expansion, is barely an extension of their real-world selves but nonetheless provides them with a fictional device to which they can attribute their actions if necessary. Spatial expansion in *SFO* means that the game-world runs closely parallel to the real-world, although it is augmented by the use of groups based on political or social themes.

- Principle 9: “The virtual world is constructed in such a way that learners learn not only about the domain but about themselves and their current and potential capacities”. Players have cited the way in which *SFO* has allowed them to explore their limitations, beliefs and personalities.
- Principle 11: “For learners of all levels there are intrinsic rewards from the beginning, customised to each learner’s level, effort, and growing mastery and signalling the learner’s ongoing achievements”. Players of *SFO* can score points from the outset, and as they progress through the game a wider, more difficult array of higher-scoring tasks becomes available to reflect their developing skill and the increased community expectation.
- Principle 12: “Learners get lots and lots of practice in a context where the practice is not boring (i.e. in a virtual world that is compelling to learners on their own terms and where the learners experience ongoing success). They spend lots of time on task”. The players of *SFO* are free to choose any number of tasks, and due to the lack of instructional detail have a lot of freedom in their approach to tasking. For most players, tasking is the main way of interacting with the game, and advanced tasks can go on for months or years.
- Principle 14: “The learner gets ample opportunity to operate within, but at the outer edge of, his or her resources, so at those points things are felt as challenging but not ‘undoable’”. Players have described the community expectation in *SFO*, particularly for experienced players, and the “backlash” that is often received for lack of effort. Also, the concept of “drive” has evolved to describe the self-motivation a player has to do a task well.

- Principle 16: “There are multiple ways to make progress or move ahead. This allows learners to make choices, rely on their own strengths and styles of learning and problem-solving, while also exploring alternative styles”. Clearly *SFO* is a very flexible game, players can choose almost any approach they wish, and have noted the opportunities the game provides to ‘do something different’.
- Principle 18: “Texts are not understood purely verbally (i.e. only in terms of the definitions of the words in the text and their inter-textual relationships to each other) but are understood in terms of embodied experiences. Learners move back and forth between texts and embodied experiences [...]”. The task descriptions in *SFO* are very brief and rely on the varied interpretations and experiences of the players to produce a variety of outcomes for discussion.
- Principle 20: “Meaning and knowledge are built up through various modalities (images, texts, symbols, interactions, abstract design, sound etc.), not just words”. There are no real restrictions on how *SFO* evidence is presented, as long as it can be verified. Creative evidence is encouraged.
- Principle 22: “Intuitive or tacit knowledge built up in repeated practice or experience, often in association with an affinity group, counts a great deal and is honoured. Not just verbal and conscious knowledge is rewarded”. As already discussed, understanding the community expectation is key to scoring highly in *SFO*. However, this understanding is often gained through a constructivist process rather than being read beforehand.
- Principle 27: “The learner is given explicit information both on demand and just in time, when the learner needs it or just at the point where the information can be best understood and used in practice”. Players can receive feedback on their task submissions fairly promptly after completion, due to being highlighted on a ‘recently-completed tasks’ list, and can search the website for players to contact based on how recently they logged in, in order to get a reliable response.
- Principle 28: “Overt telling is kept to a well-thought-out minimum, allowing ample opportunity for the learner to experiment and make discoveries”. Again, the

lack of instructional detail allows players to decide for themselves how to interact with the game.

- Principles 30-32 (combined for brevity): “Learning is set up in such a way that learners come to think consciously and reflectively about some of their cultural models regarding the world, learning, and/or a particular semiotic domain, without denigration of their identities, abilities, or social affiliations, and juxtapose them to new models that may conflict with or otherwise relate to them in various ways”. Many of the tasks in *SFO* are reflective in nature, and the process of reflection is one of the emergent benefits found to exist in the Grounded Theory.
- Principle 34: “Meaning/knowledge is dispersed in the sense that the learner shares it with others outside the domain/game, some of whom the learner may rarely or never see face-to-face”. All tasks are presented on the *SFO* website for the general public to see, so non-players can also benefit from the game. Furthermore, the internet-based nature of *SFO* means that the majority of players will not meet other players face-to-face outside of specifically-organised *SFO* events.
- Principle 35: “Learners constitute an ‘affinity group’, that is, a group that is bonded primarily through shared endeavours, goals and practices, and not shared race, gender, ethnicity, or culture”. The *SFO* community does not discriminate on any of these grounds (or others).
- Principle 36: “The learner is an ‘insider’, ‘teacher’, and ‘producer’ (not just a ‘consumer’) able to customise the learning experience and domain/game from the beginning and throughout the experience”. Players are free to submit tasks for others to complete in future, and creative tasking raises the bar of expectation for the future. Feedback can be provided to other players in order to help them improve in future task submissions.

It should be noted at this point that Gee acknowledges that players will not necessarily play the game with a particular real-world agenda in mind (Gee, 2007, p.38). One cannot realistically predict all of the potential uses of a game – unintended outcomes will almost

certainly arise, and the players concerned might not receive any of the educational benefits that games are capable of providing. This problem was discussed in the earlier critique of serious games, and has also been observed in the researcher's previous work. Nevertheless, it is apparent from the above list of principles that when played in a particular way, *SFO* is consistent with a game that facilitates learning, and such achievement of self-directed aims as a process of constructed understanding might explain the satisfaction received by many of its players. This contributes evidence for the recommendation that the study of real-world benefit in games should not be limited to those overtly-labelled as serious games.

***SFO* as an effective tool for satisfaction**

McGonigal (2011, p.4), following Maslow's *hierarchy of needs* (Huitt, 2007), acknowledges that games can provide satisfaction for human needs that cannot be satisfied elsewhere in everyday life. Satisfaction of needs is clearly observable in the responses from players of *SFO*: needs for socialising, learning, and creative expression are clearly being satisfied, and in many cases (as illustrated by the quotes from SF014, SF015, SF016, SF018, SF019 and SF021 in the previous chapter) this is a satisfaction that could not, or would not, be obtained otherwise. While McGonigal's outlook on the current state and future trajectory of human existence is somewhat hyperbolic in places (*Ibid.*, p.4-p.6), there is ample evidence of players' "hunger for more and better engagement from the world around us" in the *SFO* data, and therefore it would be useful to get a deeper understanding of the elements of games that are likely to provide satisfaction, in order to aid future investigation.

McGonigal (2011, p.49) lists the four most essential intrinsic rewards for human happiness as follows:

- Satisfaction through completion of activities, and the observation of the direct impact of work done.
- Aspiration and the experience of success, in order to promote the feeling of being powerful.

- Social connection, in order to share experiences and build bonds.
- A feeling of transcendence, or meaning, such that we feel that what we have achieved matters on a scale bigger and more significant than our own lives.

The *SFO* framework provides many opportunities for these needs to be supported. For example, the completion of tasks is recorded, rewarded and stored online, both in the player's profile and on the "recently completed tasks" section of the *SFO* website, for all to view both at the time it occurs and for the foreseeable future. Success is celebrated in the form of both mandatory and discretionary points awarded, and the positive feedback from a reportedly tough crowd (see SF07 in Appendix A), and players can aspire to complete tasks by documenting their preparations and initial thoughts alongside evidence of their task completions. Collaborative tasking is supported, as is formation of teams, membership to a faction, private messaging and public commenting on task submissions. Lastly, the *SFO* website emphasises the 'epic' nature of playing the game: Not only do all task submissions contribute to the global identity of the *SFO* community, but tasks are separated chronologically into 'eras', and players are reminded that their choices may have "far reaching implications" in their lives (www.sf0.org/about/). This would also seem to appeal to the *transcendental temptation* as discussed earlier in the thesis. In addition to this, some tasks have been voluntarily upgraded to be completed on a significantly larger scale: The task "One Cent" (www.sf0.org/tasks/One-Cent/) required the mailing of a penny to another player, but the players decided to send the *same* penny through a long chain of players, to see how far they could get it to travel.

It would seem that McGonigal's stance on effective games being those that help players create their own goals for satisfaction, aspiration, connection and meaning, is closely related to the results of the *SFO* study, therefore *SFO* should be considered a 'satisfying' game.

Particular characteristics of *SFO* that could be effective

It could be the case, however, that some games are more appropriate for emergent benefit than others. If *SFO* was not intended to be a serious game, something about its design

might be particularly conducive for real-world benefits to emerge from play. Many players benefit from *SFO* by playing the game with a particular real-world context in mind. For example, one participant stated that “it gives you an excuse to do things you wouldn’t normally do but want to”. Another player stated that “I can try things, experiment or just make a joke or do it deathly serious...”. Both of these quotations (amongst others) illustrate the ways in which *SFO* is used by players to achieve some real-world objective. On its own, the simplicity of the *SFO* game framework might not appear to promote real-world benefit, and a significant observation of this study is that such benefits seem to arise as a *combination* of the game system and the ways that players voluntarily act within the game system. Many players play the game with unnecessary additional gameplay parameters, such as a focus on making friends, being creative and so on. They can *pull* desirable experiences from the context of the magic circle of play to their everyday life as required, rather than having them *pushed* by pre-scripted game content or designer intention. They can be just as successful as players in the virtual world without these extra parameters, as long as their task submissions are deemed impressive enough by the *SFO* community. In terms of Gazzard’s (2012) *appropriated play*, the players are allowed to take part in *perverse play*, taking ownership of, and being creative with the rules to promote extra-lusory benefit. In the next section, the nature of these additional gameplay parameters is discussed in terms of *implicit rules*.

Implicit rules

Implicit rules are rules of a game which are not made explicit in the pragmatic, operational ‘rulebook’ (Salen & Zimmerman, 2004, p.130), but nonetheless exist in order to allow harmonious play to happen. For example, it is generally agreed that in a game of *Monopoly*, one should not destroy the game materials. This rule does not appear in the rulebook of *Monopoly* but is agreed upon implicitly by the players. If a player began damaging the components (claiming it was part of the game), the implicit rule would need to be made explicit and agreed upon in order to stop the game being disrupted, or to allow players to ‘agree to disagree’, abandoning play to go their separate ways.

The general rules of *SFO* (i.e. pick a task; upload evidence; score points; rate the efforts of other players; do not harm anyone), even in combination with the additional *temporary* rules provided by individual tasks, are not particularly rich in terms of instructional detail. Players are usually required to consult the rules they hold implicit, in order to clarify the situation and make decisions as to exactly which task to choose, what the task means, how they will complete it and how they will document the evidence to impress others.

For example, the task called ‘Something Very Good’ instructs players to “go to a street corner of your choosing and wait for something fantastic to happen”. Assuming the player has first chosen this task they must then at some point consider their method for selecting a street corner, their definition of ‘fantastic’, and how best to capture the event. This has obvious repercussions in that one player’s idea of ‘fantastic’ things would quite likely differ from another’s, and so on. Therefore, the task submissions of the players involved could vary greatly due to the game’s tendency to encourage players to consider their own implicit rules.

The number and nature of potential implicit rules was suggested in previous chapters to be infinite, thus it can never be said for certain that two players are playing the same game. This also extends to *SFO*: each player is playing a different game, albeit based on the explicit rules of *SFO*, the difference between each game being in the implicit rules used to clarify the explicit framework. In the data gathered in the main study, one participant (SF014) was using *SFO* as a vehicle for having fun with his son while he was suffering from the side effects of heavy prescription medication, while another participant (SF016) used the game to meet new friends. As Dovey and Kennedy (2006, p.28) note, the operational rules of a game “shape and structure our experience of a game to a greater or lesser degree, but they do not inevitably determine our whole experience. The practices of cheating and/or creating modifications of games, to take two examples, afford different kinds of experience of both the rules themselves and the game”.

In many games, contradictions between the implicit rules of different players can halt gameplay, for example if particular ‘house rules’ are in effect there might be a dispute of

the legality of a particular move. With *SFO*, however, as long as players satisfy the few *explicit* rules of the game, the frequent contradictions encountered when different players are forced to follow their own *implicit* rules in the face of ambiguity are actively *encouraged* as points for discussion. This is evidenced by the web-based nature of the *SFO* interface and the numerous methods for asynchronous communication provided, particularly on the pages where submitted evidence is displayed.

It would therefore appear that a major difference between *SFO* and other games is not necessarily in the vagueness of its explicit rules (and therefore the focus on implicit rules), but mostly in its positive attitude towards the subsequent contradictions which occur between players as a result of being forced to consider their implicit rules more often. Other games involve vague rules, but the resulting contradictions in implicit rules are not always viewed as favourably. Evidence for this can be found in the player-written additional rules often uploaded to websites such as *Board Game Geek* (www.boardgamegeek.com) to help others in times of ambiguity.

Because players of *SFO* are not required to compromise or cease playing when their implicit rules contradict those of other players, each player has more freedom to customise their gameplay experience towards personally-appropriate real-world goals if they wish. Thus, an interesting avenue for further investigation is whether encouraging diversity in the space of implicit rules in a game might contribute to the emergence of real-world benefit for the players involved.

Implicit rules, Suits' imposed restrictions, and McGonigal's eustress in *SFO*

Suits (2005) takes a much more action-based approach to defining games, although the resulting definition is very useful when attempting to contextualise the observations of this research.

Suits defines playing a game as a pursuit of an activity, using means that are unnecessarily and deliberately inefficient (*Ibid.*, p.37). For example, in the activity of directing a ball into a hole a player could pick it up and place it there by hand. However,

players of golf choose the relatively inefficient option of hitting the ball with a metal stick from several hundred yards away, and picking up the ball is forbidden. The addition of scoring prevents the game from becoming a mere exercise: without this, every player would succeed given enough time and sufficient shots.

In *SFO*, completing a task as efficiently and literally as possible, while adhering to the explicit restrictions, would seem like the best way to win, as would be the case in golf. However, in *SFO* the lack of detail in the tasks often makes literal completion impossible, meaning that players need to consider their own personal values, goals and restrictions, discussed previously in terms of implicit rules, just to be able to complete a task. Any *unnecessary* detail or difficulty in these extra rules is added voluntarily by the players concerned, at a level of complexity that suits them.

It is subsequently noted (*Ibid.*, p.42) that games are non-serious undertakings. However, it is clear, for example by comparing coffee-house chess to tournament chess, that different levels of seriousness, or *commitment*, exist among different players inside the non-serious boundaries. For example, a tournament chess player might sacrifice his social life for the sake of practice whereas a less-serious player would not. The same applies to *SFO*, and the game caters for many different levels of commitment (or “drive” in *SFO* parlance) by allowing the players to make the voluntary restrictions as tight as they wish. Indeed, as discussed earlier in this chapter, an unofficial community expectation of commitment has developed, making tighter restrictions almost mandatory for successful high-level play.

McGonigal (2011, p.32) states that one defining feature of satisfying games is *eustress*, which occurs when we put ourselves under stress through choice rather than by necessity. Activities such as extreme sports, puzzles, musical performance and improvisational theatre place participants under physiological, cognitive, kinesthetic and emotional stress, but such stress is optional and much more controlled than the stressful situations found in everyday life. According to McGonigal, games are very effective at generating eustress, and people would rather work hard on something optional and achievable than be

passively entertained. This could explain why players of *SFO* impose unnecessarily difficult restrictions on the way they play, rather than completing tasks literally and easily; the eustress generated by such obstacles could be a key factor in the enjoyment of the game, and the nature of the obstacles (and therefore the stress) is often inspired by social or creative difficulties the players experience in their everyday lives. According to the *SFO* documentation (www.sf0.org/about/), “the pathological striving for pleasure is located in the formal space of duty”.

***SFO* is not necessarily ‘dull’**

Suits defines playing a game as attempting to “achieve a specific state of affairs, using only means permitted by rules, where the rules prohibit use of more efficient in favour of less-efficient means, and where the rules are accepted just because they make possible such activity” (2005, p.48). It is implied (*Ibid.*, p.38) that prohibiting more-efficient means in a game makes the activity less technically-intelligent, but somehow appealing, and therefore argued (*Ibid.*, p.44) that a lack of restrictions can make a game dull.

In *SFO*, the frequent lack of detail in the tasks means that players, rather than the game designers, are often required to add simple restrictions, by considering the rules they hold implicit, to make the game at least playable. Additionally, they gradually need to make an effort to add more complex restrictions in order to prevent the game (according to Suits) becoming dull over time. However, it would seem that because the longer-term appeal of the game seems to come from the contrasting of such ‘deeper’ interpretations of the tasks, the game appears to be very rewarding for players who are willing to make that effort.

It would seem that *SFO* is conducive to a wide variety of play styles and levels of commitment. The players have the option to choose the subject and depth of a task completion in order to make the experience more individually appealing, therefore it could be argued that despite the risk of being dull if played conservatively, it allows the game to accommodate a wide variety of personal interests and needs if played in earnest in the long-term. Such rule-based imposition of these less efficient means is voluntary, and is done so *only because* it makes possible the enjoyable and difficult activity of trying

to succeed – that is, without “some ulterior purpose” for needing to do so (*Ibid.*, p.62). That is not to say that players cannot gain additional “extra-lusory” rewards from playing games (*Ibid.*, p.131), such as fame, fortune or fitness, and indeed, in this study it has been found that players also receive extra-lusory benefits.

Because extra-lusory rewards have been gained from playing *SFO*, these are features that could be studied in more depth as potential indicators of games that are effective at facilitating emergent real-world benefit.

***SFO* and Caillois’ classification of games**

Caillois (1961, p.27) distinguishes unrestricted, playful activity from restricted rule-based play using the terms “paidia” and “ludus”. Paidia and ludus appear to correspond to the researcher’s own notions of “play” and “game” respectively: Paidia is impromptu and unstructured, and describes the “spontaneous manifestations of the play instinct” that can be observed when kittens play with wool or when babies impulsively grab and throw objects they find. Ludus-based play, however, involves the use of “conventions, techniques and utensils”, perhaps via an evolutionary process as particular patterns of behaviour are found to be more rewarding. Such structure extends to the addition of rules, which can be found in all modern games.

Although *SFO*, as discussed throughout this thesis, has relatively few explicit rules, the fact it has rules at all would seem to classify it as a ludus-based activity. However, given that many of the rules are created by the players themselves when they complete tasks, and are not required to agree with the generated rules of other players, *SFO* might be considered more towards the paidia end of the ludus continuum, or perhaps a kind of *meta-game*: a paidia-within-ludus activity, where the imposition of ludus happens as part of play itself. This provides a further potential avenue for investigation, namely whether paidia-based activity afforded by a game towards its own ludic aspects has an effect on the typical experience it generates.

In addition to the continuum between *paidia* and *ludus*, Caillois (*Ibid.*, p.12) further classifies playful activities in terms of the dominant principles they contain. The four resulting categories are as follows:

- Competition (or “*agôn*”) describes playful (i.e. non-serious) activities in which an individual attempts to overcome an adversary in terms of mental or physical skill or strength, in a relatively fair scenario. Examples of competition-based games would be chess, boxing, darts, poker, and so on.
- Chance (“*alea*”) describes activities that mainly rely on luck, therefore requiring little “work, patience, experience and qualifications” (*Ibid.*, p.17), such as lotteries, roulette, *Yahtzee*, and so on.
- Mimicry is used to classify the playful activities that primarily involve make-believe – that is, the individual is “being or passing for another” (*Ibid.*, p.21), such as a soldier, nurse, animal or teacher.
- Vertigo (“*Ilinx*”) is the term used for activities that try to induce a momentary feeling of falling, dizziness, flying, panic, or other exhilarating sensory experiences. Tightrope walking, running downhill, trampolining and playing on a rope-swing would all be considered vertigo-based activities.

Combining these four categories with the continuum of *paidia* and *ludus* gives eight possible areas by which games can be classified. For example, *paidia*-competition activities include play-fighting and simple guessing games, whereas *ludus*-competition activities might include professional boxing and polymath competitions. However, because games are complex systems with many elements open to cultural and environmental factors, it would seem that these eight groups should not be considered discrete or mutually exclusive. The computer game *Grand Theft Auto IV* (2008, Rockstar Games) involves many elements of competition (e.g. completing missions, online

multiplayer matches), chance (e.g. a random selection of cars of various quality in the environment with which to work, unpredictable enemy behaviour), mimicry (the player can act as a good citizen or destructive criminal, the player can select their avatar's clothes) and vertigo (the visceral reward of frequent explosions, driving at speed, jumping off of buildings and flying helicopters), and this is compounded by allowing the player 'free roam' of the virtual city, with no real obligation to take part in the rule-based part of the game or move through the experience in a predetermined fashion. This problem has been illustrated in a similar context in the researcher's own work via the notion of *granularity* (Eglin, Eyles & Dansey, 2008), where the unit of time (for example) used to discern actions can affect their overall categorisation. It would therefore be difficult to accurately classify the game with confidence, either in terms of *paidia* and *ludus*, or in terms of competition, chance, mimicry and vertigo.

Indeed, *SFO* is similar in that it has been viewed in terms of at least one of the four categories at some point by each of its players. Players reported "competitive one-upmanship" (SF019), "random strangers" (SF015), feeling like a spy (SF014), and a notion of whimsical silliness (SF020, SF021f).

Despite *SFO* being able to belong to each of the four categories, Caillois (1961, p.72) argues that particular combinations of categories are incompatible. Firstly, it is stated that competition and vertigo are incompatible because the adherence to and respect of a set of rules would not hold in moments of wild abandon. In response, it could be argued that the existence of extreme sports, in which people compete with dedication and respect in vertigo-based activities in order to score points over others, is evidence that competition and vertigo can indeed co-exist.

Secondly, Caillois argues that mimicry and chance cannot work together, as a game that presupposes a total submission to chance will be "incompatible with disguise or subterfuge". In response, using the examples of improvisational theatre and "story games" (www.story-games.com), a player must often act in character while responding to

random suggestions from the dice or the actions of other participants, so it would also seem that mimicry-chance is possible.

It is also noted elsewhere (Gazzard, 2011) that many examples exist in digital games of mimicry being mixed with chance, and of vertigo being mixed with competition. It is feasible that Caillois is referring to activities at the extreme end of each scale, for example a player with total devotion to competition will be unable or unwilling to experience vertigo-style play as it would require concentration on something else. If this is the case, it could be said that the pairs of mimicry-chance and competition-vertigo are not mutually exclusive, but somehow cancel each other out or dilute each other. Even if this is true, there are two further issues: one of certainty and one of interpretation.

With regard to certainty, it would seem difficult to imagine playing completely inside a single category. For example, the act of rolling a dice might be seen as being completely inside the category of chance. However, the player might be rolling the dice using common dice-rolling mannerisms (i.e. unintentionally mimicking the actions of the archetypal 'dice-roller'), which would indicate that elements of mimicry are present, albeit at minimal levels, making clear analysis of the situation problematic. Even the fact that a player sits at a table to roll the dice could be viewed as mimicry if scrutinised with sufficient rigorousness.

With regard to interpretation, the dice-roller might not intentionally be mimicking an archetype, and therefore it could be argued (from a player-centric point of view) that they are only in the realms of chance. However, Caillois (*Ibid.*) notes that games can be viewed in terms of different categories depending on the point of view employed: "a horse race, typical [competition] for jockeys, is at the same time a spectacle... and is also a pretext for betting". Therefore a classification of a game would need to consider the point of view of the observer, and could always therefore be contested.

With the above points in mind, and considering the aim of the study to investigate the range of experiences of *SFO*, the issue of certain and agreed belonging to a single

category will be assumed as impossible. It will also be assumed, therefore, that viewed in a particular fashion, a game could quite reasonably be seen as belonging to all four categories simultaneously.

However, with *SFO* it is often much easier, compared to other ‘classic’ examples of games from a particular category, to view its gameplay in such a manner. For example, the predominant view of soccer is that it is a competition-based game, where teams of players compete to display superior skill and endurance and overcome the opposition. There are elements of chance, in that the effect of weather, or intruders on the pitch, is out of the players’ control, but for most people it would take much more of an interpretive leap to associate soccer with chance than it would to do so with competition. *SFO* is different from soccer in that it is difficult to find a predominant view for classification, because the optional tasks, the varied nature of their content and the ability to add rules as required, allow the game to more easily be interpreted in any of the four categories. Players are encouraged to add unique elements to the game, and can do so in the context that suits them best. A potential point for further investigation, therefore, is to investigate whether *SFO*’s flexibility in classification allows it to satisfy a player’s needs more efficiently, and whether this contributes to an explanation of why *SFO* is such an effective facilitator of benefit.

There are two main points of disagreement between the work of the researcher and that of Caillois. First, Caillois states (*Ibid.*, p.43) that games “certainly cannot spread beyond the playing field [...] or time that is reserved for them” without taking on “quite different, and on occasion, doubtlessly unexpected forms”. While this can be viewed as an early prediction of the potential of pervasive games, Caillois (*Ibid.*, p.54) only discusses such potential in a negative sense: if the magic circle is permeated by real-life, games of competition, chance, mimicry and vertigo become activities of violence, superstition, alienation and addiction, respectively. However, from the results of this study it is clear that pulling elements of the game through the magic circle into real life can have very positive consequences, even if, as Caillois warns, they are often unexpected.

It is also interesting that Caillois views astrology and magical thinking in a somewhat negative tone (*Ibid.*, p.48), when the researcher's own work (Dansey, 2008), in addition to that of McGonigal (2006, p.43) and Montola (2011), has indicated the potential of magical thinking (including apophenia) to *augment* the experience of games by allowing the player to attribute game-like meaning to everyday affordances in order to produce positive, meaningful and personalised content. Such augmentation in existing games has already been documented, so this contradiction could be indicative of a shift in the way the appeal of games is perceived in culture in the 50 years between Caillois' work and this thesis, especially because games have relatively recently become much more abundant and complex. This creates an interesting avenue for further investigation.

The second point of disagreement is a major one that concerns the potential for by-products or artefacts of play. Caillois (1961, p.10) cites one of the characteristics of play as "creating neither goods, nor wealth, nor new elements of any kind...". Although Caillois would not be expected to predict the arrival of pervasive games and their various effects from so long ago, there were many other games at the time, such as soccer, that offered extra-lusory benefits such as fitness, improved coordination and so on.

In the case of *SFO*, there are numerous tasks in which players create pieces of art, music, and literature. The task "Mass Transit 42-Second Friends" (example completion can be found at www.sf0.org/libriscraft/Mass-transit-42-second-friends) required the players to convince a group of strangers on public transport to be friends for 42 seconds while a group photograph was taken. The task "Create Art Under the Influence" directly instructs players to make something artistic (example praxis: www.sf0.org/frustration/Create-Art-Under-the-Influence/), while the task "Kill-Switch" required players to install a kill switch onto something that did not require such a thing (www.sf0.org/burnunit/Kill-Switch/). Furthermore, one of the conclusions of this study is that *SFO* is actually *helping* people to be creative and produce artefacts as part of play, and also encourages creativity within task submissions to prevent them from being uninteresting. The game does not end "in a situation identical to that prevailing at the beginning of the game", as Caillois

claims – quite the opposite, and due to the creativity of the players involved, the outcome is very unpredictable.

Emergence

With regard to emergence in pervasive games, McGonigal's (2006, p.43) thesis states that one of the defining characteristics of pervasive games is the "strong potential for emergent, that is to say unexpectedly complex, group play and performance". It could be suggested that the real-world benefits of playing *SFO*, because they do not appear to be overtly promoted by the game literature, are appearing in the results of the study as a product of emergence. Johnson (2001) states that emergence can be facilitated by providing a densely-interconnected system of simple interactions. Sweetser (2007, p.2-3) agrees, stating that global emergence requires a system which is "sufficiently rich, with highly interdependent entities". *SFO* would appear to feature a densely interconnected system in the complex network of the *SFO* website, including its scoring, alliance, team, task and friendship systems, and the many ways in which players can interact with such systems. The simple interactions are provided by the relatively few rules, each containing relatively few explicit parameters, so players do not need to make much effort to be able to interact with the game at a basic level.

Sweetser's notion of *global* emergence, in contrast to *local* emergence, relates to the system as a whole. In the case of games, global emergence affects how the game as a whole plays out. It would at first seem that the emergence seen in *SFO* is local rather than global, as the immediate effects are seen only in parts of the system (i.e. for the particular player involved). However, it is argued here that emergent outcomes could affect the game as a whole, for a number of reasons. First, all players (and non-players) are allowed to view evidence of task submissions on the *SFO* website, and new submissions are highlighted as such, so tasks which have resulted in real-world benefits have the potential to be seen by the entire *SFO* community. Second, task submission increases the player's score, which affects the final outcome of the game in terms of global player standings. Third, the submissions which were particularly difficult, creative, poignant or meticulous

are often popular among the *SFO* community, outstanding efforts effectively raising the bar for future tasks to beat.

One player (SF04) commented that many of the tasks come from the users themselves, and therefore the users dictate the rules of the game to an extent. Another (SF07) adds to this, commenting that the tasks *are* the game, and that the game grows out of the tasks. A third (SF019) remarked, “[I] prefer the competitive one-upmanship of trying to solve a task in as elegant and unique [a] way as possible...”. From these examples alone it can easily be seen that by creating and completing tasks, the players are affecting the system on a global scale, resulting in a constantly-evolving notion of *SFO* as a whole.

Emergent benefit in games

One of the suggestions for further research resulting from this study is the phenomenon of *emergent benefit in games*. This happens when games such as *SFO*, although not necessarily intended to foster pre-defined positive real-world outcomes (as in traditional serious games), have potentially seen such outcomes through emergence in the game system. If a study of the effects of games is restricted to serious games with prescribed outcomes, researchers could be missing some valuable lessons and original examples of real-world benefit in other games.

Although it is suggested that *SFO* was not explicitly *intended* to be a serious game, it is impossible to state this confidently without knowing the intentions of the game’s designers (according to Juul (2002)). However, it would seem reasonable to assume that because no claims are made on the *SFO* website that the game is intended to teach people to be more artistic, outgoing and wise, were it a serious game it is certainly not advertised as such, particularly in comparison to more overtly-serious games such as *3rd World Farmer*. Furthermore, *SFO* is not listed on the websites of the *Serious Games Institute* (www.seriousgamesinstitute.co.uk) or *Games for Change* (www.gamesforchange.org), the first two organisations listed by Google under the search term ‘serious games’. Therefore players would not be likely to encounter the game as a result of a specific utilitarian need.

It should also be noted that the intention is *not* to suggest that unexpected real-world outcomes *cannot* happen in games which have already been designed as serious games for other purposes. For example, a regular player of *Where in the World is Carmen Sandiego?* might discover that their understanding of grammar has improved as a result of the reading involved in the game, in addition to the geographical lessons advertised by the game materials. Therefore, when studying *emergent* real-world outcomes it is suggested that games might be chosen for the nature of their gameplay rather than the outcomes apparently intended by the designer.

SFO* and Jane McGonigal's *EVOKE

In her thesis, McGonigal (2006, p.407) describes *SFO* as a “grassroots superhero” game, and notes that through playing *SFO*, players are becoming “more empowered to act”, an observation which reflects the results of the main study described in earlier chapters.

McGonigal has more recently designed and implemented a game which is intended to promote real-world benefit in third-world areas such as Africa. *EVOKE* (www.urgentevoke.com) seeks to “help empower young people all over the world” to take on real-world tasks based on themes such as poverty, illness and human rights. These tasks involve solving “a real world problem” in the player’s local area, then uploading evidence in exchange for points, based on creativity, much in the same way as *SFO*. Solutions which are deemed particularly inventive could then be used to drive solutions in third-world communities to make change for good.

In terms of player empowerment through task-based gameplay, it would seem that McGonigal’s design of *EVOKE* has been clearly inspired by games such as *SFO*, although it would seem that *EVOKE* is more of a traditional ‘serious’ game than *SFO*, because the intended real-world benefit is made explicit from the outset.

McGonigal (2011, p.7) appears to advocate ‘fixing’ the current reality by making it more game-like, favouring predesigned experiences that ‘gamify’ the existing world, having

been “explicitly designed to improve quality of life, to prevent suffering, and to create real, wide-spread happiness” (*Ibid.*, p.10). This suggests a much more *deductive* approach based on game design experience, in preference to the kind of *inductive* approach based on existing player behaviour discussed in this thesis, and in the previous work of the researcher (Dansey & Stevens, 2008). This is a major difference in the view of the researcher compared to McGonigal. Throughout this thesis it is argued that real-world benefit is something that is best ‘pulled’ by the players from a magic circle of play that may or may not be designed to facilitate such benefit. The reason behind this argument is that it is difficult to anticipate the specific needs of individual players, and even more difficult to design a solution that will cater to all, at the specific time they need it. McGonigal’s more prescribed approach would represent the idea of ‘pushed’ content, from the game to the player, and is also subject to the problems of design quality and unpredictable player behaviour as discussed earlier in the thesis. McGonigal later acknowledges (*Ibid.*, p.278) that the potential for emergence in distributed systems such as online games is high: “The bigger and more distributed a collaborative effort gets, the more likely it is to become both chaotic and hard to predict... Bigger isn’t more; it’s different”. Therefore, there appears to be some confusion over whether McGonigal believes the larger, prescribed games can be effective.

However, due to the many structural similarities between *SFO* and *EVOKE* it is possible that similar observations to this study might also be seen in the player data from *EVOKE*, such that players use the game for an emergent manifestation of real-world change in an area other than was intended. One potential avenue for further research would therefore be to examine games such as *EVOKE* for further instances of emergent benefit and try to deepen the understanding of features of games which could be conducive to this, in order to inform the scope of future work in games research. As a first step towards the understanding of a particularly conducive gameplay structure for emergent benefit, it would be helpful to investigate whether differences between the gameplay in *SFO* and *EVOKE* affect the emergence of real-world benefit.

***SFO* and Huizinga's understanding of play**

According to Huizinga (1970, p.32), characteristics of play include the following:

- A free activity, that is, the player is free to take part or decline.
- Outside 'ordinary life' as being 'not-serious',
- Within its own proper boundaries of time and space according to fixed rules and in an orderly manner.

With regard to *SFO*, many, if not all of these points are debatable. First, while an individual is free to decide to take part in *SFO* as a player, they could quite easily find themselves part of a game just by going about their everyday business. For example, the *SFO* task "Humanitarian Catharsis" (www.sf0.org/tasks/Humanitarian-Catharsis) instructs players to make a security guard laugh while being filmed. If the security guard is unaware they are being filmed, their participation in the game might not have been agreed, and therefore difficulties arise in ascertain whether or not they are playing.

Second, particularly with pervasive games it is difficult to distinguish play from ordinary life: if the player finds the context of the rules difficult to understand (Dansey, Stevens & Eglin, 2009), or if the boundary between real and virtual personae is blurred, it might be difficult for them to ascertain whether or not they could be playing, and therefore whether or not they are outside the 'serious' context of everyday life. Furthermore, other scholars (e.g. Eyles & Pinchbeck, 2011; Eyles & Eglin, 2007) have discussed the potential for *Ambient Games*, in which player must specifically try to ignore the game and go about their everyday life in order to play.

Third, according to Huizinga (1970, p.28) the fixed boundaries of play need not be material and can instead be ideally defined, and a list of example "play-grounds" is given, including the frequently-cited "magic circle" of play. The 'ideal' boundaries of the magic circle would include a requirement for the adoption of a lusory attitude (Suits, 2005, p.49) in order for the player to be playing cognitively as well as physically. However, regardless of the phenomenological nature of the boundaries, and despite being fixed,

they could still be “blurred”, again making it difficult for players to ascertain whether or not they are playing at a given moment in a given place. Indeed, this is a deliberate function of pervasive games, as noted by Montola (2005).

The conflict between rules and pervasiveness

Because *SFO* was identified as a strong example of a pervasive game, this could explain why the results of the study contradict Huizinga’s work so frequently: Huizinga describes play as fixed, separate and voluntary, but pervasive games exist in order to deliberately *subvert* the spatial, temporal and social boundaries associated with play.

The researcher’s previous work has already explored the avenue to some extent. Rules generally govern valid game interactions by restricting player behaviour and most rules follow a social / behavioural / spatial / temporal pattern, thus (Dansey & Stevens, 2008):

PLAYERS(a) must perform ACTIONS(b) in SPACES(c) during TIMES(d), where (a),(b),(c) and (d) might be ‘none’, ‘a particular set of’, or ‘all’.

In the above definition of rules, the notion of ‘actions’ is pragmatic, and could be read as the notion of ‘spatial or social adjustments made over time’. Montola’s definition of pervasive games requires expansion of the magic circle of play, spatially, temporally or socially. Therefore, if pervasive games require spatial, temporal or social expansion, and rules contain spatial, temporal or social detail, it is suggested that another potential avenue for investigation is whether pervasiveness and rules are somehow connected, perhaps as two conflicting forces.

Intermediary summary

In retrospect of the chapter so far, a summary of the key points is as follows.

Players are finding support from *SFO* for doing things in their real-world lives that they somehow felt they could not, or might not, have done beforehand, similar to the intended outcomes promoted in serious games. However, the clear definition of the purpose of serious games is problematic, as authors either focus on utility over enjoyment, or enjoyment with incidental utility. Additionally, the common definition of serious games

makes assumptions about how players play, and does not tend to consider potential design flaws in individual games, unexpected player behaviour, or variable outcomes as potential threats to the intended benefit of the game.

This is not to say that unexpected benefits cannot emerge from serious games. Indeed, all games have the potential to be beneficial if played in particular ways, so researchers concerned with extra-lusory benefits should not just consider serious games. In this respect, it is recommended that the study of benefit in games should focus on when existing games, regardless of designer intention, have been beneficial through emergence, such as *SFO*.

SFO is a good example of a game that is suited to knowledge transfer, according to the definitions of Gee (2007), and an effective tool for player satisfaction, according to the definitions of McGonigal (2011). In particular, it would seem that certain elements of *SFO* are contributing to the effectiveness of the game as a vehicle for emergent benefit. First is the tendency for the game to promote the consideration of explicit rules, and to celebrate the resulting contradictions between implicit rules instead of treating them as a nuisance. Second is the relative lack of explicit rules, that allows the players to shape the game to their needs, and caters for varying levels of commitment or “drive”.

Following Suits’ (2005) discussion on dullness resulting from a lack of rules, in *SFO* it would appear that it is the responsibility of the player to prevent dullness over time by frequently adding fresh, original rules to the few explicit rules that the game offers. This could be seen as a negative aspect of the game, particularly among players with low levels of motivation.

Certain points made by Caillois (1961) and Huizinga (1970) have been demonstrated by the evidence for *SFO* to be problematic. In particular, points regarding the clear classification of games, the rarity of extra-lusory ephemera, the separation between real-world and game-world, the complete awareness of being part of the game, and the negative impact of real-world elements pervading the game world. However, these

differences are mainly attributed to the significant development of understanding, genre and culture in the past 50-80 years.

SFO is very similar in structure to McGonigal's *EVOKE*, and the latter seems to have been clearly inspired by the former. Although there appear to be differences in the design philosophies, because the nature of gameplay is very similar, it could be beneficial to investigate whether the players of *EVOKE* experienced a similar kind of emergent benefit (regardless of *EVOKE*'s intended purpose), in order to better understand the extent to which the nature of gameplay (i.e. focus on implicit rules, suitability for knowledge transfer and satisfaction) is a factor in emergent benefit.

Finally, because pervasiveness seeks to blur temporal, spatial and social dimension, and because rules seek to make them more specific, a further suggestion for future research is how, if at all, pervasiveness and rule definition are connected.

The remainder of this chapter analyses the methodological aspects of the project.

Methodological issues

As recommended in the methodology chapter of this thesis, the Glaserian Grounded Theory methodology contains several key themes which must be followed in order to be 'doing' Grounded Theory appropriately. These were *theoretical sensitivity* (the ability to conceptualise, tolerate confusion and regression, and trust in emergence), *conceptualisation as opposed to description*, *substantive coding* (maintaining the position that 'all is data' and being as open as possible to the data), and the gradual *emergence of a core category*, to which the other categories in the theory can all be linked via *theoretical coding*.

Both the theory and the process of generation were problematic at times during the study. Glaser's version of GT was used to inform the study in preference to that of Strauss because of the reportedly greater flexibility with regard to the GT process, which the researcher believed at the time would be more conducive to an emergent, representative

theory. However, Glaser's explanation of the process was in places *too* vague (as discussed in Covan, 2007, p.66), often leaving key decisions in the study to a subjective 'gut-feeling' on the part of the researcher. Because of this, maintaining theoretical sensitivity was the most problematic area of the methodology. It was difficult to imagine the emergence of a theory from such a complex set of data, particularly when the codes generated during the initial coding phases were so diverse and numerous. The dissonance created by such periods of confusion and lack of confidence led the researcher to tackle the workload of data analysis in a sporadic manner, achieving as much as possible at times of high motivation or inspiration. Glaser understands this and notes that Grounded Theory is particularly conducive to the unpredictable and stressful nature of postgraduate study (Glaser, 1978, p.18) which provided reassurance in times of worry. However, a significant observable issue resulted from this confusion. The researcher conducted a self-interview in order to highlight preconceptions, but it was self-defeating in its intended purpose and potentially compromised the neutrality of the data unnecessarily. This highlights a problem with the more flexible 'all is data' approach of GT, in that faced with confusion it is difficult to ascertain which details are worthy of being recorded.

With regard to conceptualisation as opposed to description, the first attempts made by the researcher at describing the emerging theory were identified as being *too* descriptive, in that they were illustrating static concepts than dynamic processes. For example, in version 2 of the theory (Appendix B, Figure B.2) categories included 'task preferences' and 'player attitudes', both of which are rather specific. In contrast, with later versions of the theory the emphasis shifted to categories of ongoing action such as 'socialising' and 'making an impact', which are notably higher in conceptual level. It would seem that the researcher's understanding of conceptualisation as promoted by Grounded Theory developed as the project progressed, rather than being entirely understood beforehand.

During substantive coding the researcher remained as open to the data as possible, coding the responses of all respondents regardless of length, perceived relevance and helpfulness (for examples of varying levels of helpfulness, see Appendix A, SF017, SF021, SF024).

Data was coded from a combination of field notes and literal correspondence, via interview media such as face-to-face, email and voice recording. Furthermore, the researcher's own opinion from the point of view of being a player in the past (Appendix A, SF013) was not discounted from being part of the data set for the study. In retrospect the substantive coding could have been improved by expanding the data set to include the completed task submissions of players, the *SFO* game website and the discussion thereon.

A further problem with the methodology of Grounded Theory is the somewhat paradoxical issue of avoiding the literature surrounding the problem domain. While Glaser is "emphatic" in recommending this (Scott, 2009, p.104), Lempert (cited in Bryant & Charmaz, 2007, p.20) notes that this can cause problems during analysis, where a researcher may feel they have made an "innovative breakthrough" when this is not the case, as they would have been aware if they had consulted the literature beforehand. If Glaser's method had been selected earlier in the PhD programme this could have been a problem, but the researcher is confident that the general reading around the problem domain prior to selecting GT has both prevented major oversights and helped to avoid restating the obvious.

Nevertheless, it is a perennial problem of Glaserian Grounded Theory that researchers will always be influenced by their prior experiences. This could be interpreted as a potential mitigating factor in the neutrality of GT results, and highlights an important issue of GT-based methodologies. Although it could be said that similar problems would seem to apply in more scientific approaches, for example, where the researcher strives to be as objective as possible despite the many cultural and environmental factors encountered throughout his or her life, the major difference is that with scientific endeavour the researcher is *encouraged* to consult the literature thoroughly before research is carried out, in order to best prepare for informed discussion and hypothesising.

With this in mind, however, it has been stated throughout this thesis that objectivity was never an aim of the research. Instead, the researcher would embrace the inevitable

influence in the research pool, providing as much information as possible on potential preconceptions in order for the reader to be able to contextualise the thesis appropriately. Bryant and Charmaz (2007, p.20) state that researchers should not avoid accounting for these preconceptions, and this thesis has been no exception.

In retrospect, the minimising of preconceptions could also be aided by using some of the principles of Action Research methods. Dick (2007, p.406) suggests that if researchers became more of an active part of the substantive area, the opportunities for mutual education are increased, and if the participants are involved in analysing their own data the risk of preconceptions (at least on the part of the researcher) could be reduced. In a similar vein, Olesen (2007, p.422) also emphasises the importance of acknowledging potential effects of researcher presence, but through *reflexivity* rather than participation, and notes that with the exception of the more recent advances in Grounded Theory (for example the social constructivism approach of Charmaz), many GT practitioners run the risk of obscuring their “considerable agency in data construction and interpretation, as well as the framing of accounts” by failing to recognise their own impact on the behaviour of the participants. Olesen describes the need for reflexivity in order to allow readers to “assess the researcher in action and accord trustworthiness and credibility” (*Ibid.*, p.428). Olesen lists three ways in which such reflexivity can be achieved, namely a full explanation of the handling of analytic and practical issues, a discussion on the background and influences of the researcher, and reflections from the researcher on the more emotional nature of the research (*Ibid.*, p.423). It was important for this project to produce as natural a result as possible, so the researcher chose to try to minimise preconceptions through reflexivity rather than through participation, although the researcher’s experience of Playing *SFO* was also taken into account via a self-interview. All three of Olesen’s reflexive guidelines have been addressed in this thesis: the method and its related issues have been fully described in an earlier chapter, other earlier chapters covered the previous work and worldview of the researcher, and this chapter covers problems with researcher confusion and lack of confidence, as well as mistakes made, where appropriate.

Benefits of being informed by the Glaserian Grounded Theory methodology included the ability to be flexible with regard to the subject being studied. If particular unexpected outcomes emerged from the data, the methodology was flexible enough to allow the researcher to shift the focus of enquiry through theoretical sampling, in order to more accurately address the issues being described by the participants. This freedom appeared to be due to the identification of preconceived ideas at the beginning of the project, thus allowing the data to speak for itself and providing an advantage which might not be available in other methodologies. However, as noted in previous chapters, preconceptions were difficult to identify, and even more difficult to ignore.

Hermeneutic issues

Grounded Theory attempts to induce results based on the researcher's interpretation of participants' meanings. However, this also requires addressing the problem of trying to ascertain a single, *intended* meaning. A number of unavoidable hermeneutic issues have been identified which could compromise the integrity of the coding, and therefore the applicability of the final theory.

Sutton-Smith acknowledges (*Ibid.*, p.17) that a rhetoric used by "experts" to understand a player's experience might differ from the rhetoric that the player assumes when they play. A player's main motive might be to learn or develop, whereas the researcher might view their actions based on fate or imagination. "When the adult says play is a developmental experience, for the child it may be nothing but hide-and-seek" (*Ibid.*, p.216). This is further complicated when studying a group of players, as there is diversity in players and the types of play they favour (*Ibid.*, p.5). This is reflected quite clearly in the results of this study, where some players play for creativity, artistic expression, learning and so on.

Furthermore, Sutton-Smith (*Ibid.*, p.17) also notes that an "expert" might use a different rhetoric when analysing accounts to when they are abstracting to theory, and although the preconceptions of the researcher indicated the focus on the interpretive rhetoric of *the imagination*, the results of this study have shown that players use the game to aid in a

number of real-world improvements to their lives. Therefore the rhetoric of the researcher shifts at this point to Sutton-Smith's rhetoric of *the self*, as the context is more focused on the individual benefits gained by a particular player.

To compound the hermeneutic issues further, while Sutton-Smith acknowledges the ability of the *researcher* to switch rhetorics, it does not appear to be explicitly acknowledged that the *players* could switch rhetorics during play, therefore complicating the job of the researcher. In the case of *SFO*, for example, one player (SF011) reported that "I can try things, experiment or just make a joke or do it deathly serious, everything is allowed...". In terms of this study, this would mean that the accounts of the players of *SFO* might only be valid at the moment they were given, or are not completely accurate all of the time. The researcher was aware of this, and because the Grounded Theory methodology promotes gradual emergence of recurring concepts through rigorous comparison, temporary changes in player rhetoric should not be an issue of importance.

To summarise, the theory presented in this thesis is a product of the researcher, and depends on the researcher's ability to express ideas in written form. The process of communicating complex ideas via the relatively brief method of speaking and writing, no matter how careful, would almost certainly not *fully* succeed in its aim. In a similar way, the theory put forward is a result of interpreting written data, informed by the Grounded Theory methodology, the researcher's interpretation of Glaser's writings and the accounts of the participants being highly unlikely the same as the writers intended. The ability of the participants to accurately record the experience of playing *SFO* would also be a factor. However, and perhaps most significantly, the players' interpretations of the game of *SFO* differ dramatically, but not because of low hermeneutic or communicative skill, but because they are almost *required* to do so. This would very much complicate the process of ascertaining experiential 'common ground' from documentary evidence alone. These issues are summarised in Figure 5.1.

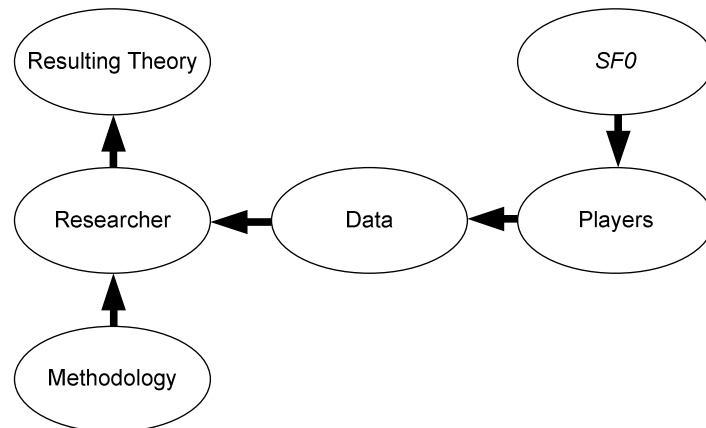


Figure 5.1: Hermeneutic issues at each stage of interpretation

Structural issues with the theory

Regarding the structure of the theory itself, the relative number of examples from data with which to illustrate each section varies greatly. However, the theory is intended to be read as if the three main categories – namely becoming more outgoing, becoming artistically expressive and becoming more wise – are the activities that are being facilitated by the game, whereas the sections within each category should be seen as more of an indicator of how the activities manifest themselves. Such sections were based on conceptualisation from frequently-appearing codes, despite the lack of explicit instances of the sections in the data. Therefore they will be left as part of the theory unless further exploration denotes them as no longer required.

A further problem with the theory is that some participant quotes appear in more than one section, which suggests continued ambiguity or unnecessary repetition in the theory, despite attempts to reduce such problems in earlier stages. As with all grounded theories, more data would help to clarify this and perhaps discover further issues, and this is something that could be explored in future using the existing version of the theory.

Other limitations

In retrospect it would seem that there were two other limitations resulting from the interview method used in the study. First, the nature of the questions given to the participants very much focused on the tasks of *SF0*. As discussed in previous chapters,

the game typically involves reviewing the tasks of others as well as scoring points for completing tasks. The researcher chose to focus on 'tasking' as this is the main way for players to progress through the game in terms of scoring points. However, it is possible that many players concentrate mainly on providing feedback, or other parts of the game, rather than completing their own tasks, so it would seem that this was a missed opportunity to gather further data on the game, and has skewed the theory towards the task-related aspects of *SFO* gameplay.

Second, because players were mainly contacted and recruited via email, it is likely that the sample used for the research is not representative of the game population. The more talkative or confident players of the game might have self-selected or might have been over-represented in the results, and this reflects a limitation in the nature of interview appeals in general. As discussed earlier, however, the aim was not objectivity, but to concentrate on producing a theory based on the data obtained. The results and theory generated in this study should therefore be viewed with the above points in mind.

Chapter 6 – Conclusions

Overview

The aim of this research was to deepen the understanding of pervasive games and explore issues that players would be likely to encounter, in order to identify phenomena that can be more closely examined.

Several research papers were written covering various aspects of pervasiveness in games, in order to delineate the boundaries of the problem space more clearly. Subjects covered included the interpretation of the boundaries of the magic circle of play, how these interpretations might be subverted through ambiguity, how unexpected outcomes might emerge as a result of creative interpretations of rules and play, how emergent outcomes might be facilitated, and how Montola's model of spatial, temporal and social pervasiveness might be extended to include contextual pervasiveness.

Following this, the main study of the PhD programme identified a 'reliable' example of a pervasive game, based on literature and the understanding gained thus far. The existing pervasive game of *SFO* was chosen, rather than creating a prototype game to be studied, in order to create as natural a result as possible, and to avoid the *telic* mindset often associated with contrived prototype testing. Glaserian Grounded Theory was used to investigate the experiences of a group of 24 players from *SFO*.

The outcome of the theory was discussed, and more widely contextualised using literature from notable authors on games and their design. This was conducted in lieu of a 'traditional' literature review, as per the recommendations of the methodological approach.

While using a relatively novel but rigorous approach to produce empirical evidence in a fairly new area of games research can be seen as a contribution to knowledge in itself, this chapter provides additional specific conclusions, grouped into categories based on their scope within the problem space. The first category contains general statements about

games that can be put forward due to the outcomes of the main study. The second category contains conclusions made about the specific group of participants and their experiences with *SFO*. Finally, recommendations for further research directions are given based on the lessons learned and conclusions reached in this study.

General conclusions

This thesis has explored the pervasive game of *SFO* in terms of the experiences of 24 of its players. It is different from existing studies in pervasive games as it did not seek to define a model for how games are pervasive (Montola) or investigate the defining features of ubiquitous games and how technology has converged with game design (McGonigal). Glaser's methodology of Grounded Theory was used to inform the gathering and analysis of data, and from the generated theory it would appear that some statements can be made with regard to the general nature of certain types of games.

Commonly-used methods in serious games are potentially flawed

It has been suggested that the genre of games known as 'serious games' is potentially flawed in its approach to knowledge transfer. Such games rely heavily on designer ability, which (as argued in the previous chapter) is generally not reliable enough to control specific outcomes, particularly when such designers do not come from a games design background. These games generally make presumptions about player behaviour, and place trust in the player to avoid appropriated play and 'play properly'. This is something that, from experience with the researcher's own prototype games, has been found to be problematic.

Non-serious (including pervasive) games can produce serious outcomes

It has been demonstrated that pervasive games can be used for benefits in everyday life, and *SFO* is an example of such a game. Similarly, this could also be said for all games that are not normally classified as serious games, as from the evidence presented in this thesis, *SFO* seems to be a non-serious game in which real-world benefits have nonetheless emerged.

Unexpected outcomes can arise, regardless of intention

It has been recommended that the study of real-world positive outcomes in games should not be driven by apparent designer intention, or focus only on games that appear to be *intended* to foster such outcomes. Through the discussion of emergence in games it has been proposed that sometimes unexpected outcomes happen during play, and in the case of *SFO* this would include the real-world benefits experienced by the players as illustrated in the current version of the grounded theory.

Serious games can produce other, unexpected serious outcomes

From this, it is also suggested that in serious games, it is possible that emergent benefit (in addition to the prescribed benefits of the game) could arise, meaning that players could be benefiting from play in ways other than those intended by the designers.

Therefore, the study of *emergent* outcomes in games should not be limited to non-serious games.

Conclusions from the particular data set

The emergence of real-world benefits in games such as *SFO* was not something the researcher expected to encounter as a result of the study. This not only demonstrates the unexpected nature of emergent behaviour but also the focus of Grounded Theory on being led by the data of the participants rather than the preferences of the researcher.

With regard to explaining the problem space of *SFO*, the following conclusions can be made:

Players are using *SFO* to become more outgoing, artistically expressive and wise

The main conclusion of the theory is that *SFO* is allowing some players to be outgoing, to be artistically expressive and to gain wisdom, by providing the means and motive for a number of activities that they somehow could not or might not have done before. This is exemplified by the numerous quotes from the participants indicating notions such as '*SFO* allows me to', '*SFO* helps me to', '*SFO* gives me a reason to', and so on.

These processes manifest themselves in specific activities

In clarification of the main conclusion, a second conclusion of the theory is that the processes facilitated by *SFO* manifest themselves in particular activities such as socialising, trying something new, reflecting, making an impact, being creative and playing unashamedly. These processes have been conceptualised from numerous specific incidents in the data, in which participants had mentioned particular examples of activities in which they had been involved.

Encouraging contradictions in implicit rules appears to facilitate emergent play

It would seem that *SFO* is conducive to emergent outcomes at least partly because, in contrast to more common games, player-to-player differences in implicit rules (and the discussion thereof) are not only inevitable, but also appear to be *encouraged* by the game. It is interesting that *SFO* deliberately encourages the use of novel interpretations for the purpose of varied gameplay and interesting discussion. Players ignore the concept of hermeneutics when deciding how to complete a task, to the point that too ‘literal’ an interpretation might be considered uninspired gameplay. Metagaming resulting from a playful attitude to the more ludic elements of the game appears to be highly encouraged.

Such emergent play in *SFO* included unexpected real-world benefit

Players are allowed to play in almost any way they choose, particularly as *SFO* has relatively few explicit rules by which players must abide. Furthermore, the ‘densely-interconnected system of simple interactions’ as described by Johnson (2001) is provided by the *SFO* website, making the gameplay environment additionally conducive to emergence. It is likely that one of the emergent outcomes of the game, as discussed throughout recent chapters, is real-world benefit.

Methodological conclusions

From the point of view of using a Grounded Theory methodology to generate knowledge in this particular project, the following conclusions were reached.

Glaserian Grounded Theory was an appropriate methodology for exploration

First, the Grounded Theory methodology was very appropriate for investigating the problem space, particularly as the researcher was unsure as to the exact phenomena to be studied within the domain due to a constantly-evolving understanding of pervasive games. As can be observed in the previous academic work of the researcher, the complex nature of game experiences did not appear to be particularly conducive to an experimental approach, and the Grounded Theory approach allowed a much more flexible method for gathering rich data. The aim of the study was to better understand the problem space and identify issues for closer investigation, an approach that has been recently validated (Reid *et al*, 2011) in the context of “using emergent phenomena from research field trials to drive experiments”.

However, while the methodology allowed for flexibility of approach in an uncertain and complex environment, this might not be particularly appropriate for studies in which more focus is required. For example, in this study the concept and discussion of emergent benefit in games has arisen from the data, but in order to extend the study of this phenomenon in future one might need to select a more focused approach to obtain a predictable domain of results.

Glaserian Grounded Theory requires trust

Glaserian Grounded Theory methodology requires a significant leap of faith on the part of the researcher. Problems with this included the uncertainty of conclusive significance or relevance, researcher depression, confusion and frustration, and a lack of initial methodological understanding. Glaser stated (1998, p.19) that the best way to do Grounded Theory is to *do* Grounded Theory, and that trusting in emergence is key to the process (*Ibid.*, p.189), and in retrospect it would appear that Glaser was correct.

Deliberate hermeneutic ambiguity causes issues with ascertaining intention

While it would appear that unavoidable hermeneutic issues would be present in any research project involving literature or data, in *SFO* the players are actively encouraged to reverse the hermeneutic process when deciding how to complete a task, by creating tenuous, unique or unexpected meaning from the task brief. Therefore, understanding the

intentions of the designers of *SFO*, at least from documentary evidence alone, would be impossible. However, this project was more concerned with understanding the experience of *SFO* from the point of view of the players, and as such the hermeneutic risks did not appear to be significantly greater than with any other text-based project of understanding.

Additional avenues for further investigation

In addition to the conclusions discussed thus far, the following suggestions are provided for future research.

Exploration of McGonigal's *EVOKE* for triangulation

As suggested in the previous chapter, future research on *emergent* real-world benefit is likely to be directed by the structure and nature of gameplay (in particular a relaxed attitude towards implicit rules) rather than whether or not the game was intended to promote real-world benefit. To this end, a game which is very similar in structure to *SFO* (Jane McGonigal's *EVOKE*) was suggested for further exploration and comparison to *SFO*.

Rules versus pervasiveness?

A final, tentative suggestion for further exploration was provided. Because pervasive games blur the spatial, temporal and social aspects of play, and rules seek to make them more specific, a potential tension between rules and pervasiveness might exist. Investigation of this could provide a deeper understanding of the nature of pervasiveness in games.

Summary

In summary of this chapter, and indeed the thesis, evidence has been presented following an unusual Grounded Theory investigation into player experiences of pervasive games. The evidence collected and coded shows that players receive strong positive benefits in their lives as a result of *SFO* gameplay. Potential reasons for this were discussed, and recommendations were made regarding directions for future research and how such research might be more effectively conducted. Reflections on the use of Glaserian

Grounded Theory in such a project are also given, so that future researchers can familiarise themselves with the process before tackling a similar task.

Overall, this project has been successful in its aim of contributing to the growing discourse on pervasive games, by providing a deeper understanding of pervasive game experiences, the potential factors that could affect them, and potential methodological techniques for discovering them.

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Appendix A – Player Data

In this appendix, the responses from players are presented. All of this data was used in the generation of the grounded theory. Participants SF01-SF09, and SF013, were interviewed face-to-face, so their data is taken from notes made during the interviews. Data from participants SF010 onwards, including the follow-up questioning, is presented as it was received via personal message on the *SFO* website, with any spelling and grammatical errors included.

Phrases in bold typeface are the researcher's own comments, which were added to aid memory of the context. Some details have been censored purely for reasons of anonymity, in accordance with the ethical approval agreement.

SF01

- Whenever we decide to do a task, we don't always decide before.
- Sometimes we plan though.
- It doesn't always go to plan.
- I help more with the documenting of the tasks than the planning.
- There are loads of different ways to interpret a task.
- Sometimes we attempt a task in many different ways.
- We consider the standard it needs [**as in quality of completion**].
- Can be quite fun sometimes.
- Once we did a task where we went to the beach and dug out a labyrinth in the sand,
- It's quite casual.
- We do the tasks while we're hanging out, and we'll take a break now and again to play *PlayStation*.
- It's very laid back.
- I'm not as confident as the others [**in my team**]
- Particularly when it comes to interacting with the public - I chicken out.
- Concerned about the people of [**town name**].
- We get weird looks from people but it's quite easy to ignore.
- The tasks are quite fun, and different.
- You need to take a few risks sometimes.
- Once we had a water fight near the seafront and someone came and had a go at us.
- The game gives us something definite to do, something to be getting on with.
- Different from what most teenagers do.
- Led onto *SFO* from *PXC* [***Perplex City*, an alternate reality game**].

SF02

- Tasks are completed to get points.
- They are interesting because they are ambiguous. "Hugely open to interpretation".
- Some players do literal tasking [**participant's team**], whereas others do metaphorical tasking [**rest of players in SF0**].
- You play the game how you want, and as long as you have made an effort it is appreciated.
- Can't really fail as long as you try.
- Really, really like the tasks.
- They give me the opportunity to do something I've never done before.
- Usually do the tasks under the guise of art students, it's less effort than explaining ARGs [**alternate reality games**] to people.
- Photography [**used to document tasks**] makes you look like art students.
- Some of [**participant's team**] are actually art students.
- In [**town name**] it is a hassle to do tasks.
- "Pain in the arse" to organise.
- Latecomers make it difficult, because they are often key in some way [**equipment or head count**]
- Pleasure in the game comes from submitting evidence and getting feedback from the community.
- Nice to look over my previous tasks.
- We don't go to the pub, or to the cinema, [**our team**] gives us an excuse to get out and do something.
- Combines computers with digging at the beach [**for example**].
- Gives you an excuse to have a day out.
- Game rules and structure take a back seat compared to personal advancement. [**our team**] maybe isn't a fair representation of the game because it is not as serious about the rules as the bigger cities such as LA, Chicago, or SF. It's more casual.

SF03

- There is a big variety of tasks, split into 7 groups, I think.
- If you prefer a certain type of task you can select a group appropriately.
- Some tasks are specific, whereas others are left open to interpretation - You can interpret them however you like.
- It's peer-reviewed I suppose. I like the community and peer review aspects.
- Tasks are always fun if you do them in the right way, with the right intent.
- I'm a solo player in [**town name**], so I go for tasks I can do alone.
- These guys are spontaneous with their task completion, whereas I think I plan it out more.

SF04

- Most of the tasks come from the users themselves. The users set the rules of the game.
- The rules can be interpreted in different ways.
- You make your own rules to an extent.
- Community has certain rules, such as what constitutes an acceptable level of evidence, or what is right and wrong. There isn't much admin-deleted stuff though.
- In **[our team]** there are only a few people, so it is quite relaxed.
- If we are bored, we pick a task, and then go out.
- Some tasks are spontaneous, but some are more planned. "Organised chaos".
- This suits the game, because different people have different ideas about how a task should be completed **[therefore presumably there would need to be a degree of spontaneity]**.
- "Tasking is great"
- Some tasks are odd.
- Some you end up walking in the rain.
- Some are amazing.
- "They're fun. Fun. That sounds awful."
- Nature of the fun varies based on the nature of the task.
- It's a reason to get out and do something. We're not a very sociable group.
- If you see new players, unless they study the game before playing, you can see their playing style change as they get community feedback and even flags **[reported for bad behaviour]**.
- I started the game just taking photos at my desk, but now I'm involved in a "bigger collaboration". This is one of the key features of the game.

SF05

- I'm not that involved with too many tasks.
- It's enjoyable to be involved in something.
- It's different in that it's not like going clubbing or to parties.
- It's enjoyable.
- Discovering new things and "being friends a lot".
- Sometimes I don't like the organisation or the travel. **[our team]** don't do organisation so that's okay **[joke]**.
- It's FUN. Simple as that.
- Good how it brings everyone together - people who wouldn't have met face-to-face before. I met **[name of team member]** today.

SF06

- The tasks are like a break away from the norm of every day.
- They are not a great [**i.e. big**] disruption.
- They make people see the world differently.
- They warp people's perceptions of their everyday surroundings.

- Some tasks are quite "hit and miss".
- Some are quite localised to the player, and therefore the emphasis is on personal development.
- Some are not as localised, and therefore the emphasis is on making other people see their world differently.
- It's like graffiti of people's minds, but not permanent graffiti.
- It's a creative way to pass one's time.
- Rather than sitting playing games, it is enriching one's life.
- Everyone is affected by the game in different ways.
- Players can interpret the tasks in different ways.
- It's lightheartedness, not really serious.
- There was a task where we had to put a moustache on a statue, and some people would see that as defacing.

[Player from America arrives unannounced]

- This sort of thing is a normal occurrence [**i.e. random players from elsewhere turning up**].

SF07

- The tasks actually ARE the game. The game itself grows out of the tasks.
- The game "withers away" after a while.
- *SFO* is based on 1960s/1970s French Expressionism.
- The tasks range from easy and specific, through more difficult but still specific, to vague.
- The player level requirement of a task defines the expectations of the community [**presumably with regard to effort and quality**].
- Heavy backlash for non-effort: comments from other players, albeit constructive, and even being ignored.
- Some players are known for being "snarky".
- "Huge distinction" between group tasks and individual tasks. Individual tasks require more "drive" and less "culture jamming".
- Philosophical grounding of game comes out more in group tasks.
- "Welling-up of spirit" [**during some unspecified aspect of tasks**].
- The tasks are a perfect catalyst for creative energy.
- With group tasks you get a pleasant anxiety or apprehension for doing something

out of the norm.

- There are standards of completion for tasks, but these have developed out of the community, and are often unwritten.
- It's interesting to watch someone evolve. They start with the specific, easy tasks, then get more adventurous, even with the easy tasks.
- A bit of an expectation develops once you get established.
- *SFO* is about 3.5 years old.

SF08

- There are 6 different groups in *SFO* (I think).
- There are different tasks for different groups.
- For each task the player needs to be at a certain level to be able to complete the task.
- Completing tasks increases a player's level.
- Some tasks require more effort or preparation than others.
- The tasks are fun. They are different, and involve things you wouldn't normally do, like smashing TVs up to make furniture.
- I'm more willing to do some tasks than others. Certain interpretations of a task would earn you more points, but sometimes the way you interpret a task would get you in trouble if you did it.

SF09

- I've only done 3 or 4 tasks.
- I liked the ambiguity and the freedom. I like the tasks.
- For group tasks I let other people do the organising.
- The game gives me something to do, rather than just sitting around.
- I learn from the tasks on some occasions.
- I'm finding it quite enjoyable so far.

SF010

That's really, really cool!

By the way, you're welcome to quote any of my tasks if you like, since I'll be referring back to them in my answers.

My answers:

What are your experiences of the tasks in SF0?

I think of them as a way to inspire yourself and push yourself to never not have something strange and awesome to do. If it weren't for SF0, I'd find ways to fill my time - but I probably never would have played human Pong in the Mall of America, arm-wrestled a stranger while dressed as the Easter Bunny, or painted a giant fractal on my wall.

How do you feel about the tasks?

Mixed - some are great, some don't really inspire me. But that's because the game seems to try to have something for everyone, and there's always enough tasks I like for me to keep on tasking. I do feel like Insatiability [**an era of tasks in SF0**] had more tasks that were to my taste than Everyday Life [**another era**], but EL's aren't bad.

What is it like to do the tasks?

Depends on the task.

Sometimes you do a lot of planning, put a lot of thought into it, and get frustrated as it all fizzles. Sometimes all that planning turns into a brilliant time with you and some friends doing something strange, like when you meet someone you barely know to bother strangers in a suburban mall or make horrible music in the park. Sometimes you put yourself through all sorts of strange experiences without much planning at all.

Some tasks are introspective, and in doing them you can push yourself to share difficult memories or meditate on life. Some are calm acts of creation, like my recent coulages.

Sometimes you explore something new and fall in love with it; without SF0 I wouldn't have become a part of my local steampunk club scene. Other times you try something different and it sucks. Some tasks are bonding experiences, while some are done with people you already know and some are entirely solitary.

Sometimes you do something serious and artistic, but sometimes you just play.

I don't think of SF0 as being one experience - rather, it's a framework for pushing yourself to try all sorts of new things according to what strikes your fancy.

SF011

Dear Neil

I didn't play in a while but I can answer anyway.

What are my experiences of the tasks?

So as I understand you mean my experiencing of completing the tasks, right? Ok:

The nice thing about it is that you can choose wich task you wanna do, so you can either challenge yourself or do something that's easy for you or whatever you're in the mood for and you can also point this out within the completion. I see the tasks more as an inspiration, they kind of give me a reason to do what I like to do. Also the character of the game allows it to interpret the tasks in a way I want what makes it a very creative game. I like that, I would not like to play a game with real rules :)

Also what motivated me probably most to play (and is also the reason I don't really play anymore) was the community. Right now I'm not really involved but when I started playing there was a really good spirit in the game. There were a lot of really fun and good players, and they gave me the feeling that my contibution to the game is wanted. So completing a task was also something I somehow did for the community. That's the character the game has, it's that everyone can contribute, also the tasks are made by the players. It's nice to have a task approved and see that other players are having fun completing it.

How do I feel about the tasks? You mean how do I feel about completing the tasks, right? When I was playing frequently I really got into it. I wanted to complete the tasks really well and so, that the other players would enjoy reading my proof, I was really ambitious about it. Doing a task well made me happy and lot's of votes made me feel good. There are some completions I made that I sometimes look up and I like to read them and then I also read the comments on it, that's nice.

What is it like to do the task?

It's a task and it's a game. It's like doing something important and I wanna do it well but still it's a game and I can play when doing it. I can try things, experiment or just make a joke or do it deathly serious, everything is allowed cause there are no rules. I can do just what I want to do, it's like playing with myself, just with others. It's very entertaining, you should try it!

I'm not nativly speaking E[nglish] so if something is not clearly enough said ask back!

Go usability, go!

Now I want to play again!

SF012

What are your experiences of the tasks in SF0?

My experiences of the tasks are varied. Having done over 100 I have over a hundred different experiences, that's what's so great about the tasks, they keep you moving in different directions all of the time. Some you spend hours creating something alone, some you do with large groups of people, some you do as art projects, some you do to explore yourself and your boundaries, some you spend years plodding along slowly working toward an eventual goal. The experiences are very different for each task. It's hard to do two the same way.

How do you feel about the tasks?

The tasks, like the experiences in doing them are so varied, and that comes from the fact, that we the players create the tasks, and tasks made by **[player name]** are far different than those made by **[another player name]**. All of the tasks are awesome, and some easy, and some impossible, but all are worth considering. I fully plan on doing every task someday. Just to push myself.

What is it like to do the tasks?

Well, like I mentioned earlier, each is a different experience, but one thing is constant, they make you step outside of yourself and do things you wouldn't normally do, or wouldn't necessarily even think of doing. But having done it, you feel better for it. You've done or created something and put it out into the world to make the world a stranger place, and that's never a bad thing.

SF013

SF0 is a collaborative street game. You make a character online and you are that character – although the character is not necessarily you.

You take part in a variety of tasks, in order to score points. Tasks range from literal, really simple tasks (e.g. upload a picture of yourself to use as your character) all the way through to metaphorical tasks or really difficult tasks (e.g. create a structure that's visible from space).

Very frequently the tasks tend to be ambiguous in nature. You can interpret them how you wish. It leads to some really creative submissions of tasks, and allows you to have a bit of fun and go out and do something a bit silly.

Even though you get points no matter how you submit the answers, people often have fun being outlandish with their submissions, and often it's like a competition to see who can do the most creative submission.

It's actually possible to interpret the tasks in a variety of different ways, which means that you can apply the game to wherever you are, at any time of day or night. For example, you could be walking to work and doing a task, or you could actually make it your mission to go on holiday to do the task, and there's different ways you can take part in the game.

Doing the tasks is fun, and it's actually a bit scary because quite often you are required to do things that would be kind of socially unacceptable.

For example, there's a task called "reverse shoplifting" where you have to actually have to insert an item into a store. Obviously there's that kind of heart-pounding... apprehension... when you go in to do it. So it's fun but it's also scary at the same time. But it's that kind of defiance of social conventions and social norms that makes the game fun. Usually the most difficult tasks are the ones that break the most taboos.

SF014

Can you tell me about your experiences of the tasks in SF0?

I love the tasks on SF0.org because they require me to be creative.
It gives me a reason to be creative & explore arts & crafts from a new perspective...
A new reason to spent countless hours being silly with my son ...

I have even reached out to other players in order to collaborate on tasks & this has proved quite interesting ... Evidence to come soon i hope but planning this one is tough ;-P

How do you feel about the tasks?

Most are simple in term - but prove to be the best
this is because interpretation is broad
Some are complex
I love them because it causes me to explore my inner ridiculous

What is it like to do the tasks?

For me -
I sometimes feel like a spy... Covert .. A secret society of nonsense makers....
I can walk down the street any day at any time & be calculating my next move.
A reality inside of a reality ... I could be seeing other players every day

They could be seeing me
I am invisible - Only 1 person knows my true Identity
I suppose it is easy enough to figure out who I am - but at least i can pretend
.....

I am only willing to do this under my terms.
I will provide you a constant source of experience.
I am playing this game with my son. We do not plan on stopping play for any reason at this time.

This game has become a really cool interaction between my 10 year old and me.

I will send you updates whenever we work on this game (which is often)
I will have him also send updates from his account. (I will monitor that interaction in his account)

We have a flickr account & a collection dedicated to SF0.org

[link removed]

I welcome you to that
I am also gonna start a blog specifically for our SF0.org interactions with the world.
If you are doing a thesis - I would like to read it

Cheers

SF015

Hi, Neil! This is **[player name]** from SF0.

Mmm IRB disclaimers... :)

- * Can you tell me about your experiences of the tasks in SF0?
- * How do you feel about the tasks?
- * What is it like to do the tasks?

Wow, these -are- vague. Okay, I'll give it a shot. Feel free to follow-up with me; it's best if you contact me via this account than via SF0's message system.

Lesse...

What I like about SF0 is that they encourage me to 1, be artistic and 2, overcome the natural social disinclination to separate ourselves. Normally, I do not strike up

conversations with random strangers (the social contract of a city, especially a **[identity of home town removed]**!). SF0, though, gives me a way to do so that is (hopefully!) non-threatening. It reminds me and others that the world is a small place, that we live in a community. Back to Point #1, I don't really consider myself an artist in any particular way, but I suppose like most people, I do have artistic urges. Having something external (an SF0 task) to channel that really helps me. :)

How do I feel about the tasks: mixed. Some fit the above two criteria well. Some don't. There are styles of tasks: this is easily seen in the House breakout (Humanitarian Crisis, BIOME, etc).

What is it like to do the tasks: "slightly embarrassing" comes immediately to mind. I normally don't perform in front of a lot of people, and SF0 in many ways is performance art (or can be, or perhaps I should say, the tasks I end up doing being more about performance art). Liberating, in the way that a somewhat shy person might feel by doing community theatre. Fulfilling, in the sense of accomplishment, but also in the form of satisfaction of bringing hopefully humor and/or meaningful reflection to both myself and others. Fun, of course; oh woe, I'm only thinking of that last. :) But yes, if it's not fun, change it so that it is.

As I said, feel free to follow-up with me. As you can see from my **[player name]** page, I'm not a big SF0 tasker, although my wife **[player name]** is.

cheers!

SF016

Can you tell me about your experiences of the tasks in SF0?

Well, the tasks I have done are things that I had thought about doing, but never bothered to try myself.

I have certainly had many new adventures and experiences while performing some of my tasks.

(Twice now I have been stopped for questioning by a policeman while tasking, which has never happened before in my life! I'm one of those upstanding citizens, and it was so funny talking my way out of the situation)

I was never charged of anything.

How do you feel about the tasks?

I would say that 96% of the tasks are NOT illegal, although they certainly can look that way from a distance!

I think that the tasks are meant to push boundaries. They inspire people to go to new places, meet new people, and experience new things. The tasks I have seen are so adventurous, and creative, and most players find very artistic or humorous ways in which to complete the tasks.

What is it like to do the tasks?

It is so exciting for me! SF0 really helps me to feel as if I am a part of something, a member of a group unified by our completion of tasks.

To be honest, I keep my tasks a secret from my family and friends. I don't think it's something they would approve of. I have mentioned SF0 to a few people, but they never seemed to understand what the game was all about.

The tasking process can sometimes be a little lonely. There have been several occasions when I was trying to take a picture of myself doing a task, all the while wishing desperately I had a collaborator to take pictures and do the tasks with me.

I have only worked with a collaborator once before, on my Calvinball task, which was great fun. (Although, I am currently working on a multitask epic sweep with several other collaborators.)

Overall though, I really have a blast. I feel a strong connection to the players of SF0, and of course it is always so rewarding when players give you points and comments on tasks you submit.

Playing SF0 has changed my way of thinking. I am nearly always thinking of ways I can complete tasks, or I sometimes wonder if, when I see something strange, perhaps another player completed a task in a flamboyant and public fashion.

(Recently in the city of **[location removed]** a certain building has had it's entire roof covered with red umbrellas, and I thought for sure that it must have been someone tasking. Only later did I realize it was a vague advertisement.)

SF0 gives you an opportunity to be a person you normally aren't are. Heck, it's practically a requirement! I'm normally a laid back individual, and SF0 has really helped me to open up.

I would recommend SF0 to any person who is willing to go on adventures, who is willing to throw off the identity they show to the everyday world, and become a player.

I hope my input is helpful to you and your endeavors

SF017

It is, that is, with lions. Also, goblin magic.

Doing is only half, the other is wanting and ifting and remembering.

Explosion of colors and life says hello to the Earth. The real game we are playing at is life.

SF018

Neil,

Thanks for the inquiry. I am no longer actively playing, though I still very much adore the game. I just completed my own MFA in performance, focusing on "appropriative" games. I have a half-baked thesis posted at **[link removed]** if you are interested (i had to abandon the writing in my last semester, because the head of my department refused to accept it as part of a studio program - the rest of it was going to document the success of the game The Architect & the Urchin, which is linked on the same website).

I don't have too much time to go into details about SFØ, which is still my favorite implementation of the appropriative game. If you flip through my Praxis **[player name removed]**, I usually write a bit about what the task did to me, psychologically. In all, however, most of my opinions of SFØ are summed up by Jane McGonigal in her 2006 dissertation when she talks about superhero training games. Besides the semi-opensource, internet-community, intelligently and poetically phrased interface, the most significant aspect of SFØ is the way it encourages players to do things they would not normally do, experience things they would not otherwise experience, learn strange skills and surmount social anxieties - all because SFØ and its community (an extremely intangible authority) gives them impetus and permission. Significantly, SFØ introduced me to contemporary psychogeography, which is why I am a street game designer now.

You should hound **[player name removed]** about what she thinks about the game; she has a lot to say.

If you have specific questions, I would certainly love to answer them. And let me know when you publish!

[after my reply]

I'm glad the little bits are useful to you. But I must insist that the only real way to figure out how SFØ works is to play until you are not interested in playing any longer. If you

need to know how long that takes, ask [player name] - he's the applied math PhD who is analyzing the entire game through numbers.

SF019

Hi Neil,

I'd be interested in hearing more about your PhD, what aspects of Pervasive games design are you focussing on? If you haven't already, I suggest contacting the people on the ludocity.org forums with your questions also.

I'm writing this instead of doing work, so please excuse the stream of consciousness nature of it!

Can you tell me about your experiences of the tasks in SF0?

My experiences are documented on my task page, not really sure what to add other than to reinterpret the question to be about SFZero in general. I've found playing SFZero to be a life changing experience. The creative stimulus of having new challenges and a strong community within which to display and receive affirmation, bolstered my confidence in general - outside of the website.

To give the example of my task Spectrum is a (public) space, I had had the idea for this art piece in my head for a while, but would probably never gotten round to executing it, if not for the motivation garnered from playing SFZero.

I describe SFZero to people as the ultimate pervasive game, because it gives you points for going out and doing cool things in real life with real people. Being a level 80 Troll in WoW [*World of Warcraft*, a popular MMORPG] impresses far fewer people than going out and making something exciting happen in the real world. Likewise, being a humdrum 9 to 5er who does nothing in the world beyond commuting through it is less impressive being a level 80 Troll in WoW. We all have the potential to find stimulation and reward in the world we live in, but sometimes it takes a game structure to give the framework necessary to focus motivation enough to go get at it.

How do you feel about the tasks?

The tasks in SFZero are UGC [user-generated content]. Whilst ratified by the games masters 'SSI' the tasks themselves will be a product of the imagination and interest of the player pool at the time. What I like about the tasks is that there's scope to interpret them how you will and still get rewarded for the completion, some members of the community don't like this and demand slavish adherence to the most obvious interpretation of the task description. This is understandable as it makes comparison between two completions of the same task easier. This is one way of competing, I however prefer the competitive 'one-up-manship' of trying to solve a task in an as elegant and unique way as possible - both are valid.

What is it like to do the tasks?

It differs from person to person I suspect, but for me it is more fun to plan out and really think over a task before completing it. I think the community (at the time I played anyway) would reward cerebral completions more than lots of small perfunctory completions. Knowing that I'd get more praise and reward for going bigger and more audacious I'd go out into the world and do things I wouldn't do otherwise, as if being on a task excused me from having to be shy or reticent as normally I would. It's not an adrenaline rush or a high from showing off in public, more that knowing the praise I'd get when I handed in the task completion would be worth much more than the shame of the weird looks and disapproval I imagined I'd be getting from the people on the tube I was singing next to.

And the main thing is that the disapproval was imagined, nobody was actually annoyed by me singing - but there's no way I'd do it without being on a task! (even now)

SF020

Can you tell me about your experiences of the tasks in SF0?

Between each account and each group I go with each year is different and exciting. The tasks keep me on my toes and no matter what a feel of whimsy goes through your day when you are trying to complete even the most simple task.

How do you feel about the tasks?

Challenging. Even the most simplest task is actually rather thought intensive to figure out how to do it just right.

What is it like to do the tasks?

The only way I can describe this is fun as hell.

SF021

[Can you tell me about your experiences of the tasks in SF0?]

Yes.

[How do you feel about the tasks?]

I feel that they make the world a better place in a weird way.

[What is it like to do the tasks?]

It lends a sense of purpose. It gives you an excuse to do things you wouldn't normally do but want to.

SF022

Can you tell me about your experiences of the tasks in SF0?

Some of my favorite experiences in SF0 have been found in the community of players, I really enjoyed the punch god for cheesecake task that we did on Easter in **[city name]**. Just watching people transform my tasks from crazy thoughts into a real life action is something that I just love! The welcoming, sharing and open community of equals is one thing that really drew me to the game, the people make the game worth it, the points are just a nice little thing on the side.

How do you feel about the tasks?

Some of the most interesting things about the tasks for me isn't so much in what I do for the tasks (many of my tasks are sub-par). What I enjoy the most is creating tasks and watching people interpret the task and make it their own. A good example of this was the public door installation, where as I thought of it as a way to install a series of doors in a high traffic area the people of SF0 constructed door-hedge and made it a meeting spot for other SF0 tasks! I would have never thought of that, that's what makes the game so much fun for me. It is in the action of creating tasks that I find more amazement and wonder than in the action of doing tasks.

What is it like to do the tasks?

Being part of the larger more planned tasks is an amazing experience; I always love it when I can help bring a community vision to fruition. To be honest it feels like I've made a lot of close friends out of a group of strangers.

I tend to write more tasks than I complete, if you ask the game creators they can attest to the sheer number of tasks that I've written and submitted. There is also a podcast somewhere when I was interviewed about my participation in SF0 I forget what task the podcast was made for.

If you need anything else feel free to contact anytime, I promise to be more prompt in my future responses.

SF023

Sure, I'll help you out.

I don't think I've ever had a negative SF0 experience. All the tasks I've done have been fun and I've done most of them with friends, so all in all, it's a positive undertaking. I've never learned anything profound about the nature of the universe or the inner workings of my heart or any of that boring stuff, but it's nice to accomplish something. Most of my specific experiences are documented pretty accurately in my Praxii.

The tasks, by and large, are pretty good, though it's equal parts frustrating and confusing when random, nebulous concepts turn up like "create beauty" or "punch God for cheesecake". Sometimes the line between good-natured mischief and illegality is blurred, but never to an extent that it would cause someone harm- at least not as far as I've seen.

Doing a task is a tough thing to describe- there's the feeling of accomplishment, yes, but there's also the feeling of somehow being outside of the norm, as though you've contributed something to the world to make it a little bit more bizarre and interesting. There's also a feeling of belonging to something bigger than the 9-5 workaday world.

Sorry if my answers are kind of nebulous.

SF024

I've decided to write this response in something of a stream of consciousness. Largely this is because I want to give you something before your ambiguous deadline, but also because SF0 works best in free form association. Tasks give us an opportunity to reflect and try new combinations of ideas, by asking people to answer vague challenges in creative ways.

My experiences of the tasks have always been thoroughly planned. I don't simply set out to complete a task, I have an audience in mind, and try to play to that audience. In a way, I think it is analogous to prayer, in that I am first trying to imagine what an undefined and vast consciousness would judge to be the value of my course of action, seek to appease that sense of value I have internalized, and hope to faithfully comport with the strictures I have put on myself. At first I sought to follow the strictures laid out by my stated moniker, **[player name]**. The clear raison d'être of this character was to immerse myself in crowds; in this case, through "collaborative" tasking. I saw my role as a facilitator of the ideas of others. I would solicit ideas for completions of tasks, consider them, suggest

how to improve them, and set about gathering supplies or information. My first tasks concerned themselves with an explicit audience; the public. I was fascinated by the interplay between the rules and norms of this digital community, and the larger social norms in which our tasks played out. I explicitly sought to answer the question, "Could I get people leaving the 2008 Presidential Primary Elections to follow curiously unmarked arrows on the sidewalk, leading away from the polling place?" In short, no, they would not. So then I found another player with a more ambitiously interpersonal task in mind. We would give strange and useful toys to people riding public transportation. In that situation we would be peers, forced to recognize one another's presence by the nature of our location, and able to create a comprehensible set of expectations and roles our audience would have to act out in response. They could either take our presents, or refuse them. Either choice would be humorous and memorable to all but the most jaded light-rail rider. Largely, we were received with enthusiasm and kindness. But almost nothing unexpected. I could give presents away every day for a year, and not see a response which reflected on anything beyond the value of giving and unexpected defiance of social norms. I'm not here to pass anything forward, or make the world a better place, or be remembered by strangers for a relatively mundane exchange and some sidewalk chalk.

So I found a task that was more defiant, anarchic, and akin to the role of a jester making fun of the powers that be. I found a collaborator with the idea to post Welsh translations of [city name] street signs and parking restrictions, and distribute poorly translated and nigh-incomprehensible political propoganda in favor of a dual Welsh-English civil program to make the changes permanent. We even submitted our demands to local (although mischosen) officials. While there was some glee in this, the response was dismissive and altogether uninteresting. Some of the signs stayed up for months, which makes me think more than they went unnoticed than that they were seen for a long time.

I quickly found that typical pedestrians are far less inquisitive, curious, or interesting as SF0 players. After this, my other tasks were aimed at this audience. Several further tasks were conceived based on my perception of what this audience clamored for. Personal struggle, defiance of habit and perceived standards of wisdom or efficiency, and an almost child-like stubbornness for precision and the logical consequences of an unwavering interpretation of meaning. This began with the SF0 Practical. On a camping trip with several friends, devoid of resources or access to the internet, I worked with a few friends on a rapid set of single-minded and simple tasks. Creativity was key with so little to work with, and we saw the fun in trying to meet the demands of our unseen proctors in outlandish ways.

Now the game became to shock and delight our quickly growing readership. We had reputations. They had expectations. We delivered. They demanded more. One task, which I hold the high score on, was to wear a cock ring through airport security. But it was not enough to simply do what they say. So what is more amusing than giving the audience exactly what they expect? In this case, it is getting a female to wear said cock ring. That was all the brain-storming we needed to pick our goal, and after that we just made sure to document well the preparation and accomplishment.

The real game of a task, you see, is the write-up. You can't simply do something, you must prove you have done it. Prove you thought the thoughts that only a person who has been there and done that can think. Sometimes you have to think hard about the possible criticisms, and address them with preternatural specificity. For example, is woman actually "wearing" a cockring that is on her belt?

Just having a cockring dangling from your belt would be accessorizing, but actually using it as the keystone in your outfit is definitely wearing it. Having each side of the belt come in through the leather loop, and then back out over the top of the loop means your be-belted article of clothing is held on only by the small leather strap between the two, literal "cock-rings".

How do you describe the process of tying a belt to a cock ring without naming parts in a diagram?

By rakishly tossing one of the two ends back through the... shaft?... main thoroughfare?... ballroom?... you end up with this stylish way to hold a belt together.

Did you ponder the more peculiar of instructions that came with the package?

INSTRUCTIONS: SOLD AS A NOVELTY ONLY! (Really? Did the lawyers make them say this? Are there cockring lawyers? Do you specialize in sex toy manufacturer defect litigation?)

But that isn't entirely true either. It isn't just about the writeup. You must not simply do something. You must feel a certain way about it. You must communicate your feelings. They must be good, contemplative, real feelings. I walked 25 miles, never letting go of another player, eating only what we could find along the walk. It was brutal. It forced us to think about our relationship, to talk about it. To think about what SF0 meant to us. About what life meant to us. About what accomplishment meant. About what meaning is. To walk a marathon hand in hand, on vacation in a verdant Canadian forest, and surprise the hell out of locals who saw us walking 10km from the nearest town. Mind you, I do all of this dressed up as **[list of various aliases]**, depending on where I am doing it.)

We wrote about everything. But mostly we wrote about ourselves. How we switched hands, what we talked about, how it felt to eat sandwiches we traded hand-picked berries for at the local market, how we sang songs to keep our spirits up over the last mile. It is still my favorite praxis. I am hurt in a way that they did not receive the high score. I realized there was a meta-game beyond simple quality. It mattered that you do what you do when players are particularly active. That you keep their attentions coming back to it after the task stopped appearing on the front page of most recent tasks. There was SEO to consider, not just polish and content.

So I tried tasks which were popular events. I attended **[Journey to the End of the Night, a popular SF0 task]**. Good performance, well received write-up, no Fleur-de-lis. Tried humour and accessible concepts, some bumbling, and sugar-coated generosity again.

Before we passed the previous front-runner, someone else completed the same task, as a new player, with a lot more commitment and generosity (bought their friend a laptop). I tried a task aimed directly at amusing an audience, commenting on the public discourse, reflecting on myself, and a rigorous schedule. It was my worst received task to date. I tried a massive collaboration, full of public interaction, humor, and epic commitment to a guiding principle. It fell short of home-made birdfeeders and good photography.

So finally I hit the nail on the head again. The first task listed when viewing the sorted tasks in this era. The high score. Death Kava [**an SFO task**]. It took an astonishing amount of work, and effort. It was personal, it was painful, it made me reflect on my lifestyle, my enjoyment of food, and the great luck I've had in discovering the extents of this pleasure in my life. I spent days of free time drafting and redrafting the writeup. Finding background music. Editing out distractions. Honing the essence of my idea for the completion, and distilling the facts and proof of the exacting praxis. It wasn't any fun to do.

Not even a little.

I can look back on it and be impressed with my handiwork. But not delight. I smile reading my other tasks. Not that one. That one I am proud of in the way I would be proud of dragging myself six miles through the snow to get rescued after a bear attack in the Yukon.

So I have just gone back to doing things that are fun, when I can. But I am still saddled, and I use that word precisely because it is both a burden and a purposeful rejiggering of natural talent, with an internalization of the values of SFO. I find myself carrying out tasks that no longer have an obvious end point. I find myself "improving" the quality of my outings and actions to appeal to these virtues and judgments I did not use to ascribe to. A different aesthetic, a different framework for judging accomplishment, meaning, and purpose. A different sense of identity, rooted in a community of thought and intent and action and facades. A society of artists and philosophers, finding joy beyond possessions, and sometimes meaning in possessions. I don't know when I will write up tasks that I have completed. Or whether they are complete. I have been completing one task in a ballooning scale for two years now. It is almost more for me than for SFO at this point.

Then again, it has always been for me. I don't want approval. I want self-improvement. Part of that is realizing the effective internalization of what others want and communicate by voting. Understanding what, to them, is a good story. A worthwhile afternoon. A valuable perspective.

I think I have that now. But I am getting rusty. I feel drawn to task again when I can. Things have changed for me. There are new aspects of life I can shed light on through tasking. New problems I can meditate on in my Cathedral of the unnoticed corridor, the unoccupied horizon, the innocuous opportunity, and the undiscovered question.

Let me know if you have any follow up questions.

P.S. I was strongly tempted to refuse to offer anything intentionally useful. A part of this aesthetic I have internalized would have comported better with mailing to you a cardboard box filled with sand. I also considered placing symbolic but ambiguous objects in amongst the sand. I decided not to do this, because you haven't earned that sort of attention, and I know many other players who would be much more amused to receive that present than you would.

SF07f (response to further questioning)

Hey Neil, nice to hear from you again,

So basically, what I was saying with that is that a player can just complete the requirements of a task and have it qualify as a completion, or they can 'take it to the limit' or do an 'over the top' completion where they use the requirements as a jumping-off platform and take what would seem to be an easy task and do a completion that would take a great deal of time and creativity. As players 'mature,' they tend to be expected to perform completions that reflect less of the level of the task and more of their status as a mature player.

I'll give you some examples.

Here's my first task:

[link removed]

Notice how I pretty much just took a picture of some pants. Honestly, I'm pretty surprised anyone voted for it.

Here's a task by **[player name]**, a very well-respected player. He performed this completion after being a player for quite some time and having developed a reputation:

[link removed]

He went through the difficulty of finding and cooking up multiple recipes for Nutraloaf, a concoction American prisons use as punishment food for unruly inmates. This, of course, garnered him a lot of votes.

There are many other examples of this, here's a small selection:

[links removed]

There's actually a task that refers to this as well:

[link removed]

Oh yeah, and I agree to all of the attached criteria.

If you need anything else, don't hesitate to contact me.

Good luck,

SF010f (response to further questioning)

Neil,

I'd say there's three answers.

One is legitimacy - there's a part of me that thinks it's somehow more OK to do these things if it's for points. For some people that might be the big one, but for me it's not; really I think the only task I wouldn't have felt like I had the nerve to do was Meat Is Money.

Number two is a sense of community. These things are all more worth doing if there are people to swap tasking stories with. SF0 as a community is a website dedicated to producing praxis, and doing tasks is how you offer your fair share - and it's also fun! Also, since SF0 introduces you to people who are also into this sort of thing, it's easier to find people to task with. (Tasking alone, while fun, is less fun.) I would never have met some of my fellow Pong players without SF0, for example.

The third is inspiration. I like to do crazy stuff like this, but it's hard to be the right kind of creative on demand. SF0 ensures that I will never lack for wild things to do in the real world. Like the Easter Bunny thing. Goofing around in costumes is more or less traditional. YouTube is littered with videos of various costumed characters dancing to Crank Dat Souja Boy - but because there are so many of them, it's not really all that interesting anymore. Arm-wrestling, though? That's not only less done, it also very much requires interacting in strange ways with strangers. I will always love the bemused expression on my opponent's face in that photo; he has no idea what's going on, only that for some reason the Easter Bunny wanted to arm-wrestle with him.

SF012f (response to further questioning)

That is an interesting question. Sure, obviously if I did something for the game, I could've done it without the game. But the thing about creativity, is that it needs a spark. And SFØ is that spark. No, it's like a bonfire, or a detonation or a forest fire, if, of course you accept the challenge. And it is a challenge. I'm a writer, and it is hard for me to motivate myself to write, because of all of the ideas bouncing around in my head, it's difficult to choose one to focus down on. But if somebody gives me a writing assignment, the writing comes easier, because the assignment will come with parameters, like page length, content guides, or maybe even story ideas. So my vision gets focused down and it's easier to concentrate. SFØ is that magnifying glass, or blinders to help you focus on what you want to do, and if you push yourself within those parameters, I find you can push further and better than you would have without the nudge of the task.

SF014f (response to further questioning)

Neil - I am in for the long haul brother....

You will probably get stuff from me for the rest of your life now.....

Stuff in the mail this week - promise

.....

You mentioned that "It gives me a reason to be creative... A new reason to spend countless hours being silly with my son". Did these things seem more difficult before SFØ?

Yes - it was getting harder before SFØ - there is a transition in a child's life where they go from daddy to mommy to independent.

This process was in full bore when i found SFØ - it was getting harder to convince my son to do cool things with me like we used to.

He is a very creative & artistic child & I am determined to stop the education system and video game machines from turning my child into a robot.

Another factor that contributed to my delima is the fact that I was injured at work this year.

I am having trouble walking - sitting - well pretty much anything is now beyond me now.

This factor contributes a strange set of problems in life for my family...

I cannot drive - I cannot walk around - I can't do anything really without lots of medication...

Medication which can make me irritable & nasty...

I am not a nasty person - i am a fun & silly person...
I have learned to roll with the uber silly side that the drugs let out instead of the nasty asshole they create.

It also allows me to be able to interact with my child even while on heavy RX drugs.

We can create together - independently yet together
We can do things together - even when i cannot physically do much.

These large quantities of drugs also affect my mind in another way...

Depression.....No one wants to hang out with some downer - even if it is your family....
When I am creative - i am focused - lost in another world

SF0 gave me a secret identity -
the opportunity to be "my silly other half" in public
(I blame it on the drugs - but my friends know that I am always this silly)

A little wider perspective than you asked for - but ...it is all anon anyway so who cares....

SF0 allows my son to view me in a new light - hurt but still trying
sad but still looking for joy
lost but lookin for the right direction
in pain but finding creative outlets in which to let it go

These are lessons that I hope he will never have to learn on his own

but if he does....at least he has a good reference point on how to deal with it.

Have a good weekend dude & feel free to ask any q's you want

nothing is out man

SF016f (response to further questioning)

Sorry for taking so long. I have been a lazybones.
Here are my thoughts:

1. What is it that sf0 is giving you?

It's hard to put it into words. It gives me a happy secret that is just for me, and that in itself is something I cherish greatly, being in a family of extremely nosy people. It gives

me human interaction in a place other than work and school, where I spend nearly all of my time. It gives me an opportunity to share similar experiences with other people, even though it is online. I can relate to these players, I can laugh and comment about other experiences that players have.

Even if I never meet these people, I carry around the knowledge that there are others who know a bit about me, and who can appreciate the tasks I submit.

2. Do you believe you could not have done these things before sf0?

I suppose I certainly could have, but I also know that before sf0, I wouldn't have.

3. What would have stopped you before?

I had no motivation. Why would I do these wacky things? Just to be wacky? Only for myself?

In my mind I see "What if I was just a girl going around doing strange things for no reason, all alone by myself, which no one knew about, and most people would never see the results"

It sounds crazy to me. A shifty-eyed girl all alone doing inexplicable things, for no reason whatsoever.

How could I do these things before? I will admit that some of these tasks may be slightly illegal. Why would I randomly do perhaps illegal and dangerous acts, for no reason?

Boredom?

No. No, that's not a good enough answer for me. I don't break the law, or act strangely just for myself because I'm bored.

The more I think about it, it's basic psychology. Once I had motivation, I took baby steps into this new world. When I was praised with comments and rewarded with points it made me want to try more tasks.

HERE'S SOME EXTRA, FOR YOU. YOU CAN USE IT IN YOUR WORK, BUT DON'T TELL THE OTHER PLAYERS

I shall tell you. I have always known this, and you may have already guessed. I hope you don't think me a creeper. In all fairness, what I shall disclose makes me quite a creeper.

I am a solitary individual, Mr. Neil. To be frankly, brutally honest, right down to the core, without beating around the bush, I am starved for social interaction of any kind whatsoever.

When I said in the first question that it's hard to put into words, it's really not hard at all. Yes sf0 gives me many things, but most likely the main reason I play, is because it gives me an enjoyable outlet for activities that I can share with OTHER PEOPLE. Even if I can't see them I know they're there.

Plain and simple.

Man is a political animal, we are meant to live in packs, herds, flocks, whatever, with families and friends, and people with which one can talk and laugh and cry.

sf0 fills my quota for friends.

I am rather ashamed of my lack of, well, other people.

As previously mentioned, my family and I are at odds. I feel alienated from them, and avoid them often. So how am I to be with other people? When I'm not working I'm at school and when I'm not at school I'm working. My attempts of outside social events with the people in these places have been to little avail.

I'm afraid I don't quite know how to make friends any other ways. It's rather disheartening to go to clubs or bars alone. Just sitting there, while people have fun around you. I sit in bookstores and cafe's, and read. How am to get into parties without friends to give me an invite, or to even let me know when and where it is?

But I digress...

All of this also gives another answer to number three, What would have stopped me? I didn't wish to do anything that would ostracize me further from the public eye.

Well,

Hopefully my angsty replies don't skew your results. I often spend a great amount of time wondering why I act the way I do. It gives me time to sift through all the muck and find out why, without any pretty excuses hiding the truth.

It's embarrassing for me.

I may have tried to say other things, and use flamboyant language to hide my basic reasonings of how and why, but I do not wish to mislead you in such an important study.

Creeperesque, no? Hopefully you won't think TOO terribly of me.

If I were to put all of my reasons in one sentence, it would be this:

sf0 helps me to be free, it helps me to feel like I belong.

I hope I was of some help.

Best Regards,

SF021f (response to further questioning)

Childhood is a time when silliness is allowed and expected and as we grow up and take increased responsibility the things we used to enjoy seem more and more ridiculous. I doubt that I'm alone in still loving a game of hide and seek. As adults most of our daily lives are dedicated to the pursuit of money, sex, fame, or whatever our society tells us to be jealous of. SF0 reinforces the behavior that the rest of society considers ridiculous by providing a peer group. Within this group it is perfectly acceptable, even encouraged to do something that is a bit silly. The communist outlook of the creators of SF0 (though it is seldom mentioned) helps remove the money consideration. The fact that it is held on the internet removes much of the sexual aspect. The recognition of the voting/comment system fulfills the need for belonging/fame. With these considerations removed we are free to have fun again.

Appendix B – Evolution of the Grounded Theory

In this appendix, the various intermediate stages of theory generation are presented in chronological order, as referenced in the text during Chapter 4.

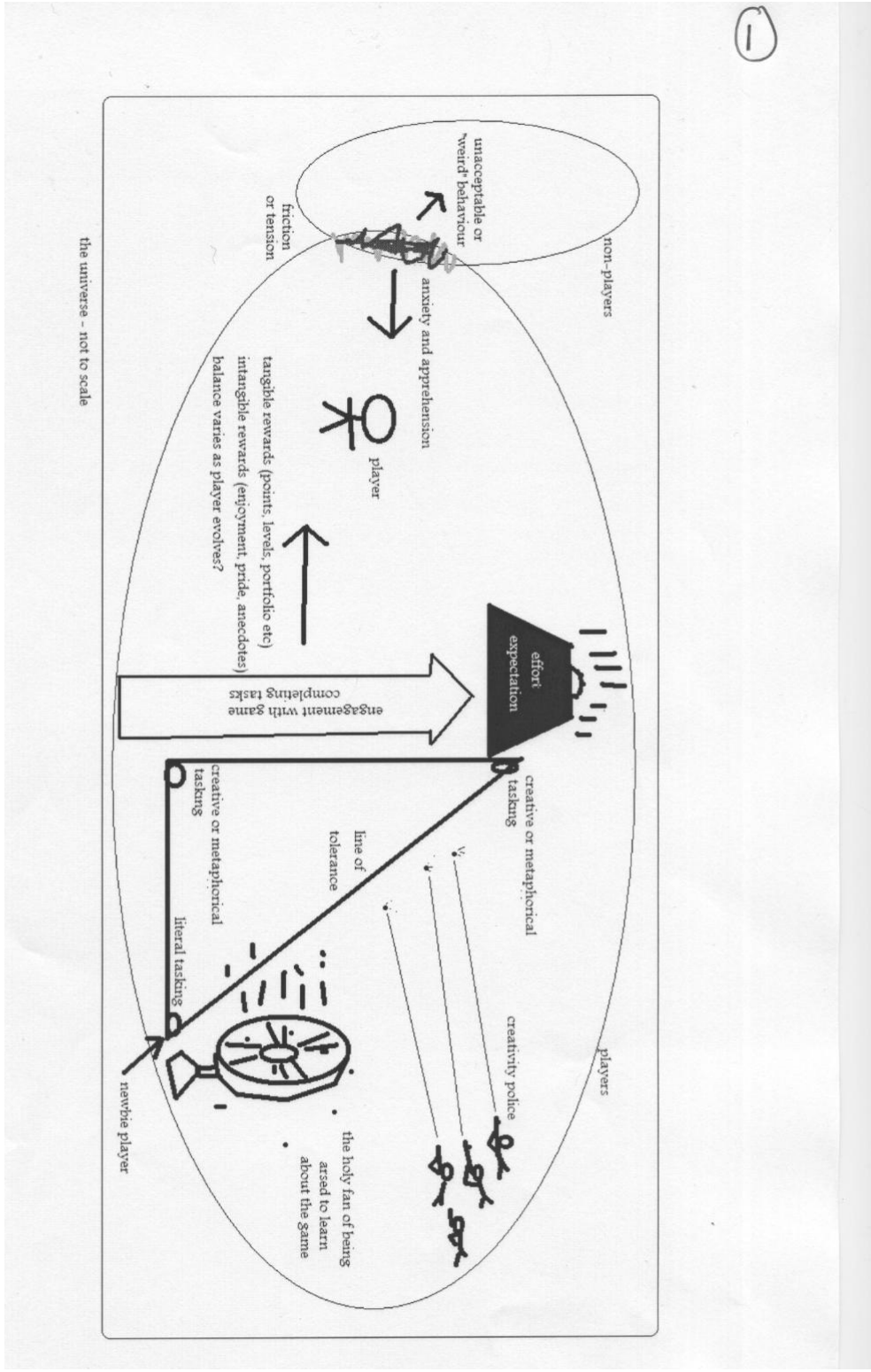


Figure B.1: Theory Version 1

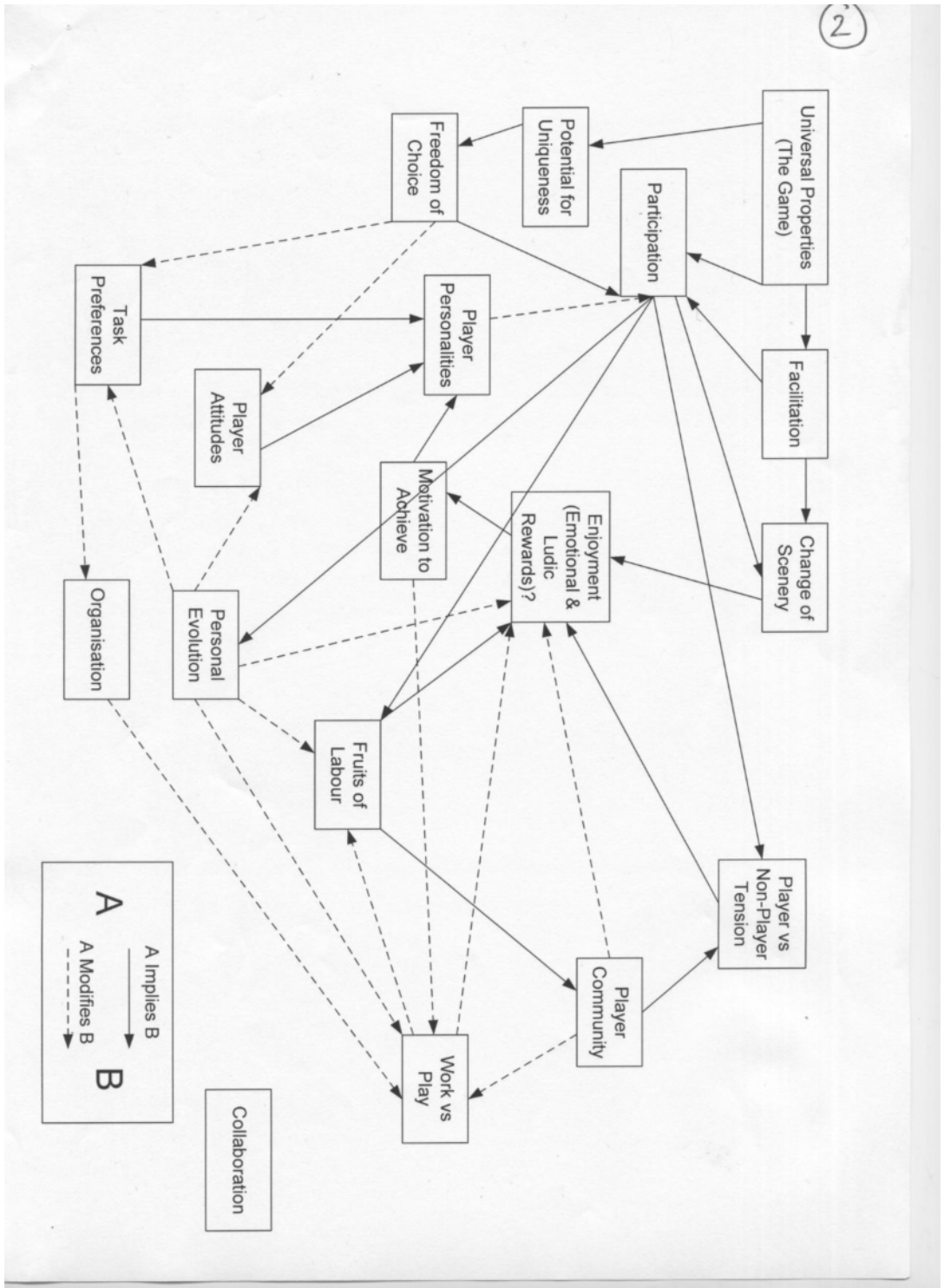
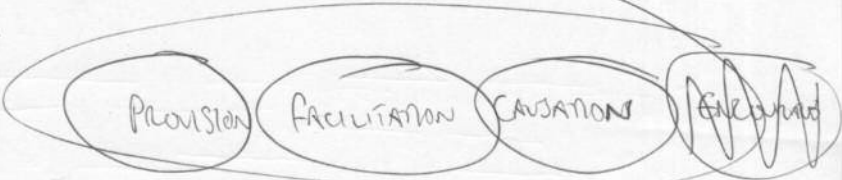


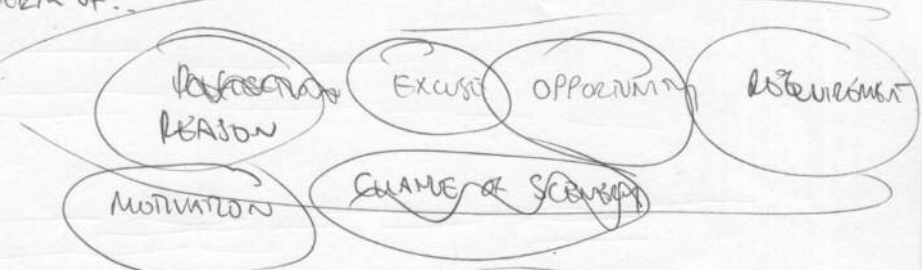
Figure B.2: Theory Version 2

3

Offers...



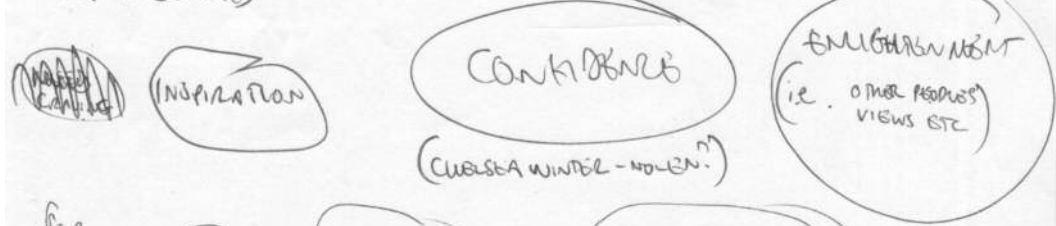
In the form of...



To do...



VIA INCREASES



for

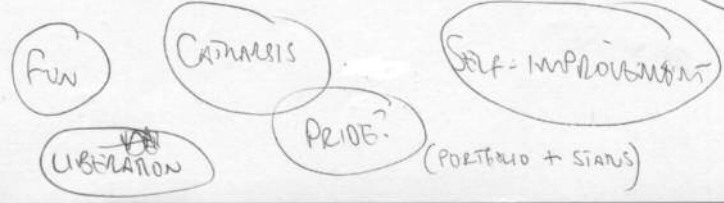


Figure B.3: Theory Version 3

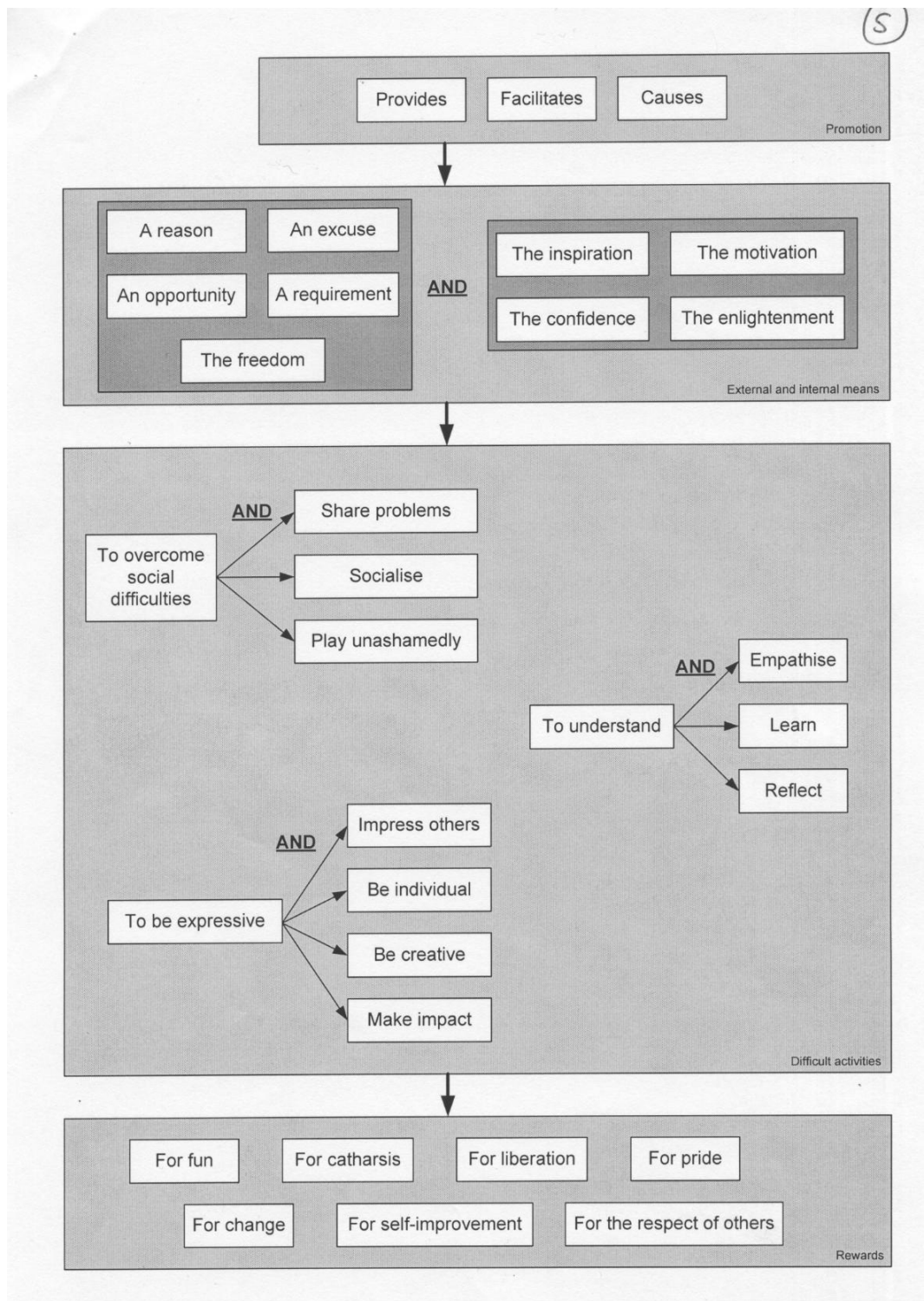


Figure B.5: Theory Version 5

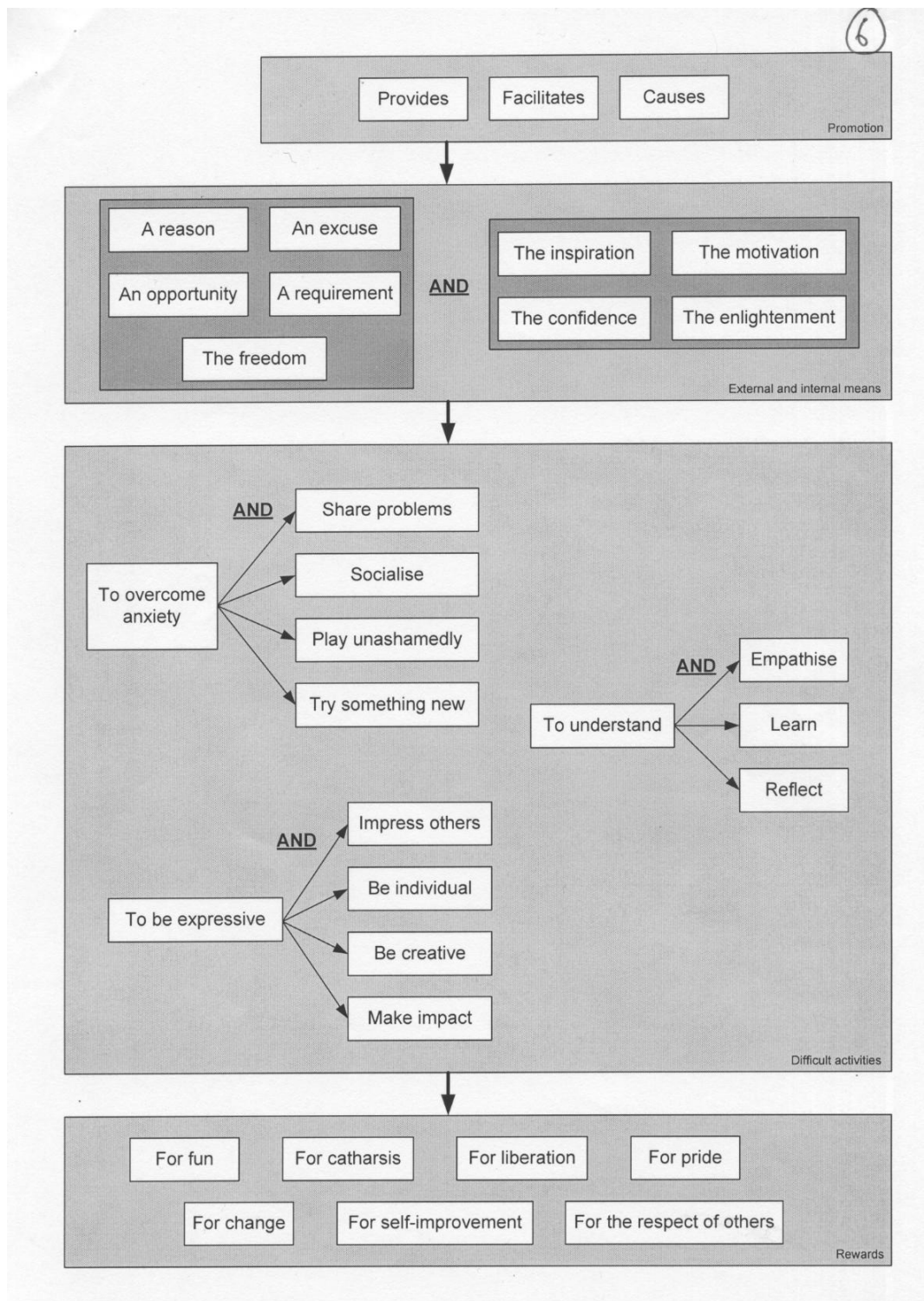


Figure B.6: Theory Version 6

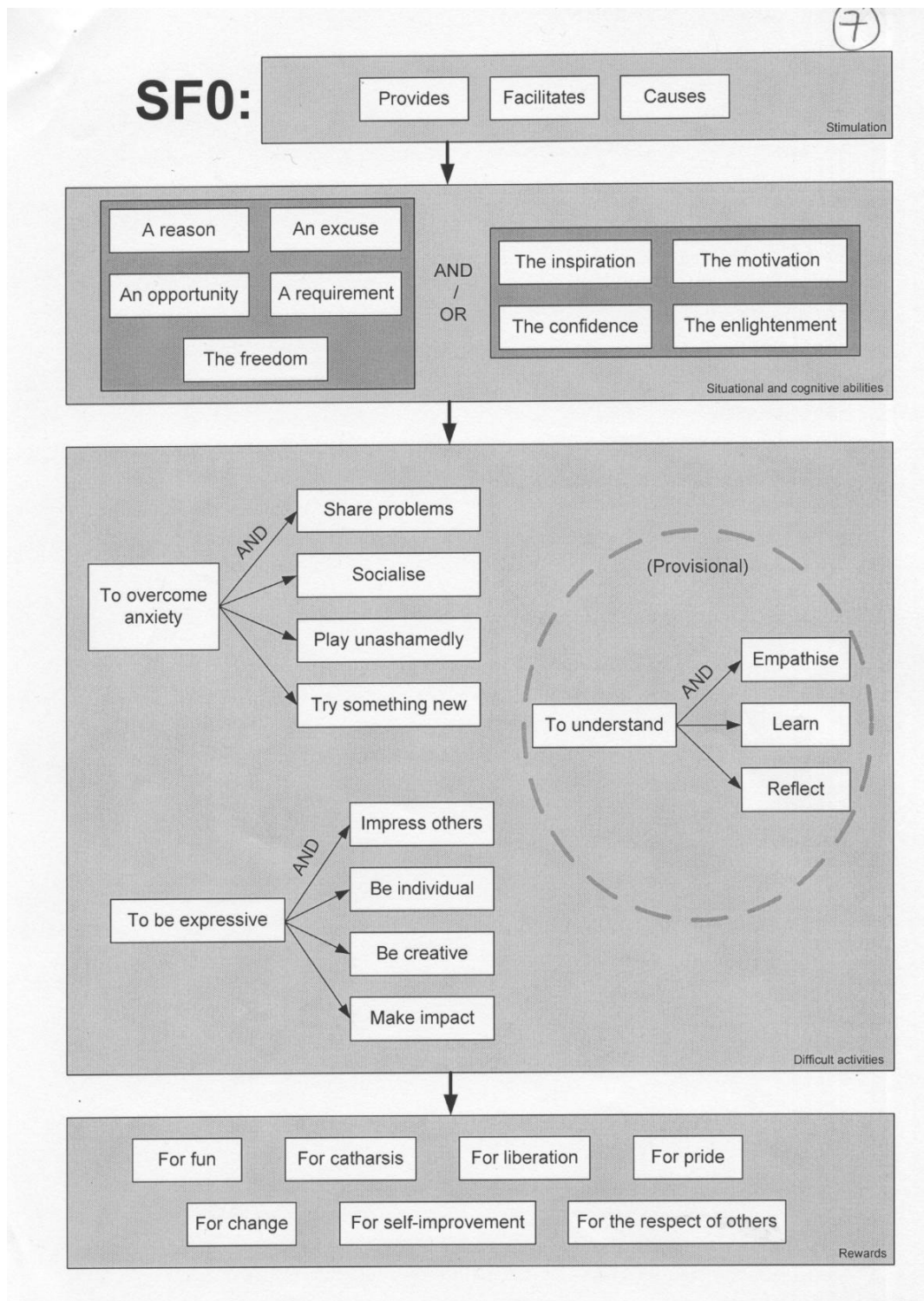


Figure B.7: Theory Version 7

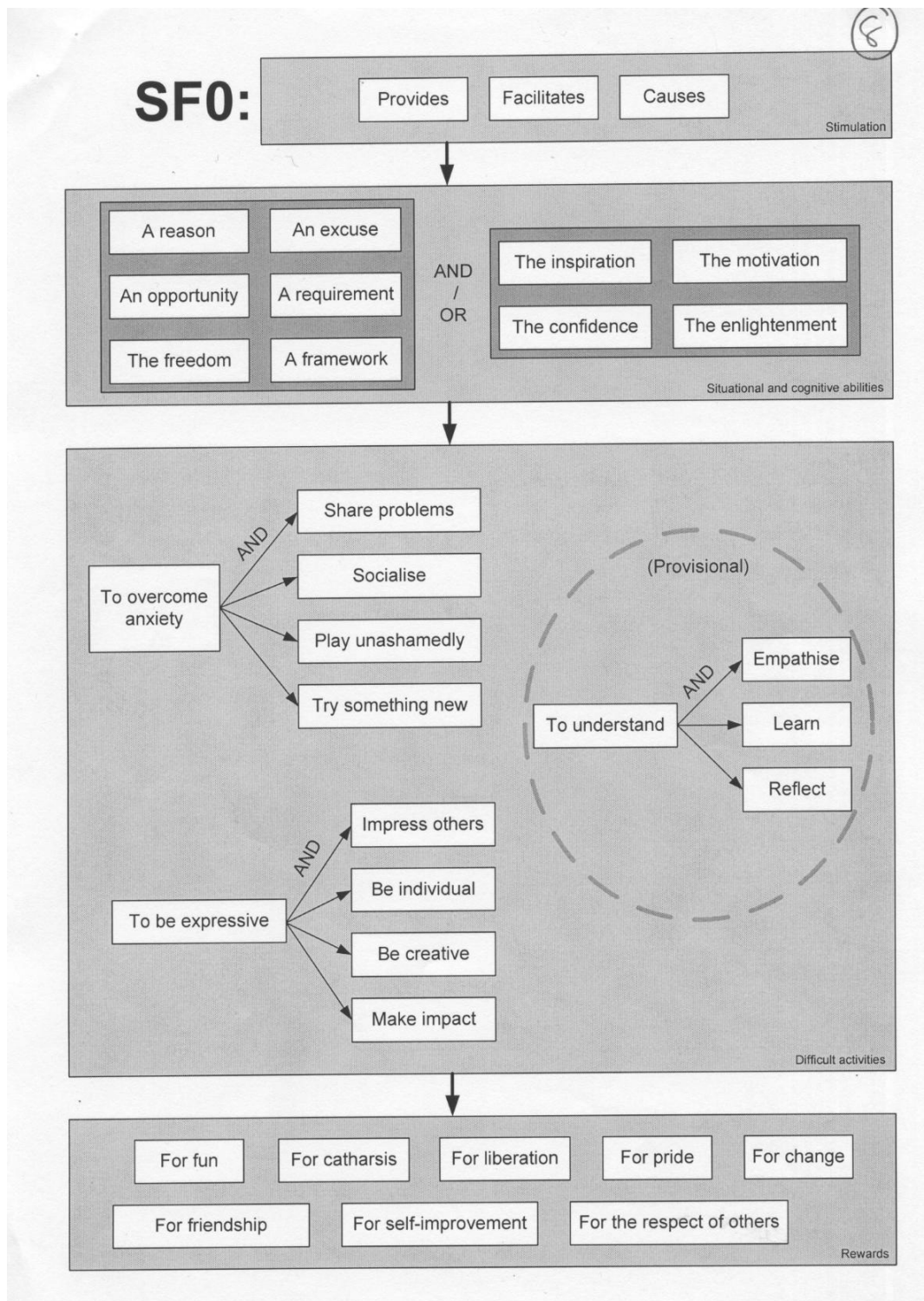


Figure B.8: Theory Version 8

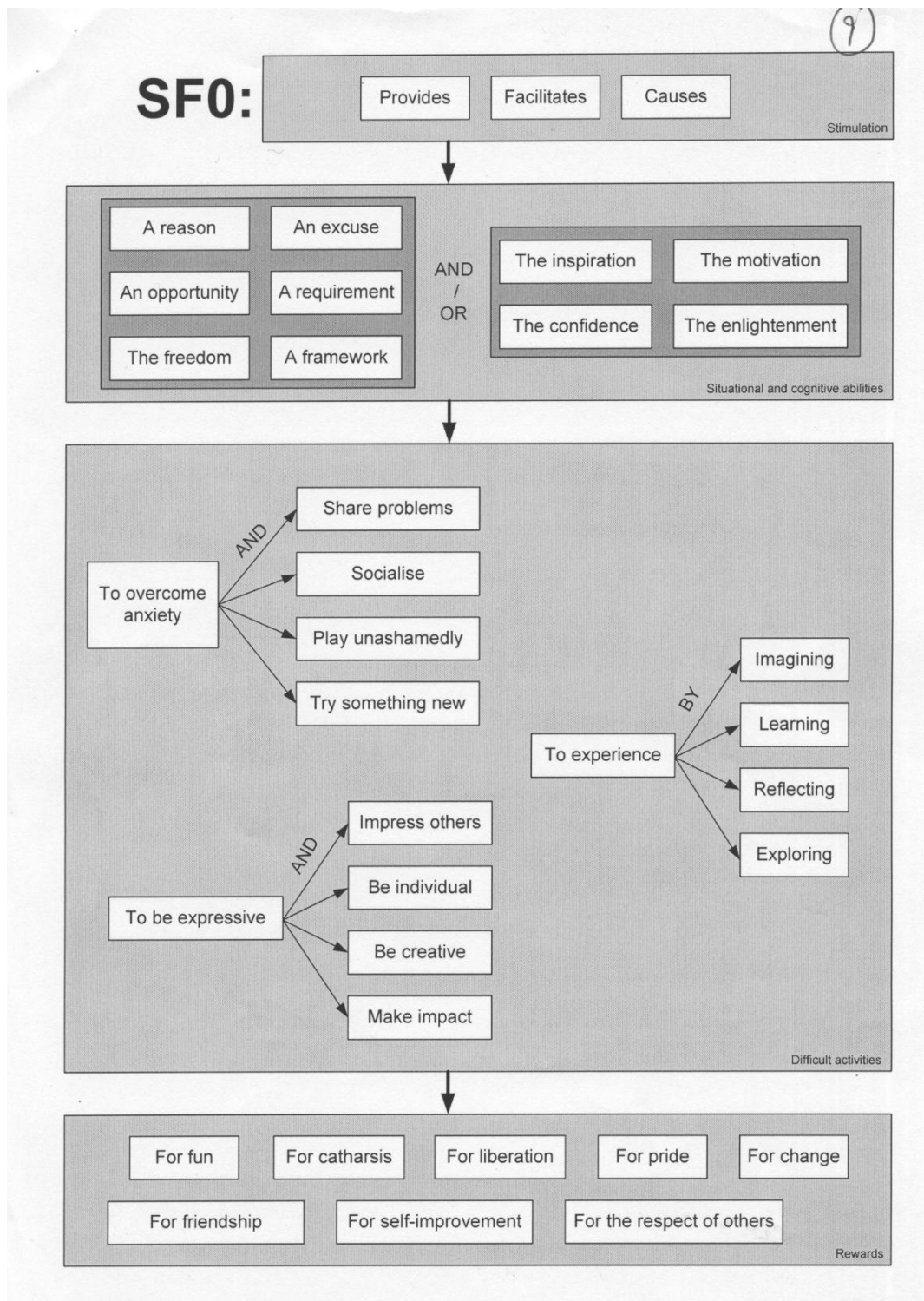


Figure B.9: Theory Version 9

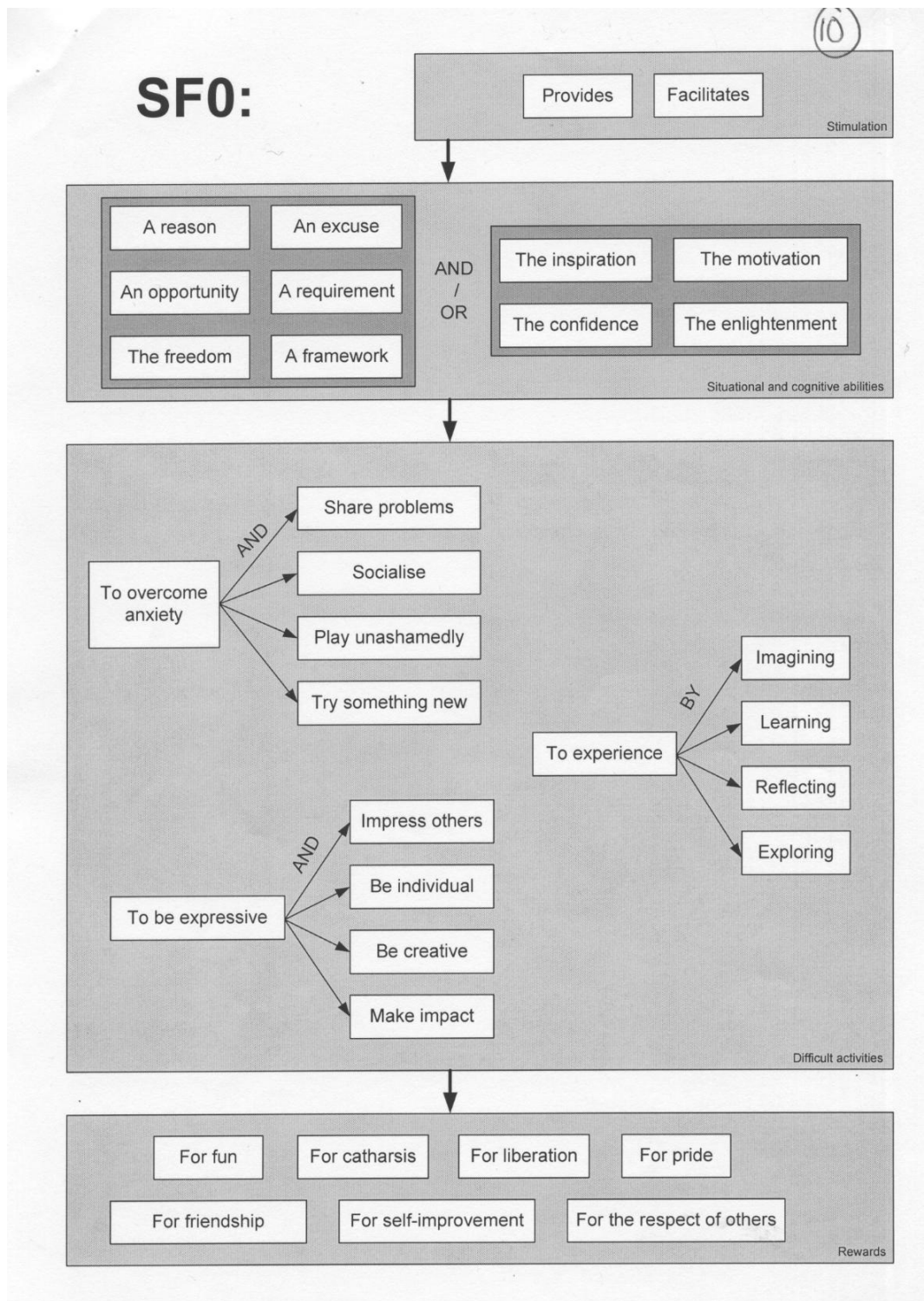
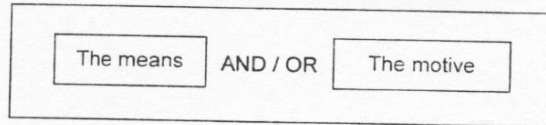


Figure B.10: Theory Version 10

11

SF0 promotes:



↓
for:

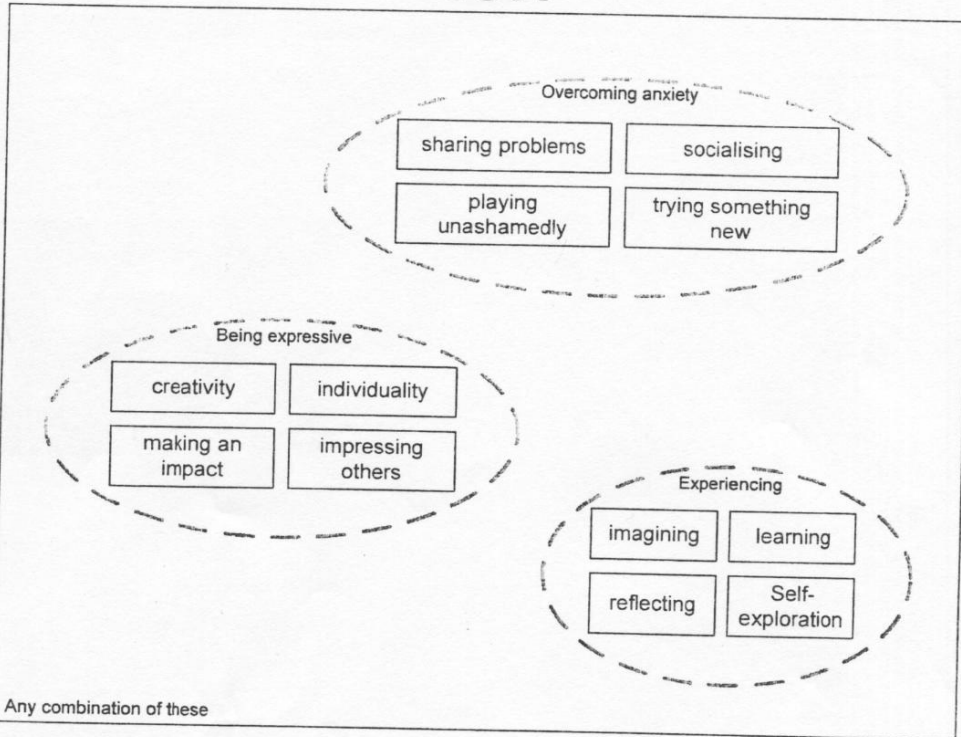


Figure B.11: Theory Version 11

SFO is allowing players to:

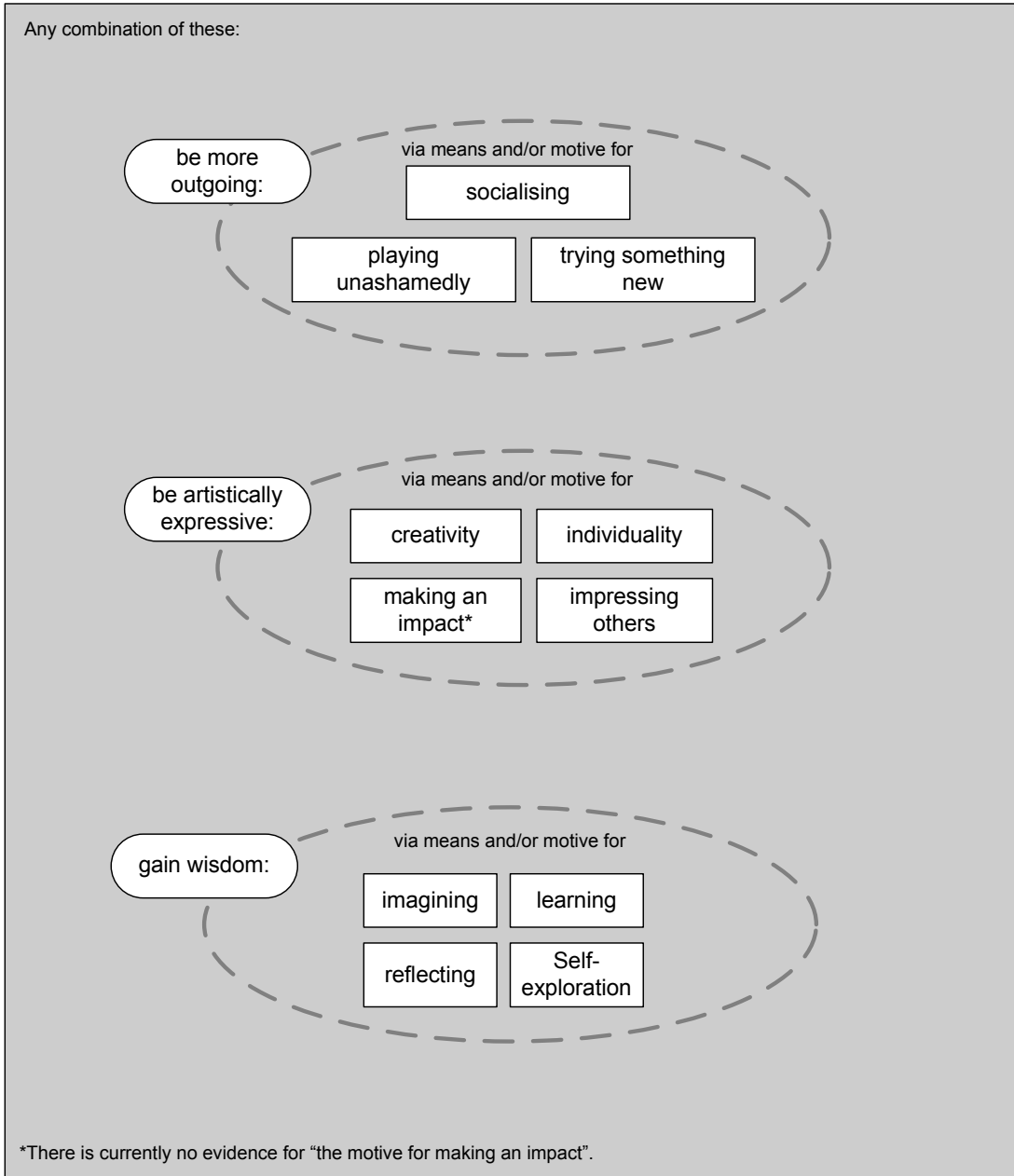


Figure B.12: Theory Version 12 (latest working version)

Appendix C - Examples of the theory in the data

This is a list of over 150 specific incidents that provide evidence for various aspects of the final version of the grounded theory. Examples in quotation marks are quoted directly from the participants' responses, while examples without quotation marks are taken from written notes which were made while speaking to participants. Participant identification codes have been removed in order to maximise anonymity.

To be more outgoing via the means for socialising

Gives you an excuse to have a day out.

Good how it brings everyone together - people who wouldn't have met face-to-face before.

“Sometimes all that planning turns into a brilliant time with you and some friends doing something strange...”

“Some tasks are bonding experiences, while some are done with people you already know...”

“It also allows me to be able to interact with my child even while on heavy RX drugs.”

“...some you do with large groups of people...”

“*SFO* helps me to be free, it helps me to feel like I belong.”

“I do not strike up conversations with random strangers... *SFO*, though, gives me a way to do so that is (hopefully!) non-threatening.”

“*SFO* fills my quota for friends.”

“*SFO* really helps me to feel as if I am a part of something, a member of a group unified by our completion of tasks.”

“To be honest it feels like I've made a lot of close friends out of a group of strangers.”

“There's also a feeling of belonging to something bigger than the 9-5 workaday world.”

“Also, since *SFO* introduces you to people who are also into this sort of thing, it's easier to find people to task with.”

“We can do things together - even when i cannot physically do much.”

“It gives me human interaction in a place other than work and school, where I spend nearly all of my time. It gives me an opportunity to share similar experiences with other people...”

“Yes *SFO* gives me many things, but most likely the main reason I play, is because it gives me an enjoyable outlet for activities that I can share with OTHER PEOPLE.”

To be more outgoing via the motive for socialising

It's a reason to get out and do something. We're not a very sociable group.

It's enjoyable to be involved in something.

It's enjoyable... "being friends a lot".

“Also what motivated me probably most to play... was the community.”

“A new reason to spend countless hours being silly with my son...”

“...they encourage me to... overcome the natural social disinclination to separate ourselves.”

“They inspire people to go to new places, meet new people, and experience new things.”

“...it gives you points for going out and doing cool things in real life with real people.”

“Some of my favorite experiences in *SFO* have been found in the community of players...”

“The welcoming, sharing and open community of equals is one thing that really drew me to the game, the people make the game worth it...”

“I don't think I've ever had a negative *SFO* experience. All the tasks I've done have been fun and I've done most of them with friends...”

“I am playing this game with my son. We do not plan on stopping play for any reason at this time.”

“These things are all more worth doing if there are people to swap tasking stories with.”

To be more outgoing via the means for playing unashamedly

We get weird looks from people but it's quite easy to ignore.

There was a task where we had to put a moustache on a statue, and some people would see that as defacing.

“Sometimes all that planning turns into a brilliant time with you and some friends doing something strange...”

“...allows you to have a bit of fun and go out and do something a bit silly.”

“I normally don't perform in front of a lot of people, and *SFO* in many ways is performance art (or can be, or perhaps I should say, the tasks I end up doing being more about performance art).”

“...*SFO* has really helped me to open up.”

“...as if being on a task excused me from having to be shy or reticent as normally I would.”

“...the opportunity to be "my silly other half" in public...”

To be more outgoing via the motive for playing unashamedly

You need to take a few risks sometimes.

Some you end up walking in the rain.

With group tasks you get a pleasant anxiety or apprehension for doing something out of the norm.

The tasks are fun. They are different, and involve things you wouldn't normally do, like smashing TVs up to make furniture.

“...but sometimes you just play.”

“...often you are required to do things that would be kind of socially unacceptable.”

“But it's that kind of defiance of social conventions and social norms that makes the game fun.”

“A new reason to spent countless hours being silly with my son...”

“...surmount social anxieties...”

“It's not an adrenaline rush or a high from showing off in public, more that knowing the praise I'd get when I handed in the task completion would be worth much more than the shame of the weird looks and disapproval I imagined I'd be getting...”

“...there's no way I'd do it without being on a task!”

“...unexpected defiance of social norms.”

“...there's a part of me that thinks it's somehow more OK to do these things if it's for points.”

“...it also very much requires interacting in strange ways with strangers.”

“It sounds crazy to me. A shifty eyed girl all alone doing inexplicable things, for no reason whatsoever... How could I do these things before?”

“...What would have stopped me? I didn't wish to do anything that would ostracize me further from the public eye.”

“*SFO* reinforces the behavior that the rest of society considers ridiculous by providing a peer group. Within this group it is perfectly acceptable, even encouraged to do something that is a bit silly.”

“...we are free to have fun again.”

To be more outgoing via the means for trying something new

Different from what most teenagers do.

They give me the opportunity to do something I've never done before.

We don't go to the pub, or to the cinema, [our group] gives us an excuse to get out and do something.

It's different in that it's not like going clubbing or to parties.

The tasks are like a break away from the norm of every day.

Rather than sitting playing games, it is enriching one's life.

The game gives me something to do, rather than just sitting around.

“Sometimes you explore something new and fall in love with it...”

“Other times you try something different and it sucks.”

“...it's a framework for pushing yourself to try all sorts of new things...”

“I can try things, experiment or just make a joke or do it deathly serious...”

“I have certainly had many new adventures and experiences while performing some of my tasks.”

“It gives you an excuse to do things you wouldn't normally do but want to.”

“Tasks give us an opportunity to reflect and try new combinations of ideas, by asking people to answer vague challenges in creative ways.”

To be more outgoing via the motive for trying something new

The tasks are fun. They are different, and involve things you wouldn't normally do, like smashing TVs up to make furniture.

"I think of them as a way to inspire yourself and push yourself to never not have something strange and awesome to do."

"Sometimes you put yourself through all sorts of strange experiences..."

"...they make you step outside of yourself and do things you wouldn't normally do, or wouldn't necessarily even think of doing."

"Well, the tasks I have done are things that I had thought about doing, but never bothered to try myself."

"They inspire people to go to new places, meet new people, and experience new things."

"...the most significant aspect of *SFO* is the way it encourages players to do things they would not normally do..."

"We all have the potential to find stimulation and reward in the world we live in, but sometimes it takes a game structure to give the framework necessary to focus motivation enough to go get at it."

"...Knowing that I'd get more praise and reward for going bigger and more audacious I'd go out into the world and do things I wouldn't do otherwise..."

"...defiance of habit..."

"I suppose I certainly could have, but I also know that before *SFO*, I wouldn't have... I had no motivation."

"Once I had motivation, I took baby steps into this new world."

To be artistically expressive via the means for creativity

It's a creative way to pass one's time.

The tasks are a perfect catalyst for creative energy.

"Some are calm acts of creation..."

"Sometimes you do something serious and artistic..."

"...a very creative game."

"...some you do as art projects..."

"You've done or created something..."

“It leads to some really creative submissions of tasks...”

“I do have artistic urges. Having something external (an *SFO* task) to channel that really helps me.”

“The tasks I have seen are so adventurous, and creative...”

“The creative stimulus...”

“...a completion that would take a great deal of time and creativity.”

“I like to do crazy stuff like this, but it's hard to be the right kind of creative on demand.”

“But the thing about creativity, is that it needs a spark. And *SFO* is that spark. No, it's like a bonfire, or a detonation or a forest fire, if, of course you accept the challenge.”

“We can create together...”

“...in pain but finding creative outlets in which to let it go...”

To be artistically expressive via the motive for creativity

“often it's like a competition to see who can do the most creative submission.”

“...they require me to be creative.”

“It gives me a reason to be creative & explore arts & crafts from a new perspective...”

“...they encourage me to 1, be artistic...”

“...I had had the idea for this art piece in my head for a while, but would probably never gotten round to executing it, if not for the motivation garnered from playing *SFZero*.”

“What I enjoy the most is creating tasks and watching people interpret the task and make it their own.”

“It is in the action of creating tasks that I find more amazement and wonder than in the action of doing tasks.”

“...by asking people to answer vague challenges in creative ways.”

To be artistically expressive via the means for individuality

There are loads of different ways to interpret a task.

You play the game how you want

If you prefer a certain type of task you can select a group appropriately.

You can interpret them however you like.

You make your own rules to an extent.

Players can interpret the tasks in different ways.

...sometimes the way you interpret a task would get you in trouble if you did it. "...the game seems to try to have something for everyone..."

"Also the character of the game allows it [*sic.*] to interpret the tasks in a way I want..."

"You can interpret them how you wish."

"It's actually possible to interpret the tasks in a variety of different ways, which means that you can apply the game to wherever you are, at any time of day or night." "...there's scope to interpret them how you will and still get rewarded for the completion..."

"...watching people interpret the task and make it their own."

"...a player can just complete the requirements of a task and have it qualify as a completion, or they can 'take it to the limit' or do an 'over the top' completion..."

"*SFO* is that magnifying glass, or blinders to help you focus on what you want to do..."

To be artistically expressive via the motive for individuality

...different people have different ideas about how a task should be completed.

I liked the ambiguity and the freedom. I like the tasks.

"I see the tasks more as an inspiration, they kind of give me a reason to do what I like to do."

To be artistically expressive via the means for making an impact

They make people see the world differently. They warp people's perceptions of their everyday surroundings.

Some are not as localised, and therefore the emphasis is on making other people see their world differently.

It's like graffiti of people's minds, but not permanent graffiti.

"...to make the world a stranger place..."

"I feel that they make the world a better place in a weird way."

"...as though you've contributed something to the world to make it a little bit more bizarre and interesting."

To be artistically expressive via the motive for making an impact

[None]

To be artistically expressive via the means for impressing others

“SF0 allows my son to view me in a new light...”

To be artistically expressive via the motive for impressing others

...as long as you have made an effort it is appreciated.

Pleasure in the game comes from submitting evidence and getting feedback from the community.

The player level requirement of a task defines the expectations of the community.

Heavy backlash for non-effort.

There are standards of completion for tasks, but these have developed out of the community, and are often unwritten.

A bit of an expectation develops once you get established.

Some tasks require more effort or preparation than others.

“So completing a task was also something I somehow did for the community.”

“It's nice to have a task approved and see that other players are having fun completing it.”

“I wanted to complete the tasks really well and so, that the other players would enjoy reading my proof, I was really ambitious about it.”

“...often it's like a competition...”

“...satisfaction of bringing hopefully humor and/or meaningful reflection to both myself and others.”

“...it is always so rewarding when players give you points and comments on tasks you submit.”

“I however prefer the competitive 'one-up-manship' of trying to solve a task in an as elegant and unique way as possible...”

“...an almost child-like stubbornness for precision and the logical consequences of an unwavering interpretation of meaning.”

“...we saw the fun in trying to meet the demands of our unseen proctors in outlandish ways.”

“As players 'mature,' they tend to be expected to perform completions that reflect less of the level of the task and more of their status as a mature player.”

To gain wisdom via the means for imagining

“...I can pretend.”

“SF0 gives you an opportunity to be a person you normally aren't are.”

“It gives me a happy secret that is just for me, and that in itself is something I cherish greatly...”

To gain wisdom via the motive for imagining

“I sometimes feel like a spy... Covert ... A secret society of nonsense makers...”

To gain wisdom via the means for learning

I learn from the tasks on some occasions.

To gain wisdom via the motive for learning

It's enjoyable... Discovering new things...

“...learn strange skills...”

To gain wisdom via the means for reflecting

“Some tasks are introspective...”

“Doing is only half, the other is wanting and iffing and remembering.”

“Tasks give us an opportunity to reflect and try new combinations of ideas, by asking people to answer vague challenges in creative ways.”

“There are new aspects of life I can shed light on through tasking. New problems I can meditate on in my Cathedral of the unnoticed corridor, the unoccupied horizon, the innocuous opportunity, and the undiscovered question.”

To gain wisdom via the motive for reflecting

“...you can push yourself to share difficult memories or meditate on life.”

“...satisfaction of bringing hopefully humor and/or meaningful reflection to both myself and others.”

“You must feel a certain way about it. You must communicate your feelings. They must be good, contemplative, real feelings.”

“It was personal, it was painful, it made me reflect on my lifestyle, my enjoyment of food, and the great luck I've had in discovering the extents of this pleasure in my life.”

To gain wisdom via the means for self-exploration

Some are quite localised to the player, and therefore the emphasis is on personal development.

“I can try things, experiment or just make a joke or do it deathly serious...”

“...some you do to explore yourself and your boundaries...”

“I want self-improvement.”

“...I find you can push further and better than you would have without the nudge of the task.”

To gain wisdom via the motive for self-exploration

“Just to push myself.”

“It gives me a reason to be creative & explore arts & crafts from a new perspective...”

“...experience things they would not otherwise experience...”

“You must feel a certain way about it. You must communicate your feelings. They must be good, contemplative, real feelings.”

Appendix D – Ethical Approval Documentation and Correspondence

This appendix contains all of the pertinent ethical approval documentation for the project, along with correspondence with the Faculty of CCI Ethics Committee (in order to clarify details) and with players of *SFO*. The ethical approval number was FO:07/09-0033, approved on July 10th, 2009.

Faculty of Creative and Cultural Industries

Application for Research Ethics Review (last updated 16/9/09)

Application for: Exemption from Full Review Full Review Checklist only

Applicant Details

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<i>If a student then also:</i>	
Details of study: (please tick)	<input checked="" type="checkbox"/> PhD <input type="checkbox"/> MPhil <input type="checkbox"/> MA <input type="checkbox"/> Other (please state)
Name of supervisor:	Roger Eglin

Project Details

Internally-Validated Rules in Games – A Grounded Theory

In this study, the term *internally-validated games* is used to describe games in which the satisfaction of the rules is mainly left open to player interpretation. For example, if a rule states that the player must ‘wait until something interesting happens’, the rule has been satisfied when the player believes they have seen something interesting, whether or not other players, referees or computer A.I. agree with this. This study will seek participants who have had experience playing games with large amounts of internally-validated situations, such as “*The Game*” (www.losethegame.com) or “*SFO*” (www.sf0.org). Participants will be interviewed on a face-to-face basis in a natural setting, in accordance with the Grounded Theory methodology of Glaser, in order to explore their experiences. Data gathered will be analysed to identify recurring concepts, and after several iterations of the process should give rise to a theory which is grounded in the data.

1. Research methodology.

1.1. Will the participants be exposed to any physical or psychological risks greater than those encountered in their normal lifestyle? If so, please provide details.

No.

1.2. Will the participants be exposed to any non-standard hardware or any non-validated instruments? If so, please provide details.

No.

1.3 If the proposed research involves vulnerable groups, can the information sought be obtained by other means?

N/A

1.4. Are drugs, placebos or other substances to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind? If so, please give details, in particular details of medical or first aid cover.

None.

1.5. How will data be collected during this study? Please provide details of data analysis.

Data will be collected via face-to-face interview with regard to the players' experiences of internally-validated rules in games such as "*The Game*" (www.losethegame.com), or "*SF0*" (www.sf0.org). Notes will be taken, and typed up afterwards. Textual analysis will be performed on submitted answers, in order to identify recurring concepts as per the Grounded Theory methodology of Barney Glaser.

1.6. If statistical tests are to be performed on the data collected, please specify these tests and the number of participants that will be needed to provide statistically meaningful results.

Grounded Theory does not employ statistical tests, but enough participants must be obtained in order to saturate the data. It is expected that at least 30 participants will be needed for this, and because of the informal nature of the interviews, this number should be relatively easy to achieve.

1.7. If you have answered Q1.6, what contingency plans do you have if you are unable to find enough participants?

There is the option of looking at internet discussions, groups and websites dedicated to these games in order to gain more data, although face-to-face interview is preferable. Otherwise, an alternative qualitative analysis, such as thematic analysis, could be used.

2. Research design.

2.1 What is the timetable for this study, with regard to the involvement of any participants?

1 x 20 minute interview (approx) immediately following consent form submission.

2.2 What arrangements have been made for ensuring that the proposed research will be conducted and reported appropriately?

All documents handed in with this ethical approval application have been checked by Roger Eglin and/or Brett Stevens.

2.3. Does the research methodology use deception? If so, why is this necessary?

No.

2.4. Will it be necessary for participants to take part in the study without their full knowledge and consent at the time? If so, why is this necessary?

No.

2.4. If you have answered YES to Q2.3 and/or Q2.4, then after the project, will participants be provided with feedback about their involvement and be able to ask any questions they may have about this involvement? If not, why not?

N/A

3. Sponsorship for the research.

3.1 Please indicate if there any real or perceived conflicts of interest which could compromise the integrity and/or independence of the project due to the nature of the funding body.

N/A

3.2 Please declare any incentives that have been made to (any of) the investigator(s).

N/A

3.3 Please indicate if there any restrictions on the freedom of the investigator(s) to publish, or otherwise make public, the results of this research.

N/A

4. Research participants.

4.1 Who do you identify as the participants in the project?

Anybody who has had experience of playing games which feature internally-validated situations.

4.2 What arrangements have been made to preserve confidentiality and privacy for the participants, including the storing, publishing, and/or destruction of the data they provide?

Data will be held on a password-protected computer or in a locked cupboard, both of which are in a secure office. Random participant ID's used where appropriate to refer to the participants.

4.3 Are any financial inducements or other incentives being offered to participants? If so, what are these and why are they being offered?

No.

4.4 What are the benefits and risks to the research participants or third parties?

None.

5. Informed consent.

5.1 Are you now, or is it likely that in the future, you may be in a position of authority or influence over any of the participants?

Some of them may be my students, but I have made it clear that participation (or non-participation, or withdrawal from participation) will have no effect on their university grades, and that there will be no prejudice towards them as a result of their participatory decisions.

5.2 What are the plans to discuss the project with those likely to be involved, including potential participants or those who may represent their views?

Information sheets, consent forms, debrief sheets and opportunities to ask questions are all provided, and are included with this application, which has been checked by Roger Eglin and/or Brett Stevens.

5.3 Are there any problems relating to the participants' ability to give informed consent?

No.

5.4 Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited?

No.

5.5 Has information (written, oral, visual, *etc.*) about the project been prepared in an appropriate form and language for potential participants? At what point in the project will this information be offered?

See 5.2.
Consent forms and information sheets given at start of task. Debrief sheets given on receipt of completed questionnaires.

5.6 Will potential participants be asked to give informed consent in writing and will they be asked to confirm that they have received and read the information about the study? If not, why not?

Yes.

5.7 Will participants be told that they have the right to withdraw at any time during the investigation, without penalty? If not, why not?

Yes.

5.8 After the study, is there any reason why participants will NOT be provided with feedback about their involvement and be able to ask any questions they may have about this involvement?

No.

5.9 Will the results of the project be offered to those participants who wish to receive them? If not, why not?

Yes.

5.10 What provision has been made to respond to queries and problems raised by participants during the course of this study?

Email addresses of myself, Roger Eglin and Tony Kalus given at various points throughout the task.

6. Risk to researchers.

6.1 Are there any identified risks to the researcher(s)? If so, please provide details.

No.

6.2 If risks have been identified in 6.1, please provide details of how they will be managed.

N/A

7. Risk to the Faculty or University.

7.1 Will the study involve the investigator and/or any participants, in activities that could be considered contentious, unacceptable, or illegal, or in any other way harmful to the reputation of the Faculty of Creative and Cultural Industries or to the University of Portsmouth?

No.

INFORMATION SHEET – PLEASE READ CAREFULLY
(Face-to-face interviews only)

Internally-Validated Rules in Games: A Grounded Theory

Neil Dansey

The aim of this study is to explore the potential of internally-validated rules in games. These are rules which rely on the interpretation of the player to flesh out the details. The player can then adapt the context of the game to fit their everyday life and routine. The rules do not change, but are deliberately ambiguous (i.e. they could be interpreted in various ways) so each player's experience of the game is different. Often players find it enjoyable to compare their interpretations with those of others, in order to see if they "saw" the game differently.

In this study, you will be asked about your experiences of such rules in games. I will be taking notes as we talk, and because it is important that these notes accurately show the ways in which things were said, you will not be able to change what is written. However, I can take note of any corrections that you wish to make, and add these to the end of the interview. All information is anonymous, and will be held in strict confidence, ensuring the privacy of all participants. The data will be stored on a password-protected PC, or in a locked cupboard, in a secure office. Your data will not be used for anything other than this study, unless you give permission in writing. The data will be destroyed once work on this research topic is completed.

It is expected that your total participation should last around 10-20 minutes. After you have read this information sheet, you will be asked to fill in a consent form in order to register for the study. Do not be alarmed by the consent form – it is standard procedure for any study that involves participants. However, you are free to withdraw from this study at any time, without prejudice or attempts at dissuasion by us, even if you have already filled in the consent form. All you need to do is tell the researcher (or email at neil.dansey@port.ac.uk) and request to be withdrawn. Any data already gathered about you will be discarded.

Your participation (or non-participation) in this study will have no effect on your marks for any subject at this, or any other university.

This study is not intended to put you in a position which is dangerous, distressing, illegal, immoral or harmful to others. If you feel that this has happened (or is currently happening) to you, you should withdraw immediately from the study verbally, or by emailing the researcher (neil.dansey@port.ac.uk)

This study has been approved by the University of Portsmouth CCI Faculty Ethics Committee. **If you have any questions whatsoever**, please do not hesitate to contact the researcher at neil.dansey@port.ac.uk.

Whilst you are free to discuss your participation in this study with the person carrying it out (Neil Dansey), if you would like to speak to someone not involved in the study, you may contact the Chair of the Faculty Ethics Committee (Tony Kalus: tony.kalus@port.ac.uk).

PARTICIPANT CONSENT FORM
(Face-to-face interviews only)

Internally-Validated Rules in Games: A Grounded Theory
Neil Dansey

Please read this document carefully.

1. I have read and understood the attached information sheet, and have had the opportunity to raise and discuss my questions with the researcher with regard to the general nature, object, potential risks, duration of study and what is expected of me.
2. I understand that neither I nor my dependants will have any claim in law on the University of Portsmouth or its employees for any injury or misadventure, except when such injury or misadventure is caused by negligence on the part of the University of Portsmouth.
3. I understand that the aim of this study is to explore the experience of internally-validated rules in games.
4. I agree to volunteer as a subject for the study described in the information sheet attached, and I give my full consent to my participation in this study.
5. This consent is specific to the particular study described in the information sheet attached, and shall not be taken to imply my consent to participate in any subsequent study or deviation from that detailed there.
6. I reserve the right to withdraw from this study at any time, without needing to give a reason, and any data already gathered from me will be discarded; I also understand that I may be withdrawn at any time if the researcher feels it is necessary (for example if you appear to be distressed), and will suffer no penalty as a result of withdrawal.
7. I understand that my participation in the study is anonymous, and that I might be quoted anonymously in relevant research papers and presentations which follow.
8. I understand that the results will be stored on a password-protected PC, or in a locked cupboard, in a secure office, and that results will not be used for anything other than this study, unless I agree to this in writing. I understand that my data will be destroyed once work on this research topic is completed.

Name of volunteer:

Date:

Signature:

DEBRIEF SHEET
(Face-to-face interviews only)

Internally-Validated Rules in Games: A Grounded Theory

Neil Dansey

First of all, I would like to thank all participants very much for taking part in this study. I know sometimes it can feel like quite a lot of effort for not much reward, but I assure you that your participation really has been valuable.

The aim of this study was to explore the experience of internally-validated situations in games. I did this by talking to you for 10-20 minutes about your experiences, taking rough notes to aid my memory. These notes will be typed up and stored securely.

It was important for my research methodology (Barney Glaser's Grounded Theory) that I conducted the study in as natural an environment as possible. That is why I have interviewed you in this location and at this time. It is also important for Grounded Theory that the interviews are conducted face-to-face, as this allows me to pursue avenues of interest as they arise, and facilitates full, natural answers from the participants.

The next step for the study is to analyse the data you have provided, along with the data from other participants, to try to identify recurring concepts or themes in the data. I will then repeat the interview process with more participants, and compare the new data with the old data, before repeating the process again. Eventually, a theory should emerge from the data, which illustrates the interpretation and experience of internally-validated situations in games. It is this theory which will be my contribution to knowledge in accordance with the requirements of my PhD study programme.

Once more, I would like to thank you for taking part in this study. If you have any questions, or would like to receive a copy of any academic work which arises from the findings of this study, or are interested in taking part in future studies, please do not hesitate to contact me at neil.dansey@port.ac.uk.

Best wishes,
Neil

This page contains correspondence with a member of the Faculty Ethics Committee (Tony Kalus) further to the receipt of the ethical approval application for face-to-face interviews. The application was subsequently accepted.

Neil,

If you do interview anyone under-18, then a several people have suggested that it would be better if you can arrange for someone else to be present at the interviews, even though they will be in a public place. It might be important from your point of view to have an independent person sitting in on these interviews. Can you arrange this?

Tony

Hi Tony,

Can the other person be one of the other players, or a parent, or one of my friends, or does it have to be someone from the university?

The problem is that I don't know for certain who will be present at different stages of the weekend. As a compromise could we say that anyone under 16 I cannot interview without an adult there? I expect the majority of participants to be 16-17, but if the older participants don't turn up until the Sunday I could miss out on 2 days of data. Just worried about coming back empty-handed because of a technicality. All participants under 18 will definitely be interviewed in a public place, and I will make sure that place is a busy place such as a cafe or whatever.

How does that sound?

Neil

Neil,

I passed on all the information you sent me about interviewing in a public place, etc., but there is still this concern, for you as well as for the participants. I think any other adult will do - after all, will there be anyone else from the University there? Parents are obviously best, but failing that, any other responsible adult.

Tony

Hi Tony,

My girlfriend is a primary school teacher and has a fully enhanced-CRB check (i.e. she's endorsed by the Criminal Records Bureau to work with kids). If she was there would that be sufficient?

Neil

The following email was sent to the prospective participants of the face-to-face interviews:

Hello,

My name is Neil Dansey (ElNeil79 in *SFO*) and I am a games researcher at the University of Portsmouth, UK. My area of study is pervasive games, in particular the creative interpretation of everyday surroundings - basically, exactly what *SFO* requires players to do. I'm looking for people to talk to with regard to their experiences of games such as *SFO*, in order for me to explore what makes these players tick. This would be ideal if I could do it over the internet, but unfortunately my research methodology requires that I do it face-to-face.

Luckily, I play *SFO* occasionally, although I am a bit of a noob, and I hear you are having a get together in [town name] in July. Are there any times over the weekend in which most of the players will be in the same place (e.g. pub)? Do you think it would be possible for me to tag along and chat to some of the players? Do you think they will mind? I could even join in in some of the tasks...

If you think you could help me with this, could you please email me at neil.dansey@port.ac.uk?

Many thanks for your time.

Neil

On the following pages are copies of correspondence between the researcher and the prospective participants of the email stage of the research (after the face-to-face interviews were completed).

Hello,

I am currently studying at the University of Portsmouth (UK) for a PhD in Pervasive Games Design and I am investigating the player-experience of tasks in *SFO*. I am doing this through the methodology of Grounded Theory as proposed by Barney Glaser, which involves getting as many opinions as possible in order to identify recurring themes. The results from this study will form part of my PhD thesis and are therefore likely to contribute to game design knowledge.

I would therefore be incredibly grateful if you could help me with this, by answering any or all of the following questions for me:

Can you tell me about your experiences of the tasks in *SFO*?
How do you feel about the tasks?
What is it like to do the tasks?

I know the questions are quite vague, but I want to avoid leading you towards any particular answers. Just say what you feel, include whatever you think is relevant, in as much or as little detail as you are comfortable with. There are no right or wrong answers.

If you are happy to participate in this study, please read the legal/ethical information below, and submit your answers by responding to this message, or by emailing neil.dansey@port.ac.uk. If you do not wish to participate, please ignore this message.

Thank you very much for your time.

Neil Dansey
University of Portsmouth
neil.dansey@port.ac.uk
+44 (0)23 9284 5492
SFO: elneil79

Here's the ethical/legal information of the study (do not be alarmed, it is university procedure that I am obliged to include this):

By submitting answers for this study you acknowledge that...

1. You are 18 years old or over.

2. You have read and understood the above information.
3. You can raise and discuss any questions with the researcher with regard to the general nature, object, potential risks, duration of study and what is expected of you, before, during and/or after participation. You can do this either by replying to this message or by emailing neil.dansey@port.ac.uk.
4. You understand that neither you nor your dependants will have any claim in law on the University of Portsmouth or its employees for any injury or misadventure, except when such injury or misadventure is caused by negligence on the part of the University of Portsmouth.
5. You understand that the aim of this study is to explore the player-experience of the tasks in *SFO*.
6. You agree to volunteer as a subject for the study described in the information above, and give your full consent to your participation in this study.
7. This consent is specific to the particular study described in the information above, and shall not be taken to imply your consent to participate in any subsequent study or deviation from that detailed there.
8. You reserve the right to withdraw from this study at any time, without needing to give a reason, and any data already gathered from you will be discarded; You also understand that you may be withdrawn at any time if the researcher feels it is necessary (for example if you appear to be distressed), and will suffer no penalty as a result of withdrawal.
9. You understand that your participation in the study is anonymous, and that you might be quoted anonymously in relevant research papers and presentations which follow.
10. You understand that the results will be stored on a password-protected PC, or in a locked cupboard, in a secure office, and that results will not be used for anything other than this study, unless you agree to this in writing. You understand that your data will be destroyed once work on this research topic is completed.
11. Whilst you are free to discuss your participation in this study with the person carrying it out, if you would like to speak to someone not involved in the study, you may contact the Chair of the Faculty Ethics Committee (Tony Kalus: tony.kalus@port.ac.uk).

After participation the following email was sent:

First of all, I would like to thank all participants very much for taking part in this study. I know sometimes it can feel like quite a lot of effort for not much reward, but I assure you that your participation really has been valuable.

The next step for the study is to analyse the data you have provided, along with the data from other participants, to try to identify recurring concepts or themes in the data. I will then repeat the interview process with more participants, and compare the new data with the old data, before repeating the process again. Eventually, a theory should emerge from the data, which illustrates the player-experience of tasks in *SFO*. It is this theory which will be my contribution to knowledge in accordance with the requirements of my PhD study programme.

Once more, I would like to thank you for taking part in this study. If you have any questions, or would like to receive a copy of any academic work which arises from the findings of this study, or are interested in taking part in future studies, please do not hesitate to contact me by PM, or at neil.dansey@port.ac.uk.

Best wishes,
Neil

The following email was sent to request for more information from players:

Hi **[name here]**,

Many thanks for speaking/writing to me before about your experiences of *SFO*. There are definitely some recurring themes coming out of my data and was wondering if you could clarify something for me please?

You mentioned that:

[insert player quote here]

Could you tell me a bit more about this please (assuming you still agree to the legal/ethical bit below)? **[removed for brevity]**

If you do not wish to take part, please ignore this email.

Many thanks for your time,

Neil

Appendix E – Memos

These memos led up to the evolution of version 2 of the theory. From this point onwards (versions 3-12) the process was much quicker, as a less reductionist approach was taken. Written memos were replaced by a frequently-evolving diagram, to better illustrate the refinement of the theory and the researcher's own preferences for communicating ideas. These memos were not written for an audience, and as such the language is sometimes inappropriate, and the formatting has been left in to accurately reflect the researcher's mood at the time. Where necessary, the inappropriate language has been replaced with a non-offensive substitute in square brackets.

21/9/09 general notes

just thinking about my core category.

is it this "ideal, hardworking, creative, daring attitude" towards the game, as many of the concepts ive come across see to be affected by this or is it the progression from one attitude to another?

a learning process, or a process of understanding through engagement?

like grounded theory??!?!?!?!?!?

im getting really [cheesed] off with this coding. worried that ive done the early bits wrong and will have to back and start again.

21/9/09 anxiety

i think anxiety and fun are linked - a few participants have mentioned that some of the fun in the game comes from breaking taboos etc.

23/9/09 general notes about method

so i arranged my codes into what i believe to be categories. each category consists of about 4-10 codes with similar semantic meaning. i merged codes if i had the same one twice, or if i had two or more with the same meaning (in the context of the category being described). i have not logged these merges, but for each category a list of the codes used to generate the category is given, so it is relatively easy to see where i have merged codes.

using the cue cards and a very big floor space made it very easy to move stuff around. originally i was taking photos on my phone and then recording a voice memo for each one, but i realised this would be both too laborious to transcribe and also inflexible. instead i drew a diagram of each category, which allowed me to quickly shuffle things round if need be, and also gave a better description of the relationship between properties within.

two categories are problematic:

enjoyment seems too broad, different types of enjoyment are derived from very different types of activity. im probably going to split this into ludic and emotional enjoyment. i need to do this when my head isnt so ruined though.

also, player personalities is [problematic]. does it include motivation? need to rewrite this one i think. EDIT: done

Category 1

name of category:
change of scenery

codes used:
change of scenery
new experience

properties derived from the codes:
change of scenery
new experience

internal relationships:
-a change of scenery invokes a new experience

potential relationships to other categories:
-potential cause for enjoyment (through discovery)?
-caused by facilitation of activity. this sounds good, as most of the players said that the game gave them an excuse to do something unusual etc.

notes:
another simple one, but i feel the change in scenery is one of the main reasons that people play the game.

Category 2

name of category:
collaboration

codes used:
collaboration
contribution
contribution levels
players

properties derived from the codes:
contribution type
contribution level
collaboration

internal relationships:
-a player's contribution is their contribution type x their contribution level
-add the contributions up to get a collaboration

potential relationships to other categories:
-not sure if this is relevant any more, its more descriptive than anything.

Category 3

name of category:

enjoyment

codes used:

enjoyment

reward (need to split this, as it contains both ludic and emotional rewards)

catharsis

observation (of others)

discovery

worry

anxiety

introspective

enrichment

meditation

pride

friendship

involvement

feeling wanted

properties derived from the codes:

enjoyment

ludic rewards

emotional rewards

positive emotional rewards

negative emotional rewards

neutral emotional rewards

enrichment

pride

friendship

involvement

catharsis

feeling wanted

discovery

meditation

observation

introspective

anxiety

internal relationships:

-anxiety is a kind of negative reward

-discovery, meditation, observation and introspective are kinds of neutral emotional reward

-enrichment, pride, friendship, involvement, catharsis and feeling wanted are kinds of positive emotional reward

-emotional rewards and ludic rewards form the enjoyment in the game

potential relationships to other categories:

-enjoyment is invoked by the tension that the game causes between players and non-players

-enjoyment is also invoked by other aspects of the game, such as community feedback, creativity, viewing portfolio, hearing anecdotes

-the relative proportions of ludic and emotional rewards that a player seeks is modulated by their level of personal evolution

notes:

i believe this is one of, if not THE core category. perhaps this is because enjoyment is the reason people play games, therefore everything in the game is related to enjoyment?

Category 4

name of category:

facilitation

codes used:

facilitates

provision

opportunity

excuse

properties derived from the codes:

facilitates

provision

opportunity

excuse

internal relationships:

-facilitates causes opportunity

-provision causes opportunity and excuse

potential relationships to other categories:

-increases participation

-invoked by the game ludus

notes:

still dont understand why they need to be facilitated

Category 5

name of category:
freedom of choice

codes used:
freedom
choice

properties derived from the codes:
freedom
amount of choice

internal relationships:
-amount of freedom modulates the amount of choice

potential relationships to other categories:
-amount of choice increases the potential for different tasking preferences
-freedom to choose is a universal quality of the game? or is potential for uniqueness?
-freedom of choice is caused by potential for uniqueness
-freedom of choice increases engagement?

notes:
self explanatory, and [fairly] obvious.

Category 6

name of category:

fruits of labour

codes used:

completion

submission

documenting

portfolio

(participation: category)

(work vs play: category)

(player community: category)

(enjoyment: category)

properties derived from the codes:

completion

portfolio

documenting

(participation: category)

(work vs play: category)

(player community: category)

(enjoyment: category)

internal relationships:

-documenting evidence contributes to completion

-completion contributes to portfolio

potential relationships to other categories:

-provides the community with something to critique

-provides enjoyment (ludic, in terms of points)

-provides enjoyment (emotional, in terms of pride)

-participation contributes to completion

-work vs play contributes to completion

-personal evolution modulates completion?

-player personality modulates completion?

notes:

more evidence for splitting the rewards up, perhaps into "enjoyment" and "ludic rewards". remember that points are scored both by submission and by community approval.

Category 7

name of category:
motivation to achieve

codes used:
personal limits (explore)
??? - need to look up
effort
challenge (verb)
unnecessary effort
motivation
ambition
(enjoyment: category)
(work vs play: category)
(player personalities: category)

properties derived from the codes:
ambition
motivation
(enjoyment: category)
(work vs play: category)
(player personalities: category)

internal relationships:
-ambition increases motivation

potential relationships to other categories:
-freedom of choice affects motivation?
-enjoyment increases motivation
-motivation forms part of player personality
-motivation biases work vs play towards play

Category 8

name of category:
organisation

codes used:
contemplation
organisation
planning
planning amount
plan

properties derived from the codes:
contemplation
planning amount
plan

internal relationships:
-planning amount varies (based on what?)
-contemplation and planning amount produce a plan

potential relationships to other categories:
-modulates work vs play
-modulated by task preferences

Category 9

name of category:

participation

codes used:

activity

engagement

properties derived from the codes:

engagement

activity

internal relationships:

-the players engage in the activity

potential relationships to other categories:

-causes a change of scenery (and therefore enjoyment via emotional rewards)

-provides fruits of labour

-causes player evolution

-facilitated by facilitation

-modulated by player personalities

notes:

only derived from two codes, but these two codes were packed full of examples, so i feel it is important for the theory.

is attitude in the same category as motivation to achieve? possibly merge the categories?

^^ really need to sort this out.

should ludic rewards and emotional rewards be split into 2 categories?

Category 10

name of category:
personal evolution

codes used:
familiarisation
personal evolution
confidence
ideal attitude
newbies
player levels
ludic rewards
emotional rewards
the game
ludus
literal tasking
metaphorical tasking
community expectation
effort
(player attitudes: category)
(enjoyment: category)
(task preferences: category)
(work vs play: category)
(participation: category)

properties derived from the codes:
personal evolution
confidence
ideal attitude
ludic rewards
emotional rewards
ludus
literal tasking
metaphorical tasking
(player attitudes: category)
(enjoyment: category)
(task preferences: category)
(work vs play: category)
(participation: category)

internal relationships:

-as players play the game, there is a transfer of interest from tangible (ludus, ludic rewards, literal tasking) to intangible (confidence, ideal attitude, emotional rewards, metaphorical tasking), almost as if the game becomes a way of life.

potential relationships to other categories:

- modulates attitude
- modulates (nature of) enjoyment
- modulates task preferences
- modulates work vs play (more effort and expectation)
- increased by participation

notes:

yet more emphasis on splitting enjoyment into 2.

this strikes me as the CORE category because of the amount of related categories and also the fact that a lot of the participants were talking about it in one way or another.

Category 11

name of category:

player attitudes

codes used:

(freedom of choice: category)

(personal evolution: category)

(player personality: category)

literal

literal tasking

creativity

metaphorical

metaphorical tasking

interpretation

interpretive tasking

properties derived from the codes:

(freedom of choice: category)

(personal evolution: category)

(player personality: category)

literal tasking

creativity

creative/interpretive/metaphorical tasking

interpretation

internal relationships:

-interpretation of a task brief leads to either literal tasking or
creative/interpretive/metaphorical tasking

potential relationships to other categories:

-contributes to personality

-affected by freedom of choice

-affected by personal evolution

notes:

need to highlight that metaphorical tasking is related to community approval

Category 12

name of category:

player community

codes used:

community

strangers

other players

player-created tasks

user-created tasks

(forum) regulation

response

feedback

standards

requirements

community approval

emergence

punishment

(completion: category)

properties derived from the codes:

community

other players

emergence

standards

player-created tasks

requirements

feedback

approval

forum regulation

(completion: category)

internal relationships:

-community is all of the players in the game

-a subset of community is other players (i.e. not the individual in question)

-completions come in and get compared with the standards to produce feedback and forum regulation

-feedback and forum regulation modulate the nature of the community

-standards evolve as this process of completion, feedback and forum regulation is repeated

- feedback can be good (approval) or bad (punishment)
- community standards modulate the nature of player-created tasks, in terms of the requirements of the task

potential relationships to other categories:

- requirements of the tasks modulate the level of "work" involved in the game (see work vs play:category)
- completion of tasks modulates feedback
- nature of community modulates the tension between players and non-players
- approval provides emotional enjoyment (pride) and ludic rewards (points)

notes:

this one is hardcore, but i believe it might be one of the core categories, along with personal evolution and enjoyment

Category 13

name of category:

player personalities

codes used:

(attitudes: category)

(task preferences: category)

modesty

introversion

(motivation to achieve: category)

properties derived from the codes:

(attitudes: category)

(task preferences: category)

modesty

(motivation to achieve: category)

internal relationships:

-a player personality contains a set of task preferences, an attitude, an amount of motivation and an amount of modesty

-modesty is variable and unpredictable

potential relationships to other categories:

-contributes to participation

-modulates quality of completion

-none yet. maybe this is the end

-implies nature of online presence, along with portfolio?

notes:

im not sure if this is helpful. how does describing different player personalities explain player experience? maybe there are other facets to player personalities which affect the experience of the game (e.g. motivation) maybe ive got one end of the bunch of keys

Category 14

name of category:

player vs non-player tension

codes used:

(player community: category)

ludus

non-players

contrast (in lifestyle) to non-players

risk

complexity (apparent, and to non-players)

'weird behaviour' (need to rename this, its [not good])

crime

properties derived from the codes:

non-players

apparent risk

weird behaviour (need to rename)

apparent complexity

apparent crime

lifestyle contrast

tension

ludus

(player community: category)

internal relationships:

-tension is like a pane of glass, with player community on one side and the non-players on the other

-players look at non-players through the glass and they see contrast of lifestyle, and apparent risk (of danger, be it physical harm, legal comeuppance or social ridicule or whatever)

-non-players also see the contrast in lifestyle, but they also see complexity and apparent crime (in the form of the ludus itself), and weird behaviour (in the form of the player's actions)

potential relationships to other categories:

-it is possible that for the players, some aspects of enjoyment are caused by the fact that this pane of glass (tension) exists

Category 15

name of category:
potential for uniqueness

codes used:
uniqueness
variation
abundance
ambiguity

properties derived from the codes:
uniqueness
variation
abundance
ambiguity

internal relationships:
-abundance, ambiguity and variation all contribute towards uniqueness

potential relationships to other categories:
-potential for uniqueness is a universal property
-causes freedom of choice

Category 16

name of category:

task preferences

codes used:

task types

group tasks

group vs solo play

group tasks vs individual tasks

solo task

difficulty

spontaneous tasking

planned tasking

task grouping

factions

player types

player camps

player styles

(player personalities: category)

(planning: category)

properties derived from the codes:

task preferences

group tasks

group vs solo play

solo tasks

difficulty

easy tasks

hard tasks

spontaneous tasking

planned tasking

spontaneous vs planned]

theme

(player personalities: category)

(planning: category)

internal relationships:

-for task preferences there are 4 dimensions of choice

-difficulty: choose between easy vs hard

-number of players: choose between group and solo

- spontaneous vs planned: choose between these
- theme (different theme based on factions in games)

potential relationships to other categories:

- affected by freedom of choice
- helps to imply personality
- modulates amount of planning required (organisation)
- modulated by personal evolution

notes:

this category describes the tasks that the player prefers to do. got rid of player camps/types/styles because that only implied that there were different options involved.

Category 17

name of category:
universal properties

codes used:
inclusive
relaxed
inconsistent
game spirit
pervasive
player-centric
??? (e.g. applying the game to wherever i am)
the game
(potential for uniqueness: category)

properties derived from the codes:
inclusive
relaxed atmosphere
inconsistent experience
pervasive
(potential for uniqueness: category)
the game

internal relationships:
-inclusive, relaxed atmosphere, inconsistent experience, pervasive, and
potential for uniqueness are all attributes of the game.

potential relationships to other categories:
-pretty much every other category is inside the game

notes:
might need to make a "the game" category, for simplicity

Category 18

name of category:

work vs play

codes used:

work vs play

effort

chore

play

properties derived from the codes:

work vs play

play

required effort

internal relationships:

-work vs play is a spectrum between play and required effort

potential relationships to other categories:

-current position on spectrum is implied by nature of task requirements

-spectrum is biased more towards required effort is personal evolution is high

-required effort decreases enjoyment

-required effort provides fruits of labour

-play increases enjoyment

-required effort is reduced by motivation

-required effort is increased by organisation

notes:

this one is [difficult] - its getting really complex now, cant wait to see the big picture

24/9/09 general notes

[got really worried] last night - the sf0 website got hijacked by cyber squatters. in way i was worried that i wouldnt be able to get more data for my phd but on the other hand i felt a bit relieved at the thought that more data would be nigh on impossible to get, therefore my research would be more important.

bit worried at the lack of response to my second lot of spamming (32 in team shplank). was reading a personal website of one of the players and they are careful to highlight the non-profit, non-consumerist attitude of sf0. is research consumerist? do they see me as trying to capitalise on their fun?

fruits of labour (update)

does personal evolution modulate completion?

a newbie will submit anything thats good enough, but experienced players might take several attempts before it "feels right" or whatever.

universal properties (update)

i think this is what is mean by "the game" itself. so it is all of the categories, plus ambiguity and pervasiveness etc. it also causes a few things, tension etc.

Appendix F – Dissemination

On the following pages are copies of the author's academic conference papers, for the convenience of the reader, presented in chronological order:

Eglin, R., Eyles, M. & Dansey, N. (2008, April). *A Systemic Domain Model for Describing Ambient Games*. Paper presented at the *CHI 2008 Surrounded by Persuasive Ambient Intelligence* workshop, Florence, Italy.

Dansey, N. (2008, April). *Facilitating Apophenia to Augment the Experience of Pervasive Games*. Paper presented at the *Breaking the Magic Circle* seminar, University of Tampere, Finland.

Dansey, N. & Eglin, R. (2008, September). *A Systems Approach to Play for Game Design*. Paper presented at the *UK Systems Society International Conference 2008*, St. Anne's College, Oxford, UK.

Dansey, N., & Stevens, B. (2008). *Facilitating Creativity without Restrictions: A Pilot Implementation of an Idea Generation Game*. In A. Lugmayr, F. Mäyrä, H. Franssila, & K. Lietsala (eds.), *12th International MindTrek Conference: Entertainment and Media in the Ubiquitous Era*. New York: ACM.

Dansey, N., Stevens, B., & Eglin, R. (2009). *Contextually-Ambiguous Pervasive Games: An Exploratory Study*. In B. Atkins, T. Krzywinska, & H. Kennedy (eds.), *Breaking New Ground: Innovation in Games, Play, Practice and Theory*. London: Digital Games Research Association.

A systemic domain model for ambient pervasive persuasive games

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Abstract

By the development of the system domain model it is hoped that a greater conceptual and theoretical clarity may be brought to understanding the complex and multifaceted nature of pervasive and ambient computer games. This paper presents a conceptual model, the system domain model, to illustrate domain areas that exist in a console, pervasive or ambient game. It is implicit that the regions that the systemic domain model describes are contextually dependent.

By developing this model it is possible to more fully understand the gaming application area for game technologies and in particular the pervasive and ambient games. Further implications of this model are discussed with specific instances of games that are designed to promote behavioural change, in particular with regards to health.

Categories and Subject Descriptors

K.8.0 [Personal computing]: Games.

H.5.1 [Information interfaces and presentation]: Multimedia Information Systems - *artificial, augmented, and virtual realities*.

H.5.2 [Information interfaces and presentation]: User Interfaces (D.2.2, H.1.2, I.3.6) - *input devices and strategies (e.g., mouse, touchscreen), interaction styles (e.g., commands, menus, forms, direct manipulation)*.

C.2.4 [Computer-communication networks]: Distributed systems – *distributed applications*.

General Terms

Design, Experimentation, Human Factors

Keywords

games, persuasive, pervasive, ambient, ambient intelligence, ubiquitous computing, console

Introduction

Common perspectives on pervasive games include the technological and cultural. The technological perspective addresses pervasive games in terms of the technology which enables the game to be played, whereas the cultural perspective focuses on the game itself and the way it integrates into the everyday world (Nieuwdorp, 2007). In this paper we focus on the cultural facets of pervasive games. In particular, we propose that a pervasive game can be conceptually modelled by three domains: data generation, participation and receiving feedback.

The study of pervasive games as differentiated from traditional games seems to have focused on mobility of devices and spatial aspects, temporal expansion and social aspect of new gameplay. We see pervasive games as a subset of traditional games. We posit that if we can define the essence of a traditional game then this will include its subsets. This does not mean that they do not have unique gameplay aspects, but that these are aspects and not fundamental determinants.

This paper first describes these three domain areas and then uses an instance of the model to describe the process of playing a pervasive game, in particular an ambient games, a class of pervasive games that are designed to work with ambient intelligent environments that may be used to promote gameplay behaviours.

Engagement domain

Many games may be considered primarily as autotelic entertainments, having a purpose in itself. If we consider that a game is an open system we might expect that games may affect the world outside its narrow confines (Salen & Zimmerman, 2004). For example playing the word completion game Hangman many times might result in improvements in spelling and perhaps even the admiration of peers. In many games the abstract winning conditions either do not have benefits in the real world or only have limited benefits.

When playing games the player participates and accepts the rule systems and victory conditions of games. While participating the players may engage with the internal logic of the game, aligning their goals with those of the game (whether the goals are to complete words or defeat alien invaders). Salen and Zimmerman talk about entering into the 'magic circle' in Rules of Play (ibid.) when playing games.

This acceptance of the game world, game goals and the limitations of a game may be part of the process of engagement.

McMahan reports Carr's definition of 'deep play' as: "a player accessing/accumulating layers of meaning that have strategic value... like "deep play" in a Dungeons and Dragons context would mean knowing all the monsters and the different schools of magic, for example, whereas 'shallow' play would mean more 'up and running hack and slash' style of play". McMahan further goes on to say that 'deep play' is a measure of a player's level of engagement (McMahan, 2003).

However there are other ways of engaging with a game. The Oxford English Dictionary defines engagement as: 'To entangle, involve, or mix oneself up' and 'To attract and hold fast (attention, interest);' (Oxford English Dictionary Online: Second Edition, 1989). So being engaged with a game would mean becoming involved with it, to be attracted to it and focus attention on it. Therefore one might be engaged with a game while playing it, and still be engaged after stopping play. After stopping play it is still possible to be thinking about the game; reflecting on play, narrative, milieu and so on.

So engagement comprises:

- an acceptance of the game system (rules, goals and so on)
- entanglement with gameplay and ideas of gameplay
- focus on the game (sometimes entering a flow state)

Note that these criteria do not require the player to observe the game. Clearly this is normally part of engaging with a game, but it is possible to engage with a game without observing it; for example by thinking about it.

Generating data domain

Games are driven by decisions of players that lead to inputs from players, these actions of players result in changes within game worlds. The decision and input are two separate events, though they may often occur close together. Normally in games the input is coincident with the generation of data. For example pressing a fire button is an input that has results in a game (a weapon fires). The act of pressing the fire button may be broken down into four distinct components: first the decision to press the button, second the physical act of pressing the button, third the mechanical motion of the button that closes contacts to complete an electrical circuit and fourthly the electric signal from the button that carries the input to the computer/console.

The pressing of the button is the act that generates game data. The mechanical closing of contacts and the resultant signal that travels to the computer/console is the process of inputting the generated data.

Sometimes generated data is input in real time and has immediate effects to events in the game world. For example in a first person shooter the generation and input of data from the player has immediate effects in the game world. Note that when viewing these actions we are breaking time into very small segments, just a fraction of a second each. If we changed the level of granularity (that is, the size of time segments we are viewing) so that we were using a coarser granularity with larger segments of time then these actions and events might appear simultaneous.

In some games data is generated and input but then has an effect at a later time. For example in turn based strategy games, Civilization 2 for example, the player generates and inputs moves and after the input they complete their turn (by clicking an 'end turn' button) and the consequences are then calculated and displayed.

There are also games in which there is a long time between generating the data for play and the consequences of that data input. For example in play by mail games the data for moves in the game is posted to a game master who calculates the results of the moves and then posts the results back to the player (a more recent version of play by mail are play by email games).

Note that in all the game types mentioned above the data is generated once play has started and lies on a timeline comprising decision, data generation, input and in-game consequences.

Ambient games expand the possibility of starting to generate data before a game session (even before the player is aware of the existence of the game), since the games can be driven by everyday behaviours: distance walked, galvanic skin response or locations visited for example. In this case the 'decision' phase where the player plans their next move is missing or may occur later when the player decides how to use the data they have generated.

It is possible to simulate an ambient game with current technology and therefore collect data before play in a traditional game. However, it is a feature of ambient games that this real life data from gameplay can be made more accessible as it can mapped onto every day activities. In this way all of the data generation in ambient environment may be thought of as a resource that can be used in a future game. It may also be used in current games to instantly triggering actions.

Receiving feedback domain

For purposes of clarity, we will discuss receiving feedback in the limited context of observation although feedback is not defined or limited to it.

Observing is defined as: 'The action of watching, noticing, or subjecting to scientific observation.' (Oxford English Dictionary Online: Draft Revision, 2004).

In the context of the systemic domain model there are different things that may be watched. A gameplayer may watch what is happening in a game they are playing as they make moves. This may be divided into a number of separate steps:

- a) They notice themselves making a decision.
- b) They are aware of their movements (or other physiological phenomena) that generate data.
- c) They notice the immediate mechanical/electronic consequences of their movements (the data that has been generated may also be recorded in this step).
- d) They watch the consequences of the input of their data.

Note that in ambient games players may observe a) and b) before they start playing the game or even before they are aware of the game.

In addition to observing the game people may observe things connected with the game while not playing. They may observe events that are occurring in a game world that are driven by other players. They may also observe other players both while playing themselves or while not playing. In the case of ambient games they may further observe people who are generating data but who have not started playing, and also observe the data being generated.

Note that it is possible to receive feedback from a game or observe a game while not being engaged in the games, that is not accepting the game system (rules, goals and so on), not being entangled with gameplay and not focusing on the game.

Systemic domain model for computer games

The three domains as described previously are combined to create a systemic domain model for computer games. This can be used to describe a class or genre of games and could also be used to describe individual games. Each of the intersecting areas represents a different game related activity which players may pass between over time; before, during and after play. Note that these movements need not be between touching areas, but can jump between distant areas. The areas themselves are contextually dependent, in that they can apply to many different games and the perspectives adopted by different people.

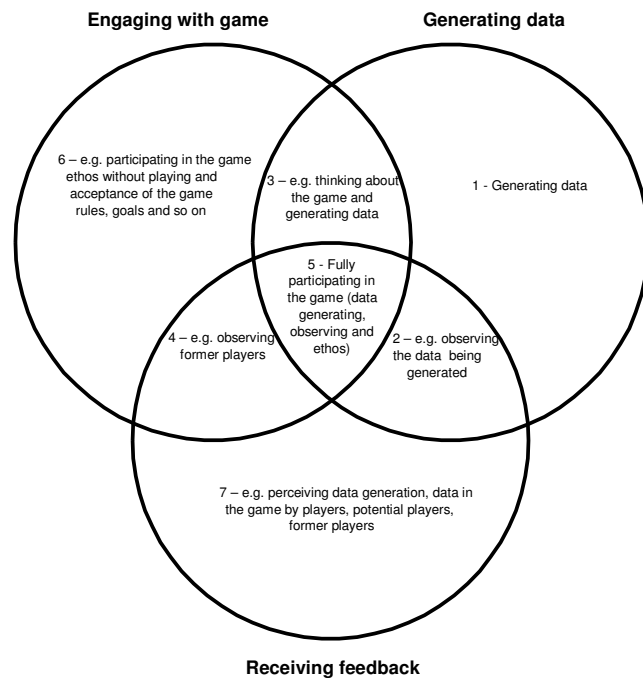


Figure 1: Systemic domain model

Systemic domain model for console (non-pervasive) games

Before considering pervasive games, we will first show a model for more traditional 'console' video games. These are games in which the player moves tokens or characters in a virtual (2D or 3D) environment in real time. The shaded area in the systemic domain model for console games figure represents the space inhabited by the player while they are playing the game. They are fully engaged (with the rules, goals and gameplay mechanisms), they are generating data (making moves, interacting with characters) and are receiving feedback by observing what they are doing.

If we examine a traditional computer game during play at low granularity, we can see that they fit neatly in to the central overlapping area shaded.

Before playing, the players may have been in area 6 if they had previously played the game and were engaged in its ethos, rules and so on. They might also have been watching someone else play, shown as area 4. If they had not previously played they might start in area 7, watching other players. They may not start in 1, generating data with out some knowledge of the game; they also may not be playing without watching the consequences of their play (area 3).

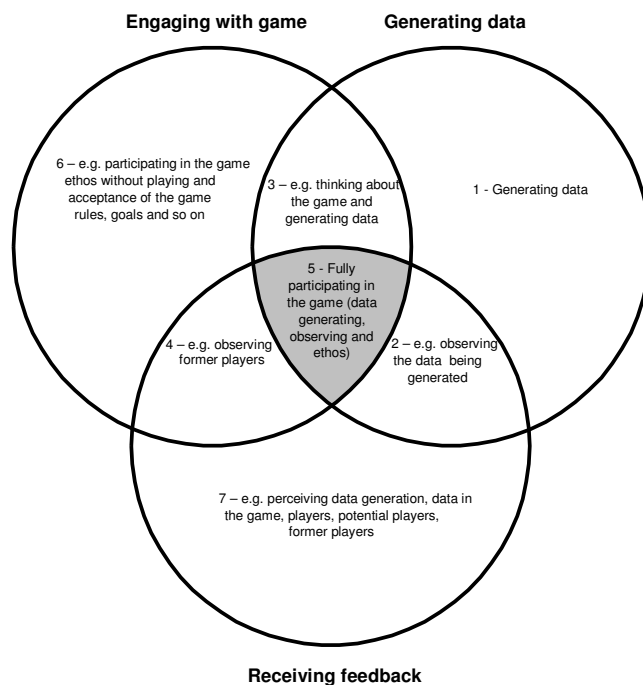


Figure 2: Console games during play

However at higher-level granularity of a game where we can expand time to look closely at the gameplay, it is possible to expand the traditional games from this central area and consider all areas including independent data generation is part of the system domain model. It is practically less likely that data generation without engagement and receiving feedback will be used in traditional games. It is also less likely that gameplay mechanisms of area 3 and 6 would be extensively used as the association of data generation and extended gameplay, respectively are problematic although they could conceivably exist.

Note that the numbering of the areas does not refer to the order in which the player passes through them but is just to identify them.

Systemic domain model for pervasive and ambient games

If we consider pervasive games are a subset of games in general, then we would expect many inherited traits. A distinguishing feature of the pervasive games is the ability of a pervasive game to expand the possible data collected and to make it easier to integrate into a game. This ability to generate data expands the possibility to incorporate real life data into games and to generate this data through an ambient environment. Through this conceptual model, it is possible to view data gathering as a key gameplay mechanism to developing pervasive and ambient games to modify behaviour. Further it is possible to create gameplay rules that encourage or promote behaviours associated with gameplay that are linked to real life behaviour and by so doing promote and reinforce those behaviours through gameplay mechanisms. It may be possible to extend the temporal gameplay to reinforce gameplay behaviour whilst not receiving gameplay feedback or in our particular instance not “see the game”. That is the participant may through engagement with the game continue to show behaviours reinforced by the gameplay mechanisms, in the full knowledge that she will return to the game at some later date, with the knowledge that her continuing behaviour is part of the gameplay mechanism. A further extension of this is that if these gameplay behaviours become embedded in into real life behaviours the game may be affectively used to promote real life behaviours outside of the game.

In pervasive games, play does not just occur in front of a computer or console but passes out into the world. In ambient games the player’s actions in the real world can be used to generate events in a virtual game world, the actions being (ideally) monitored by an ambient intelligent environment (Eyles, 2007a). Consequently, while in the process of playing a pervasive or ambient game the activities of a player may be represented in a number of the areas in the systemic domain model.

Players may take many paths through the model, most notably for pervasive games with which they may generate data before they decide to engage with the game. The knowledge alone that this data exists could attract potential participants to review their own personal data. Replay of this data through gameplay or other means when observed by the potential player might also promote gameplay.

The notions of temporal expansion are seen in areas 6, 3 and 1. These areas may also be closely associated with the notion of social expansion. Montola has also defined pervasive games in terms of social, temporal and spatial expansion which supports the definitions above (Montola, 2005).

Persuasion

The opportunity to modify player behaviour is embedded in ambient games in particular. If we consider that they are open systems then we can recognise that everyday tasks carried out by players have an effect in a virtual world and real world. By assigning game value to tasks that are linked to a gameplay mechanism, it is possible to transform player behaviour as was observed when the ambient game *Ambient Quest* was played at the *Women in Games 2007* conference. In the game *Ambient Quest* the distance walked by the player is rewarded by moves in a 2D virtual game world. Players reported anecdotal evidence of walking further during the conference while playing the game (Eyles, 2007b). This influence of gameplay affecting real life needs to be further studied in a longitudinal trial.

The lure of associating gameplay mechanisms with real life activities that are perceived to have health benefits may be another strong attractor for transforming behaviour. An example of this might include a gameplay regime that promotes a healthier life style. Other currently exploited examples include viewing data or playing against highly esteemed persons e.g. in a training gameplay mechanism. It is clear that computer gameplay mechanisms if adopted have the potential to promote a healthy life style (Eglin & Eglin, 2007). It has also been suggested that the incorporation of these gameplay mechanisms should not form the sole, or main mechanism, but rather that these learning activities should be designed as mechanisms that allow greater efficiencies while in gameplay. The learning activities, or learning outcomes, are embedded in the mechanisms such that they are not essential for completion of

goals, but the required behaviour (that is linked to the outcomes) greatly aids the successful completion of those goals (Bartle, 2006).

The gameplay mechanisms might be seen as a means to transform real life behaviour for short periods between gameplay, via temporal expansion. Further it might be seen as a means to be a transforming agent that could develop lasting behaviour beyond the game playing session. In particular, area 6 in which the players may be deemed to be engaged with the ethos of the game (e.g. where potentially healthy behaviour have been promoted in the case of Ambient Quest) requires further examination.

Current research at the Advanced Games Research Group at the University of Portsmouth is seeking to investigate this phenomenon further and in particular is addressing the question of whether these changes in behaviour only occur during the game or whether they continue after play stops. The systemic domain model offers a way of teasing out which specific types of player behaviour need investigating.

Conclusion

The systemic domain model described in this paper offers a conceptual framework for describing, defining aspects of games and differentiating pervasive, ambient and traditional (console) computer games at set granularity. This model also offers a conceptual model to aid the design of gameplay mechanisms to promote gameplay behaviours as a response to gameplay and in particular to ambient gameplay carried out in an ambient intelligent environment.

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Facilitating Apophenia to Augment the Experience of Pervasive Games

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Abstract

In a 'traditional' game the boundaries of play are quite specific, enabling players to easily decide whether or not perceived events are relevant to the game. In pervasive games the magic circle is not as clearly defined and as a result, order is sometimes seen in chaos. So far, effects have been observed in social, spatial and temporal dimensions. Therefore it is proposed that using ambiguous narrative elements could further augment the experience in a similar way.

Keywords

Apophenia; Pervasive games; Ambiguity; Magic circle.

Introduction

The magic circle (Salen & Zimmerman, 2004, p.95), is a conceptual list of limitations used to delineate a game. While this list might indeed consider the physical boundaries of legal gameplay (for example, the edges of a football pitch), it might also cover temporal and social aspects (when legal moves can be made, and by whom) as well as behavioural and narrative elements (what constitutes a legal move, and what this move represents). The use of the term 'magic circle' by Salen and Zimmerman stems from Huizinga's list of "play-grounds", which also included equally "the arena" and "the stage" (1970, p.28). To enter into the magic circle is to act within *all* of the sets of boundaries in its list.

In 'traditional' games such as *Monopoly*, *Space Invaders* and chess, the magic circle is quite clearly defined. This allows players to easily decide whether interpretations are meaningful in terms of the game being played. For example, if on their turn a player of *Monopoly* rolls two dice onto the board and moves their counter accordingly, this agrees with the social, spatial and temporal aspects of the magic circle (they are a player; it is their turn; the correct dice were rolled in the correct place; the correct token was moved). However, if it is currently not that player's turn, the same action would not qualify because it does not comply with the temporal aspect of the magic circle.

Although the majority of interpretations can be 'sorted' in this way, it is possible that a small amount of ambiguity can exist, perhaps as a result of a poorly-defined magic circle, or if events are perceived differently by different players. If a player takes longer than normal in deciding whether or not to buy a property in *Monopoly*, does this contravene the temporal aspect of the magic circle? Without an adjudicator, smaller amounts of ambiguity in 'traditional' games can usually be resolved by the players on the fly, using implicit rules such as those described by Salen and Zimmerman (2004, p.130). If the player was thinking for hours this would probably not be allowed, whereas a two-minute pause would in most cases be tolerated. In effect, the missing elements of the magic circle are improvised in order to make decisions and therefore prevent the game from breaking down.

Pervasive games deliberately create an amount of ambiguity which requires more than implicit rules to resolve. They have been defined as games which have "one or more salient features that expand the contractual magic circle of play socially, spatially or temporally (Montola, 2005)". Montola explains that social expansion occurs when the boundary between players and non-players is uncertain, spatial expansion involves uncertain boundaries between the real world and the game world, and temporal expansion involves uncertain boundaries between explicit play sessions. The ambiguity created from these expansions makes it more difficult for players to distinguish between game events and non-game events. When this happens, people sometimes interpret meaning where none exists.

Apophenia

In order to make perceptual judgements, people are required to make a decision, sometimes "in the face of unreliable, incomplete or inconsistent information (Mather, 2006, p.23)". In constantly trying to

understand the disjointed information they receive, people sometimes make sense out of nonsense (Beyerstein, 1996, cited in Carroll, 1998). *Apophenia* occurs when people mistakenly ascribe meanings to coincident occurrences which are unrelated or accidental (Mishlove & Engen, 2007). The term was coined in 1958 by Conrad (cited in Brugger, 2001), who described apophenia as an “unmotivated seeing of connections” accompanied by a “specific experience of an abnormal meaningfulness”.



Figure 1: Jesus in clouds? (Source: <http://www.rejesus.co.uk>)

A visual form of apophenia, *pareidolia* (Fig. 1), is evident when vague or obscure visual stimuli are interpreted as meaningful (French, 2001, p.14). However, Brugger (2001) favours Conrad’s broader definition of apophenia when illustrating the judgemental experiences of August Strindberg (1979). Strindberg’s mental condition was a major factor in the amount of apophenia he experienced, thus when unfortunate things happened he attributed them to the belief that he was being punished by a higher being – an “Evil one”. This could be seen as a type of intrinsic motivation, and contradicts Conrad’s (Cited in Brugger, 2001) description of apophenic connections as being unmotivated. However, it is likely that Conrad’s use of the word ‘unmotivated’ was intended to mean ‘not extrinsically motivated’. Children might notice friendly faces among passing clouds because they have intrinsic reasons for doing so, not because they are told, paid or otherwise prompted to do so. The roulette player might value a ‘winning streak’ of 6 red numbers, but might not care about the sequence of 6 red cars in a row during the journey home from the casino.

Apophenia for pervasive games

For pervasive games it would be desirable from a design point of view to try to harness the “abnormal meaningfulness” associated with apophenia, in order to make the experience more intense for players. However, the deliberate triggering of apophenia in subjects is impossible because it would necessitate a contrived setting, which could be seen as a type of extrinsic motivation, which contradicts the definition of apophenia. Even if the image in figure 1 appeared in this paper without a caption and the reader perceived the shape of Jesus unaided, this would not qualify as apophenia because the paper is *about* apophenia, and therefore the reader might be affected by demand characteristics. However, if the paper discussed a different subject and the reader perceived the shape unprompted, the experience would qualify as apophenia. For apophenia in games, ambiguity can be created, but an interpretation must not be suggested, nor can progress in the game depend on the ambiguity being resolved. Game designers should provide nothing more than the *potential* for apophenia to occur. Luckily, pervasive games by nature have ambiguous elements which already do this. This ambiguity gives plenty of opportunities for players to see order in chaos.

The designers of *Prosopopeia Bardo 1: Där vi föll* (hereafter called *Prosopopeia*) applied pervasiveness to a Live-Action Role-Playing (LARP) game. *Prosopopeia* attempted to give players a game experience which was as close as possible to reality, by expanding the magic circle along spatial, temporal *and* social axes (Montola & Jonsson, 2006). Because of this, everything and everyone was potential game content, at any time of day or night. Actors, staged events and in-game props were hidden around the city of Stockholm and players were encouraged to role-play themselves as they moved around the city, uncovering the story.

It would seem that due to the extreme pervasiveness of the game, the players of *Prosopopeia* experienced a level of apophenia (Ibid.):

Believing that the stranger might have been involved with the game the players spent a considerable amount of time discussing game-related issues with him. Even though the discussion never dropped a critical clue to the players, they were afterwards extremely uncertain on whether the encounter was staged or coincidental.

When the players reportedly attached game meaning to a person who was not deliberately pre-scripted into the game, their experience was augmented.

		Interpreted as game event?	
		YES	NO
Intended by designer?	YES	Normal game event (1)	Game event missed / dismissed (2)
	NO	Apophenic game event (3)	Non-game event (4)

Figure 2: Decision outcomes for interpretation in games

Figure 2 illustrates the possible outcomes when players decide if interpretations are game-related or not. Due to the specific nature of ‘traditional’ magic circles, game events are usually perceived as game-related and non-game events are not (cells 1 and 4 in Figure 2 respectively). With pervasive games, interpretation is more difficult because of the ambiguity involved. As was the case in *Prosopopeia*, while there are some clearly discernable events, others can become misinterpreted (cells 2 and 3). While misinterpretation is still possible in non-pervasive games – for example, if certain aspects of the game were poorly defined by the designer – one would expect misinterpretation to happen more frequently in games which feature a greater amount of ambiguity.

With regard to misinterpretation, not only is there the apophenic interpretation of non-game events, but there is also the dismissal of actual game events as non-game events. Therefore it could be seen that pervasiveness is risky in game design, because time, effort and money are invested in content creation which, if disregarded, could be costly for game designers. However, the assumption is made that both types of misinterpretation have an equal probability of happening. In everyday life this might be the case, but it could be argued that in a game this is not so.

Ambiguity and confirmation bias

In a classroom demonstration, Bertram Forer gave each of his students a personality description featuring statements which had mostly been taken from an astrology book. The average personal accuracy rating given by the students was 4.26 out of 5 (Forer, 1949), yet all had been given the same description. The description seemed to contain vague statements which were flattering, or at least negative but in a flattering way (for example “You have considerable unused capacity that you have not turned to your advantage” (Ibid.)).

It is surprising that the description appealed strongly to so many people, yet the students did not notice its general applicability. Carroll (1998) suggests that people are more likely to accept claims about themselves if the resulting ‘truth’ is of a desirable nature. Mynatt, Doherty and Tweney (1977) suggested that “a bias in favour of confirmatory evidence may be a general, trans-situational characteristic of human reasoning”. If these claims are true, participants would have wanted to see themselves in the ‘desirable’ description, and would have been more likely to remember a situation in which they displayed personality traits matching the description, and less likely to notice evidence to the contrary. Horoscopes use a combination of the above factors to make a general ‘prediction’ appeal to so many people on a personal level (Carroll, 1998; Fichten & Sunerton, 1983).

When people play games, they do so voluntarily, and for enjoyment (Huizinga, 1970, p.26). Therefore, if people have entered the magic circle of a game – that is, if they have *chosen* to act in accordance with the ‘contract’ outlined by it – it would be reasonable to assume that they find the magic circle

desirable (Salen & Zimmerman, 2004, p.333). While this desire to be inside the magic circle remains it is likely that a bias in favour of game-related events will influence their perception of ambiguity. This would mean that apophenic misinterpretations which create content out of noise would happen more frequently than misinterpretations which result in the disregarding of actual game events as noise. If the creation of content via apophenia outweighs the loss of content to noise, a greater amount of meaning – and therefore a richer experience – is generated.

Expansion of the idea

If the abnormal meaningfulness associated with apophenia in games leads to a richer player experience, it would be desirable to exaggerate the effect as much as possible. In the *Prosopopeia* games there was no apparent limit to where, when, or with who the game was played: the dimensions were already stretched as far as was feasible. This suggests that in order to expand the magic circle further we would need to look at other aspects.

The above expansions seem to be largely concerned with the structure of the game. Instead, ambiguity could be applied to the way the narrative is presented to the players. The background fiction, staged events and overall message could all be delivered in such a way as to allow multiple interpretations. As discussed by Gaver, Beaver and Benford (2003), ambiguity can be used to help create products which are engaging and thought-provoking. Gaver et al suggest several methods for creating ambiguity, including the use of imprecise representations to emphasise uncertainty, perhaps through certain wordings which create the illusion of precision in vague statements. Another method is to emphasise inconsistencies in the information, therefore highlighting the choice for interpretation. Yet another method is to undermine the credibility of the source of the information in order to force the recipients to decide for themselves whether or not the source is to be believed. All three of these methods (among others outlined by Gaver et al) could quite easily be integrated into pre-scripted content for pervasive games.

If ambiguity can be used effectively to expand the narrative elements of the magic circle (alongside the existing expansion of the temporal, social and spatial dimensions), it could facilitate the generation of further content via apophenia. The success of this will depend on the ability to maintain the interest (and therefore the confirmation bias) of players in the face of the increased ambiguity. Providing extrinsic motivations for the players to make connections would contradict the definition of apophenia, so in order to include apophenia the games must be designed such that progress does not rely on apophenia being experienced.

Acknowledgements

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A Systems Approach to Play for Game Design

Abstract

A systems perspective is taken to describe a game in which play involves generating game designs. Players are encouraged to consider assumptions, biases and oversights in their thinking, and as play continues better game ideas are expected to emerge. Generated ideas are copyright free, enabling them to be used elsewhere. Players decide which ideas are considered 'good' by voting for the ideas they would most like to play. This paper will outline the purpose and rules of the proposed game, illustrating from the point of view of human activity systems, group support systems and on scales of complexity of restrictions and number of interactions.

Key words: Group Support Systems, Emergence, Idea generation, Games, Game design.

Outline of Game

It is believed that both interpersonal and intrapersonal ideas can help promote a productive learning cycle (Bednar, Eglin and Welch, 2007). The critical appraisal of individual assumptions, by comparing personal experiences with those of a group, may promote a deeper 'double-loop' type of learning. The proposed game is a collaborative idea generation game. Players generate and submit game design ideas individually, before viewing the collective 'idea pool' in order to compare their ideas with others. After this reflection stage the process is repeated, and it is expected that after several iterations a higher standard of game designs will emerge. The questioning of previously held assumptions, and subsequent expansion of thinking, is expected to make the players better at designing games in future. It could be argued that the proposed game has characteristics in common with group support systems (GSS). Differences between the two will therefore be discussed.

The instructions of the game are as follows. Play happens over a number of sessions, each of which involves a period of idea generation and a short review and rest period. During each idea generation period players are required to submit as many game ideas as possible, scoring a point for each idea submitted. Ideas must consist of between 3 and 5 rules, and do not have to be good, serious or feasible, as long as they are theoretically possible. Players can submit as many or as few ideas as they wish, but are encouraged to submit at least one idea per idea generation period. Rules should not involve action which could be deemed illegal, immoral, or harmful to others. Ideas can be submitted in any format (i.e. written list, drawing, sound file) supported by the organisers. To avoid copyright issues, ideas are not allowed to copy existing games, but can be inspired by existing games or ideas which are already in the pool. For the benefit of game design, ideas which are submitted are done so as 'public domain' –

that is, they are freely available to the public. Players have the option to withdraw from play at any time if they do not agree with the instructions or do not want to play.

Once the idea generation period is complete, the ideas are collected up and presented to the players. The players then have some time to rest and browse the pool of ideas. After this time, a new idea generation period begins, and so on. After a predetermined number of iterations, players vote for the game ideas they would actually play. Two winners are declared: the person(s) who submitted the most ideas and the person(s) whose idea received the most ‘good game’ votes.

Play happens both at a lower level – as the players engage with the rules and produce game ideas – and at a higher level – as players view the results of other players and have the opportunity to question previously held assumptions about what is possible.

Systems Perspective

In terms of systems, the game could be represented as in figure 1:

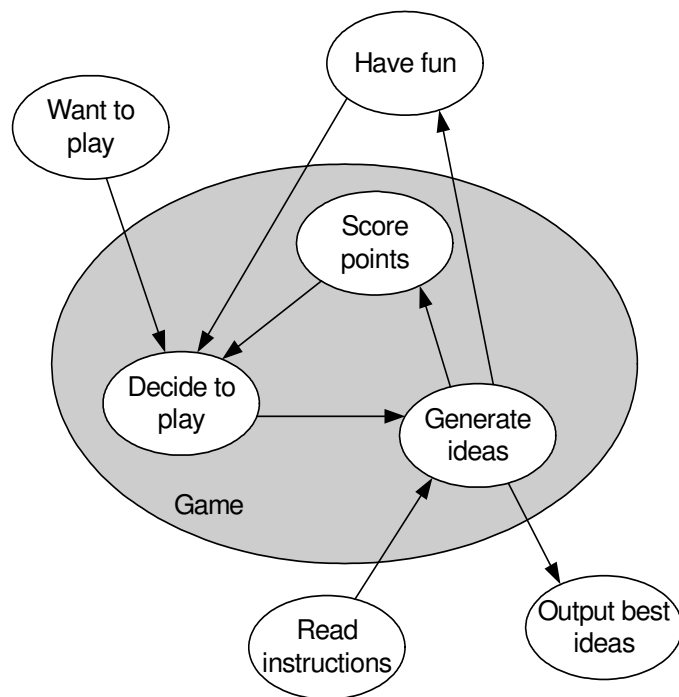


Figure 1: Conceptual model of the game as a human activity system.

Ackoff (1962, cited in Wilson, 1991, p.11) described iconic, analogic and analytic forms of modelling systems. Wilson (1991, p.12) states that these forms mainly cover physical and formulaic systems, and argues for a further category of model to be included, which could be used to describe a more qualitative type of system. This *conceptual model* is the one which will be used to describe our idea generation process, as concepts such as ‘fun’ and ‘good ideas’ could be difficult to quantify. Using the summary of Checkland’s system classification (cited in Wilson, 1991, p.25) it would appear that our system is a human activity system – a

group of humans undertaking a purposeful activity – rather than a social or cultural system which implies focus on relationships between humans. It is for this reason that the system is defined in terms of verbs (Ibid., p.27).

Players enter the game by deciding to play, and in conjunction with reading the instructions they generate ideas. The idea generation process scores a point for the player and perhaps provides some fun too. However, fun can also be had without participating in idea generation: observation of the idea generation process could be fun, as players compare ideas and laugh at the more obscure efforts provided. This meta-level play could result in players competing to design with self-imposed motives – to produce the most annoying or humorous game, for example. A formal test run will be undertaken in due course, potentially with the cooperation of some UK universities which run games design courses.

Achieving the internal goal of point-scoring and the external goal of having fun feeds back into the decision to continue playing, and so a feedback loop is established. A by-product of this loop, as mentioned earlier, is the emergence of particularly good ideas which have been voted for by the players. The ideas are also copyright free and publicly available, therefore allowing them to be used elsewhere.

Emergence

The generation of good game ideas is influenced by emergence. From the appearance of slums in *Sim City*, to bluffing in poker, to the evolution of ‘combos’ in fighting games, emergence can often be observed. According to Salen and Zimmerman (2004, p.165), emergent systems in games can provide variety, novelty and surprise. “A successfully emergent game system will continue to offer new experiences, as players explore the permutations of the system’s behaviour”. Johnson (2001, p.94) states that emergence relies on “the right kind and right number” of interactions. For this purpose it is better to build a densely interconnected system with simple elements than a sparse system with complex elements. Rose (2008) states that “game designs are usually most notable for what they *don't* include”.

The proposed game takes the above advice, minimising the number of rules and maximising the opportunity for interaction. Here, ‘interaction’ takes two forms: First, the mental interaction between the player’s mind and the allowed game space provides most of the opportunity. It could be said that emergence through mental interaction is synonymous with creativity. The game space is deliberately unobstructed by rules to allow for as many different game states (i.e. designs) as possible. However, there need to be a few restrictive rules in place, mainly to comply with ethical research procedures but also to prevent the game from breaking down completely. Second, there is the social interaction between players and the game as they submit ideas, compare them with those of other players and comment on assumptions, oversights and biases. Simply allowing repeated iterations of this cycle increases the number of potential interactions. It is also intended that rather than spending a considerable amount of time on each idea, players should submit frequent, brainstorming-style ideas, in order to keep the number of interactions up.

The number of both mental and social interactions can be further increased by running the game over a longer period of time, or by placing the idea pool in a widely accessible location such as the internet. This would allow more ideas, more iterations and hopefully a greater amount of emergence. Figure 2 shows how the proposed game stands on the spectra of complexity of restrictions and number of interactions.

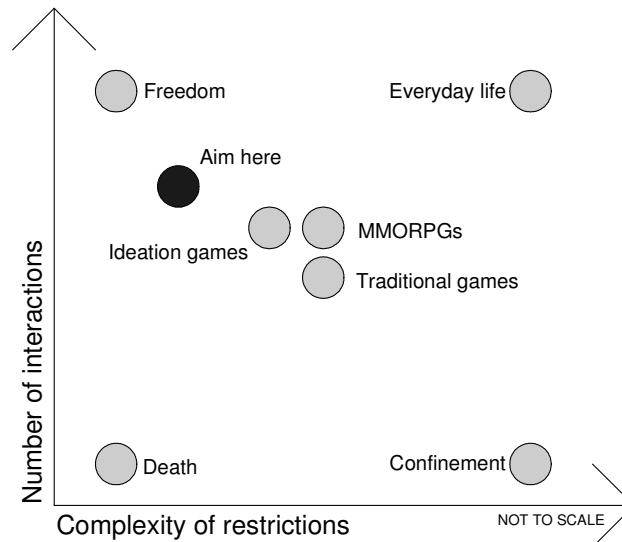


Figure 2: Position of the game on the spectra of interaction abundance and restriction complexity.

Everyday life contains a large amount of potential interactions, but there are also many complex restrictions which govern the way people behave and interact with things. Living in confinement is similar in terms of what is theoretically possible, but the number of opportunities for interaction is greatly reduced. At the opposite end of the scale, being dead involves no complexity of restrictions and no amount of interactions. Freedom, in this case, implies omnipresence and omnipotence: perhaps the idea of ‘godlike’ behaviour.

Traditional games (e.g. most board, dice, card and computer games), although they might seem to contain many rules, have a less complex restrictive nature than the social etiquette and laws of everyday life. They allow more godlike behaviour, in the form of fantasy or play. The number of interactions in traditional games is also more restricted: one is only allowed to interact with certain players and the game environment in a limited number of ways.

Massively multiplayer online role-playing games (MMORPGs) feature a similar complexity of restrictions to traditional games, but allow for a larger number of interactions by adding more players and a larger game world. Because of this, phenomena such as player-created law systems emerge (Mnookin, 1996).

Ideation games, such as those described by Kultima et al (2008), are designed to facilitate ideas. These games also have a larger number of interactions than traditional games, but unlike in MMORPGs this comes from the greater freedom allowed by the rules, and therefore an increased number of valid game interactions. Games in which gameplay involves changing

the game, such as *Nomic* (Suber, 1990), and contests in which the best game idea wins, such as the *Nordic Game Jam 2008* (Højsted, 2008) could also be seen as related to ideation games.

The game proposed in this paper allows an even greater level of freedom: the players do not have to actually make or play the games (unlike the *Nordic Game Jam*), rule creation does not entail a lengthy democratic process (unlike *Nomic*) and the flow of ideas is not as obstructed by turn-taking and other gameplay mechanisms as the games described by Kultima et al. The open-endedness of the rules broadens the definition of a valid game interaction further than in ideation games, so there are even more potential interactions between the player and the game system. However, while the aim is to provide many interactions with as low restriction as possible, there will need to be a few restrictive rules in place, because complete freedom implies the ability to engage in illegal or harmful activity. Therefore basic rules restricting certain actions will add a small amount of complexity and slightly reduce the amount of permitted interactions.

Similarities to GSS

Group support systems (GSS) are believed to have potential for effectiveness and learning in face-to-face settings (Walsh et al, 1995). Although the proposed idea could be seen as similar to GSS in that there is a collective “group memory” of ideas (Satzinger et al, 1999) to which participants contribute simultaneously and anonymously using the existing ideas in the knowledge base for inspiration, there are areas in which our proposal is different. Stepanek (1999, cited in Garfield et al, 2001) describes the use of GSS by “large companies” to produce novel, paradigm-breaking ideas. In research, the suitability of an idea is often evaluated externally, based on reductive factors such as levels of creativity and paradigm-modification (Satzinger et al, 1999; Garfield et al, 2001; Nagasundaram & Bostrom, 1995). However, in a practical setting one would not be able to easily control the amount of “intuitor-feeler” personality types in the group, and therefore the amount of paradigm-modifying ideas generated would vary accordingly (Garfield et al, 2001), potentially rendering the method unreliable. Furthermore, it is of our opinion that a game design is more than the sum of its parts, and therefore it should be evaluated using criteria of a more holistic nature, such as “would I actually play it?”, or “is it fun?”. We are not as interested in whether or not the ideas break paradigms, as long as they are ‘good’. Because game participation is voluntary (Huizinga, 1970, p.26) the participants of the game proposed in this paper should be people who are interested in designing and playing games. To design games, one needs a knowledge of and an interest in games (Colayco, n.d.), so it would seem that internal evaluation based on group consensus could be valuable for learning.

Conclusions:

Because of the emergent potential of the game system it is difficult to determine at present whether it will function best as a vehicle for generating good ideas or as a learning tool for expanding thinking. This could be seen as an advantage, because it necessitates a reduced pressure on the generation of good ideas in favour of a more general approach to output.

Combined with a tactile pen-and-paper environment and inclusion of game elements such as point scoring, this will hopefully create a more enjoyable, productive session and therefore a more suitable environment for emergence and learning.

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Facilitating Creativity without Restrictions: A Pilot Implementation of an Idea Generation Game

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ABSTRACT

In this paper the design, pilot implementation and results from an idea generation game are discussed. The *Neo-Darwinian* and *Neo-Lamarckian* models of creativity provided by Johnson-Laird are used to discuss differences between this game and other idea generation games. The emphasis of the study is on the facilitation of emergence in idea generation games. Results of the pilot were inconclusive, but offer an insight into the kinds of issues which could be faced should this study be carried out in full.

Categories and Subject Descriptors

H1.1 [Systems and Information Theory].

General Terms

Design, Experimentation, Human Factors.

Keywords

Creativity, Emergence, Idea Generation, Games.

1. INTRODUCTION

The aim of this study was to design, implement and discuss an idea generation game which facilitates emergence [see section 3] in order to promote the generation of surprising or novel ideas. Two different models of creativity will be used to explain how this game differs from existing idea generation games and how it provides a more effective environment for emergence.

Idea generation games are those which are designed to facilitate creativity among design groups. Fundamental to these games is the belief that being inside the magic circle of play creates the relaxed and playful atmosphere required for creativity to flow [1]. Idea generation games belong in the category of serious games in that they are played for reasons other than entertainment. Other serious games include those played for health, education or rehabilitation benefits.

2. TWO MODELS OF CREATIVITY

The two models of creativity proposed by Johnson-Laird (cited in [2]) are the *Neo-Darwinian* model and the *Neo-Lamarckian* model. *Neo-Darwinian* (ND) creativity is characterised by the unrestricted

combination of ideas to produce potential new ideas, which are then subject to a screening process based on predefined constraints in order to filter out the ideas which are non-viable. Conversely, *Neo-Lamarckian* (NL) creativity involves imposing the constraints from the beginning in order to generate only viable ideas.

Essentially, an ‘appropriateness filter’ is being used in both cases to grade ideas. For NL creativity the filter is applied as the idea is formed, and for ND creativity the filter is applied at the end of the process. However, it would seem that for idea generation exercises, no particular method promotes creativity which is completely ND or NL. For example, the process of brainstorming might seem like the most unrestricted method of idea generation – all ideas are considered equally valid until the end of the exercise when they are evaluated. While brainstorming appears to entirely promote ND creativity, there are still some NL restrictions in place. For example, a participant would probably not consider ideas which solved problems other than the ones which were being addressed by the exercise, and would not submit ideas outside of the allotted time for the exercise. In both of these examples an additional filter is applied by the participant, which adds some NL elements to the supposedly ND technique.

According to Furnham and Yazdanpanahi (cited in [1]) brainstorming sessions can result in fear of evaluation, social loafing and production blocking, all of which can hinder the idea generation process. The inclusion of the magic circle of play by turning the exercise into a game can alleviate these problems, but the necessary rules of the game add NL elements to the exercise, as players must submit suggestions which first conform to the gameplay requirements in order for them to be valid.

For example, in the game *GameSeekers* [1] players must wait their turn to act on the current idea and their behaviour is channelled by the information on the cards in their (and their opponents’) hand.

It would therefore seem that rather than being viewed as a binary attribute, the type of creativity promoted by a particular technique should be placed on a scale somewhere between ND and NL. Such a scale is shown in Figure 1.

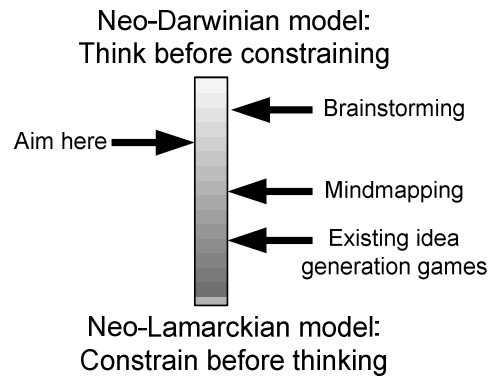


Figure 1: Position of different ideation techniques with regard to ND and NL models of creativity.

The initial filtering of ideas in the *Neo-Lamarckian* model might lead to the assumption that non-viable ideas are somehow worthless, and over a single iteration of the creative process this might be so. However, over several iterations of the process – or in the later stages of a longer single iteration – it could be that the non-viable ideas could be just as important as the viable ideas, as there is no condition within the ND model which requires the building blocks of viable ideas to themselves be viable too. Therefore recording the non-viable ideas is important – a practice which is advocated in exercises such as brainstorming. It would seem that if a greater number of conceptual building blocks are available there would be an increased chance of a stronger structure being built. If this structure is greater in value or complexity than the sum of the building blocks, emergent behaviour can be observed.

3. EMERGENCE

Emergence is the evolution of an output which is greater in value or complexity than the sum of the elements which were input. A classic example given by Johnson [3] is that of an ant colony: individual ants exhibit relatively simple behaviour but when many ants are together a much more complex behaviour emerges. Ants can be observed walking in an organised manner and the colony can even overcome simple mathematical problems (see [3], p.32). In games, emergence can be observed when the system exhibits behaviour that the designer did not directly specify. This behaviour can add novelty or surprise to a game [4] and therefore lead to richer game play: an example of this would be bluffing strategies found in poker. In alternate reality games, individual players would find the puzzles presented extremely difficult or laborious, but because the players work together progress is made in incredibly short periods of time [5].

Sometimes emergent behaviour can be undesirable, harming the potential for fun, fairness or aesthetics. For example, in multiplayer online games the ability to plant virtual flowers anywhere on a virtual field could lead to offensive words being spelled out in flowers. In general, game designers try to limit this ‘bad’ emergence while

trying to facilitate the ‘good’ emergence. However, this distinction is purely subjective and what is useful or novel to one person might be unhelpful, obvious or uninteresting to another. Furthermore, emergence only exists if it can be perceived, so if the designer believes that a certain outcome was not directly specified then emergence is present. It is this ‘ideal’ stance that will be taken in this paper.

4. FACILITATING CREATIVITY AND EMERGENCE

4.1 Brainstorming

According to Johnson [3], “emergent systems can grow unwieldy when their component parts become excessively complicated. Better to build a densely interconnected system with simple elements and let the more sophisticated behaviour trickle up”. In a brainstorming session the elements of the system include the ideas submitted by the participants. Because the creativity involved in brainstorming is situated at the *Neo-Darwinian* end of the scale, submitted ideas only need to conform to a few basic rules; the evaluation of those ideas happens later on. Thus, the simple interactions recommended by Johnson are provided. The densely interconnected system that Johnson also recommends is provided when existing suggestions are left on display as a record of events and to inspire further ideas. In theory, using Johnson’s recommendations this system seems to be an ideal environment for emergence, and therefore (according to Salen and Zimmerman [4]) novel or surprising outcomes – in the case of brainstorming, novel or surprising *ideas*.

4.2 Potential Problems

The problems of social loafing and production blocking can hinder idea generation during some exercises, so Kultima et al [1] suggested using the magic circle of play to provide an environment in which these problems can be reduced. However, rather than turning the exercise into a game which required creativity from the ND end of the scale (as in brainstorming), some of the suggested gameplay mechanics imposed by Kultima et al placed restrictions on the nature of the generated ideas, such that most ideas required pre-evaluation for suitability, and therefore a more NL style of creativity. From Johnson’s recommendations it would seem that this could reduce the amount of potential emergence in the system.

It would also seem that there could be other problems with idea generation games. In games which contain rules governing the nature of an ‘acceptable’ idea, the inherent biases brought to the design, and therefore the rules, could affect the overall quality or format of the generated ideas. This is difficult to avoid because even the simplest rules are created using an axiology, and therefore the best scenario is to try to limit the rules as much as possible and be aware of potential biases. Another potential problem lies in the evaluation of the

generated ideas for their suitability, for the same reasons. Again, an awareness of potential biases might help, but it could be more effective to organise a group evaluation system such as a ballot in order to minimise individual biases.

4.3 Aim

The aim of this paper is therefore to investigate the possibility of creating a brainstorming-style idea generation exercise, which due to its promotion of *Neo-Darwinian* creativity provides a suitable environment for emergence (and therefore surprising ideas), but does not break down in the way that brainstorming sometimes does via problems such as the social loafing described earlier. By making this exercise into a game a relaxed environment is facilitated, but care must be taken not to impose a *Neo-Lamarckian* requirement on the players via too many gameplay mechanics and rules.

The game will function in a brainstorming style in order to maintain a densely interconnected system of ideas, and the rules will be as non-restrictive as possible in order to facilitate simple interactions. To overcome the problem of subjective experiences of viability, players will be asked to vote for ideas which they think are viable, in order to obtain a general consensus on whether or not a particularly viable idea is present.

5. SIMPLIFICATION OF THE RULES

In order to simplify the rules of the proposed game, one must first have an understanding of the elements which make up a rule. Rules generally govern valid game interactions by restricting player behaviour. Without these restrictions the players would be free to do whatever they wanted. In idea generation games the rules define (among other things) the ways in which ideas are considered valid. It is suggested that most rules follow a social / behavioural / spatial / temporal pattern, thus:

PLAYERS(a) must perform ACTIONS(b) in SPACES(c) during TIMES(d), where (a),(b),(c) and (d) might be 'none', 'a particular set of', or 'all'.

It could be argued that items in the ACTIONS category, if studied closely enough, could be broken down into many spatial changes made over time, and therefore the ACTIONS category should not exist. However, rules are designed to be followed by players, so groups of spatial-temporal adjustments which are likely to be already internalised, and therefore automated, by the player (for example, those involved in rolling the dice) will be given as ACTIONS.

A way in which rules could be simplified is by reducing the number of checks an interaction must satisfy in order to conform to a rule. It takes fewer steps to evaluate the terms such as 'no players' or 'at any time'

than it does to evaluate more complex terms such as 'less than 10 but greater than 5', or 'the player to the left of the dealer'. This simplification has been implemented wherever possible for the design outlined in this paper. For the proposed game the spatial restrictions have been reduced as much as possible in order to allow the content of ideas to take any form. Ideas do not need to be serious or feasible, and are not restricted to a particular domain. This allows for more 'valid' suggestions, and even if ultimately they are not viable they might still form part of a viable idea in accordance with the ND model of creativity as explained earlier. Social restrictions have also been reduced by allowing all players the same rights and abilities, and players are not split into teams. Temporal restrictions have been reduced by allowing all players to make game interactions simultaneously. No player has to wait for their turn to submit an idea, and can do so as often as they wish.

It was the object of the design to reduce unnecessary restrictions, in order to make the game interactions as simple as possible. However, there are some areas in which this could not be achieved. There need to be some rules in place which govern the spatial dimension, for the sake of ethical practice, to prevent the submission of ideas which could be harmful to others and also to help organise the game. Some temporal rules are also in place: separate periods of idea generation and review are employed in order to assist the tracking of the chronological order of events, and to give participants regular rest breaks.

If it is easier for the player to make valid game interactions, the process of interacting with the game has been simplified. By allowing the players to view the collective pool of ideas the densely interconnected system is simulated. Thus, a more suitable environment for emergence could be facilitated. Furthermore, random participant numbers were used instead of names, and ideas were written down on paper rather than being called out by the participants, in order to minimise the fear of evaluation sometimes associated with brainstorming tasks.

6. THE GAME

The pilot implementation described in this paper was carried out with the assistance of students and graduates of game-related university courses and departments. Therefore it seemed logical to test the design by asking the participants to use the game to help them generate ideas for new games.

The proposed game is played as follows:

All players sit together in a relaxed environment for the duration of the game session, which lasts around 2 hours. There are three iterations of the process during this time, each consisting of a 10-minute idea generation phase, a 10-minute review and discussion phase and a 5-minute rest phase. During the idea generation phase players are required to think of as many game ideas as they can, each consisting of 3-5 key points or rules,

writing each idea down on a separate piece of paper. Ideas do not need to be fun, serious or feasible, as long as they are theoretically possible and not illegal, immoral or harmful to others. Players score a point for each submitted idea which conforms to the rules, and after 10-minutes the idea generation phase stops. There is then a 10-minute period where players can review all of the ideas which have just been generated, and can discuss them if they wish. The players then rest for 5 minutes and the process begins again. After the third iteration, players award a vote to any of the ideas that they would actually play if they were real. At the end of the game, two winners are declared: the person(s) who submitted the most ideas and the person(s) whose idea received the most votes. Small prizes were offered to the winners in order to provide an amount of friendly competition and encourage the generation of ideas.

Because emergence can only be facilitated (as opposed to being induced) a negative result is not necessarily an indication of a non-effective idea generation technique. While it might seem appropriate to test the game design against a control group for productivity levels and efficiency, in order to achieve statistically significant result the study would need to be conducted many times, in parallel with control groups who were undertaking a typical idea generation session such as brainstorming. This is beyond the scope of feasibility for this pilot, and so a more open approach is taken with regard to the findings. Contact has been made with universities around the UK who run game-related courses in order to enquire about running some creativity sessions with this technique should the results of the pilot implementation appear to be encouraging.

7. PARTICIPANTS

For the pilot implementation of the game the play session was conducted during a games industry competition in which groups of students were competing to develop the best game. It was emphasised that participants should possess an interest in making games, in order to encourage willing and relevant participants. A snowball method was also used to recruit extra participants from the existing participants' friends and colleagues. This was based on perceived appropriateness for the exercise, and while there was a risk of these newer participants not meeting the same criteria – and therefore bringing additional variables to the participant pool – this did not actually happen: the extra participants were also students of game-related courses and were taking part in the same competition. In total there were 8 participants, including the researcher.

8. RESULTS

To aid discussion, the term 'iteration' will be used to refer to one cycle of idea generation (10 minutes), review and discussion (10 minutes), and rest (5 minutes). There were three iterations carried out in the game, meaning that the session lasted approximately 2 hours in total, including player voting and final scoring.

During the game a total of 97 non-disqualified ideas were submitted. There were 8 ideas which were either disqualified or withdrawn. A game idea was declared to be 'good' only if it received votes from at least 50% of the participants. The results are summarised in Table 1.

Table 1: Total vs. 'good' ideas on a per-iteration basis

	Iteration A	Iteration B	Iteration C
Total Ideas	27	35	35
'Good' Ideas	3	0	1

9. DISCUSSION

While it is clear that each iteration in the game yielded minimal 'good' ideas, it is possible that it is normal in the process of designing an outstanding game to produce potentially hundreds of 'bad' ideas, particularly if a ND style of creativity is adopted. In the space of 2 hours there were 4 'good' ideas generated. Depending on the feasibility of these ideas, the session could be seen as a partial success, if only for providing a starting point from which the game designers could work.

For this study the assumption is made that groups of people who are interested in making games would also be suitable panels for critiquing them. Thus, high group approval signifies good quality ideas, although the argument could be made that a more accurate verdict would come from collective experiences of playing the game rather than simply viewing a written summary of the rules and trying to imagine the gameplay. However, the large number of ideas that were expected to be generated in total would have rendered this approach impractical.

It was clear that during the game, motivation among participants was very low. Having just taken part in a three-day exhibition they reported high levels of tiredness but as there was no other available time slot the session was carried out, despite the potential impact this could have on the quality of generated ideas.

During the game, a participant withdrew halfway through iteration B due to sickness, and although their data was removed from the pool it was not possible to remove any inspiration their ideas had given to the other participants. Therefore it is possible that the emergence of a particularly good or bad idea which was derived from the withdrawn participant's ideas might not be noted as such.

A clear example of emergence arose during the game. Many ideas were submitted which broke the rules because they involved immoral or harmful behaviour. However, participants discovered that by turning their 'real-world' game into an idea for a computer game, or by including rules which effectively said 'do not actually play this game', they could submit offensive

ideas which qualified as valid game interactions. Some participants admitted to “messing around” more towards the end of the game, especially once they had noticed that other participants were also doing so. This is not necessarily an example of ‘bad’ emergence, as the participants took the voting seriously enough to deem the ideas not viable.

Also prevalent during the game were instances of metagaming: “...the act of using the game that you are playing for purposes other than the game itself” [6]. Some of the ‘adapted’ rule-breaking ideas were considered potentially offensive because they involved slapstick violence towards other participants. While this was obviously meant in a jovial way, participants could have been offended and therefore the process would have been unethical. Another instance of metagaming occurred when one particular idea was submitted in which anyone who read the rules had to buy the creator a drink. The ideas produced during this metagaming were not deemed viable (the ‘free drink’ game only received a vote from the person who created it), but they do illustrate the type of lateral thinking which would be encouraged if it were used for a more viable purpose.

It was also discovered that ideas which had been formed before the session by the participants had sometimes been included in their submissions. There is no rule which states that players must only submit ideas generated during the game, and some participants of the study stated that in iteration A they used preconceived ideas to increase their scores. This practice should not be discouraged for idea generation, because all valid ideas are useful with regard to the ND model of creativity, whether they are viable or not. However, the task of ascertaining whether or not more *new* ideas were generated over successive iterations via emergence has been made more difficult.

10. CONCLUSIONS

From the results and discussion it would seem that there are many factors which could affect the conclusions drawn. While the lack of participant motivation was deemed to be one of these factors, this could be a very real risk when conducting idea generation sessions. One can organise a session in advance but cannot place any guarantees on the state of mind of the participants leading up to and during the session.

It appears as if emergence occurred during the study in the form of metagaming. This was not directly specified in the design and was certainly surprising when it happened. However, the games produced as a result were not particularly viable, which highlights the notion that emergence cannot be controlled. While it might seem that the emergence was ‘bad’, if the game had not been a ‘serious game’ the emergence would have been

considered ‘good’, because the participants seemed to enjoy the metagaming process despite initial motivation issues.

This study was intended to be a pilot implementation of an idea generation game which promoted the *Neo-Darwinian* model of creativity whilst trying to avoid the problems sometimes encountered during other ND techniques such as brainstorming. Indications are that on this occasion the success of the technique varied. Some ‘good’ ideas were generated, but the emergent metagaming (which was deemed non-viable in this instance although it would have been encouraged elsewhere) could have restricted viable idea generation. While the results and observations from the investigation are far from significant, it is useful to present them here in order to record the steps taken so far, and to highlight some of the issues encountered so they can be avoided in future.

11. ACKNOWLEDGEMENTS

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Contextually-Ambiguous Pervasive Games: An Exploratory Study

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ABSTRACT

In this paper a player-centric view is taken to illustrate game rules in terms of definition and validation. Games with externally-defined but internally-validated rules are given the term *contextually-ambiguous* games, and it is suggested that a contemporary definition of pervasiveness in games should accommodate contextual ambiguity. Several pervasive games have displayed elements of this ambiguity, but examples of games which feature this as a core gameplay mechanism are rare. Therefore, four such games are implemented in a case study in order to explore the potential of contextually-ambiguous games. Results are tentative, but offer some insight into potentially popular features and target audiences of such games.

Author Keywords

Games; Internally-Validated; Play; Rules; Ambiguity; Pervasive; Interpretation; Definition; Validation.

INTRODUCTION

According to Mäyrä [6], the nature of games depends on the perspective from which they are approached. Because game studies has emerged from such diverse fields as game theory, psychology, humanities, systems science, social science, there are many different perspectives on what a game actually is. Caillois [1] describes games based on the types of experiences they offer to players, while Salen & Zimmerman [11] describe games from a more formal point of view with regard to what they must contain. Nieuwdorp [9] notes that [pervasive] games are often viewed in terms of the technology or equipment required to play, Suits [12] frames games as self-imposed restrictions which make easy tasks more difficult, whereas Meier (cited in [10]) famously described gameplay as series of “interesting choices”.

In this paper a formal systemic view of games will be considered, (following Salen and Zimmerman from *Rules of Play* [11]). One of

the fundamental traits of games within this view is that they contain rules that restrict play to particular times, places, actions and people, and to act in accordance with these rules is to play the game. However, in recent years a number of *pervasive games* have been designed in order to blur the spatial, temporal and social aspects of rules [7], in order to make the player feel as if the game is ‘pervading’ their everyday life, thus making the experience more immersive. These games have been investigated at length, from a variety of perspectives, by research groups such as the iPerG Project (www.pervasive-gaming.org), the Nokia Research Center (<http://research.nokia.com>), and the University of Nottingham Mixed Reality Lab (www.mrl.nottingham.ac.uk).

While the blurring of the ‘actions’ aspect of rules is missing from Montola’s definition of pervasive games, it could be argued that actions, on closer inspection, could be reduced down to social and/or spatial adjustments made over time. For example, the action of ‘throwing a ball’ could be reduced to hundreds of spatial-temporal movements, but for the sake of practicality these movements are grouped into a recognisable action because of the likelihood that they will be performed together.

So it would seem that the spatial, temporal, social and action aspects of rules are evident and mutable in pervasive games. Normally in pervasive games, some or all of these aspects are made ambiguous, while the context of the game – the narrative and meaning – remains somewhat fixed. **Therefore, it is proposed here that games could be made to pervade the lives of players in a different way: by blurring the *contextual* aspect of the rules, while keeping the other aspects of the rules fixed. This could be achieved by using ambiguity, such that players can interpret the rules in any way they choose, and could lead to gameplay situations which could be more easily interpreted within the players’**

everyday lives. The potential for using ambiguity within design to create thought-provoking products has been already been noted [4], and has been used to great extent in astrological profiling, in order to make a general statement appeal to many people [5].

Ambiguity has also been used to some extent in pervasive games, in order to provide the players with the opportunity to perceive game content where it was not explicitly defined. For example, the pervasive Live-Action Role-Playing game *Prosopopeia* [8] was embedded in the city of Stockholm and lasted for 52 consecutive hours, and players were told that the game was always active, such that game content might be experienced anywhere, at any time of the day or night, during this time. At one point this resulted in the players spending a considerable amount of time having a conversation with a man about game-related issues, believing him to be part of the game, but afterwards they could not be sure whether he was really part of the game or if he was just an everyday passer-by. It is unclear from the report whether or not he *was* part of the game, but the interesting point is that either outcome would have been believable to the players.

Similarly, the creators of *Uncle Roy All Around You* [3] told players to “Look for a woman with black hair. She will show you where to go”. The ambiguity of the instruction ensured that no matter where the player was standing, it would be likely that somewhere nearby there would be a woman with black hair. In this way, the players could adapt the game to their current situation most of the time.

In the examples of *Prosopopeia* and *Uncle Roy All Around You*, this contextual ambiguity was employed as an adjunct to other pervasive techniques, and it is suggested here that contextual ambiguity in games be explored further, with a view to contributing to Montola’s definition of pervasive games.

DEFINING AND VALIDATING RULES

Within this formal, systemic view of games, this interpretive research takes a player-centric view of interactive applications such as games, such that information is viewed from the player’s point of view, and transactions happen either between player and the rest of the system, or between system and system. In player-system transactions, information flows back and forth between the player and another entity in the game system. Whether this entity is a referee, computer AI, or another player,

depends on the situation. Because of this player-centric stance, transactions initiated by the player (such as in-game decisions, or interpretations of the current success) will be referred to as *internal* for the rest of this paper. Conversely, transactions initiated by the rest of the game system, such as statements of the current game state, will be referred to as *external*.

In light of the above distinction between internal and external transactions, it would seem that individual game rules could be viewed in terms of how they are *defined* and how they are *validated*.

For example, when a child plays in a playground they might invent their own rules as they go, and these rules are subject to change whenever the child feels it is appropriate. For example, one moment they might be imagining they are a superhero with x-ray vision, but if they get bored of this they might suddenly ‘develop’ the ability to fly. Here, there are rules, but they are extremely flexible, informal, and completely subservient to the whims of the child. This is an example of *internally-defined* rules – the definition of the rules is completely in the hands of the child.

Conversely, when playing a game of *Ludo*, the majority of the rules are defined by the game system, in particular the rulebook. If the player wants to play a game of *Ludo*, they must adhere strictly to the rules given to them, otherwise the game is not *Ludo*. This is an example of *externally-defined* rules – the player has no control over the definition of the rules of the game.

With regard to *validating* the rules, a similar distinction can be made. For example, in the game of soccer, a player might believe that they have scored a goal, having seen the ball cross the opponent’s goal line, but if the referee does not agree, the goal does not count. This is known as an *externally-validated* rule – some other element of the game system (in this case, the referee) validates the player’s input in order to contribute to the game state.

Conversely, in some games the player is allowed to validate the rules internally. For example, in the street game *SFO* (www.sf0.org) players are given tasks to do, which often have ambiguous instructions so the players are free to interpret the task in whichever way they choose. One particular task instructs the players to go to a street corner, wait for

something interesting to happen, and document it. The definition of ‘interesting’ is left for the player to decide, hence the rule is *internally-validated*.

Figure 1 illustrates the above discussion in terms of a graph. The x axis of the graph represents the spectrum of games with regard to the definition of the rules. Because games often contain numerous rules, it would be theoretically possible to place a particular game precisely on the x axis based on the relative proportions of internally-defined and externally-defined rules that it contains. Similarly, validation of the rules is illustrated in the y axis, so games which feature a higher proportion of externally-validated rules are placed higher on the y axis. The four extremities of Figure 1 are:

- Free play, such as a child acting as a superhero.
- Performance, in which the player’s input is internally-defined but externally-validated, such as a musician playing freeform jazz in a music club.
- Zero-player / ambient games, such as *Ambient Quest* [2] and *Progress Quest* (www.progressquest.com), which exist independently of the player, and in which the player has very little control over the game, apart from the decision to play.
- Contextually-ambiguous games, in which the rules are externally-defined, but internally-validated. Extreme examples of this are rare, hence the suggestion that this be explored.

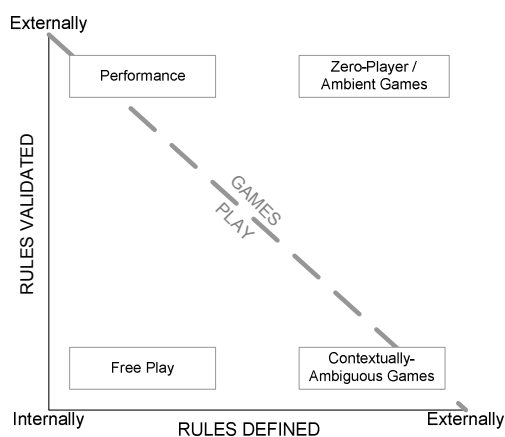


Figure 1: Game types plotted in terms of definition and validation of their rules.

Starting with free play, we can see that it is different from performance because there is a

lack of external-validation – with performance, the audience decide whether an individual is ‘playing the game’ well, whereas with free play the enjoyment is intrinsic and nobody can tell the individual that they are playing badly. Free play is also different from contextually-ambiguous games, because the rules of contextually-ambiguous games are defined externally, whereas in free play the rules are defined internally, on the fly. Zero-player or ambient games are different from contextually-ambiguous games in that there are external elements of the game system which are evaluating the player’s performance. For example, in *Ambient Quest* the external elements assess player progress objectively, based on how many real-world steps they take each day, whereas a more internally-validated version might let the players assess their own performance based on how tired they were after walking.

Finally, while zero-player / ambient games and performance seem quite different from one another, there is a similarity in that both activities are heavily externally-validated. The game system of *Ambient Quest* and the audience of the performance both have a similar level of control of the outcome of the ‘game’. The main difference, however, is mainly in the *definition* of the rules – in performance, nobody can tell the performer what to do, although they can critique the product itself. In ambient games, the rules are very clearly defined and the player must act in a particular way in order to be considered to be ‘playing’.

It is important to note that Figure 1 is a pragmatic diagram for illustrative purposes. It is likely that different instances of free play (for example) would be placed in slightly different locations on the graph, depending on many different environmental factors. It should be assumed for the purpose of this discussion that no game is positioned exactly at any extreme on the graph – instead the graph should be viewed as a two-dimensional continuum.

A final feature of Figure 1 which should be noted is the diagonal line which distinguishes mainly play-based activities from mainly game-based activities. Again, it should be observed that this line bisects a continuum, rather than 2 distinct categories. Viewed in this way, it would seem that this third continuum is very similar to Caillois’ [1] *Paidia-Ludus* scale, which distinguishes games of free play from games of rules. It is likely, therefore, that

the more traditional types of game, such as computer, card, dice and board games, would be placed to the right-hand side of this line.

EXISTING EXAMPLES

This research is concerned with exploring the area of contextually-ambiguous games. These are games in which the rules are mainly externally-defined, but mainly internally-validated. As discussed earlier, games such as *Prosopopeia* and *Uncle Roy All Around You* employed small amounts of contextual ambiguity to good effect. In addition to this, many abstract games (such as *solitaire*, *noughts and crosses* or *Geometry Wars*) employ contextual ambiguity, as the boards, playing pieces, graphics and symbols do not appear to represent anything in particular. **However, there are relatively few ‘extreme’ examples of contextually-ambiguous games, such that the core gameplay mechanism, hence the majority of gameplay, is the creative resolution of the contextual ambiguity. The current aim of the research is to gain a deeper understanding of such games, by investigating games with a high degree of contextual ambiguity in a case study.** Two popular examples of games in the area of interest are *SFO* (www.sf0.org) and *The Game* (www.losethegame.com).

SFO, as mentioned previously, is a street game in which players score points for responding creatively to ambiguous challenges. While there is plenty of scope for internally-validated input in *SFO*, the players receive the majority of their points, and therefore in-game progress, by impressing other players with the effort and creativity that they have put into a task. It would seem that even games like *SFO* have many externally-validated elements, and this study seeks to explore games which are less so.

The Game is a very simple cognitive game with a reputation for being annoyingly infectious. The only rules are:

- To know about *The Game* is to play *The Game*.
- To think about *The Game* is to lose *The Game*.
- Losses must be announced.

Because losses must be announced, thinking of *The Game* not only makes the player lose, but also sets off a chain reaction of people losing *The Game*. It is not completely internally-validated because although the player is the only person who can tell what they are

thinking, their outcome can still be affected by other people.

While *SFO* and *The Game* seem to be among the most prevalent examples of internally-validated, externally-defined games, they are at the same time very different from each other. One difference is that in *SFO*, players are rewarded for interacting with the game system, whereas in *The Game* they are punished. Secondly, *SFO* is much more complex than *The Game*, with many different tasks, regional events, factions, and thematic “eras” on which the nature of the available tasks is based.

DESIGN

To counterbalance the issues of complexity, reward and punishment within *SFO* and *The Game*, four new games were devised:

Game A Rules:

- Your score starts at 75 points.
- Every time you think of the game, you lose 1 point.
- When you lose a point, you have one minute to try to forget the game again, otherwise you lose another point.
- If your score reaches zero before 48 hours have passed, you lose the game. Otherwise, you win.

Game B Rules:

- Your score starts at 0 points.
- Every time you think of the game, you gain 1 point.
- When you gain a point, you cannot gain another point for at least 1 minute.
- If your score reaches 75 points before 48 hours have passed, you win the game. Otherwise, you lose.

Game A is an adaptation of *The Game*, designed to remove the external influence of other players, and includes a scoring system so players can keep track of how many times they lose within the 48-hour time period. Game B is simply an inverse version of Game A. The reason for this is because of the difference between *The Game* and *SFO* in terms of positive versus negative player reward: It would be interesting to investigate whether or not players find it more enjoyable to forget something with negative gameplay consequences than to remember something with positive gameplay consequences.

Game A and Game B are very simple cognitive games. However, there is also a difference between *The Game* and *SFO* in

terms of complexity, so Games C and D seek to accommodate this by increasing complexity slightly. However, the complexity is still fairly modest, mainly so the games are easy to learn and play over the 48-hour period, but also because it would not be as feasible at this exploratory stage to implement something as complex as *SFO*.

Game C Rules:

- Your score starts at 50 points.
- The theme is “conflict” – every time you perceive some form of “conflict”, you lose 1 point.
- When you lose a point, you have one minute of immunity before you can lose another point.
- If your score reaches zero before 48 hours have passed, you lose the game. Otherwise, you win.

Game D Rules:

- Your score starts at 0 points.
- The theme is “expression” – every time you perceive some form of “expression”, you gain 1 point.
- When you gain a point, you cannot gain another point for at least 1 minute.
- If your score reaches 50 before 48 hours have passed, you win the game. Otherwise, you lose.

In Game C, the player loses points every time they perceive conflict. This does not necessarily need to be a war-like conflict: it could be the conflict of two very different architectural styles in adjacent buildings, or two people having a heated conversation, or a salmon trying to swim upstream. The context of the conflict is supplied by the player. As with the reversal of Game A to make Game B, Game C has been reversed to make Game D. The themes of ‘expression’ and ‘conflict’ have been chosen to match the nature of the respective rewards and punishments. However, it would be interesting to (carefully) investigate the rewarding of players for perceiving negative themes, and similarly the punishment for perceiving positive themes.

METHOD

The study was conducted entirely by email, in order to minimise the required effort from the participants. After giving consent and answering questions about their game-playing habits, participants were emailed the instructions, rules and question sheets for each game, and were told to play the games in a specific order, which had been randomised to

avoid order effects. Each game was to be played for 48 hours, and the participants were allowed to rest for as long as they felt they needed in between games. Despite the relatively long duration of the games, the players were told that they would only be *actively* playing while they were thinking about the games. After each game, players were asked about their experiences of the game. After all four games had been played, participants were asked to answer some follow-up questions, in order to gauge their overall experience of the participation itself. Apart from these follow-up questions, all questions asked were open-ended in order to allow the participants to state whatever they felt was relevant.

PARTICIPANTS

All potential participants were staff and/or students of the University of Portsmouth. Of the 10 participants who volunteered for the study, three completed the task to various degrees, while the rest have yet to respond.

Participant 105 is male, 20 years of age, and mainly prefers first-person shooter and third-person action (computer) games, but also spends a relatively large amount of game-playing time in the virtual world *Second Life*. His written responses to the games were very brief in places, which made it difficult to draw conclusions from his experiences.

Participant 106 is male, 22 years of age, and spends most of his game-playing time playing role-playing (computer) games. Of the three participants described here, participant 106 provided the most data, often expanding on his answers and making suggestions as to how the games could be improved.

Participant 107 is male, 27 years of age, and divides the majority of his games-playing time between puzzle, adventure and first-person shooter (computer) games. He has yet to finish the study, but has given permission for the data that he has provided so far for two of the games to be used.

RESULTS

Findings from Game A

Participant 105 stated briefly that he enjoyed playing the game, and got a relatively high score because he managed to forget about it.

Participant 106 stated that “...I had trouble getting my mind off the game and so had to

frequently interrupt what I was doing...". He also stated that the game made him feel under pressure because he had no control over something that he felt occurred naturally. He reported that this situation was worsened because he lost a lot of points in the first hour of play alone. For him the game quickly became irritating due to a sense of no reward, and he reported that he lost the game long before the time expired.

Findings from Game B

Participant 105 stated very briefly his score, and that he felt that he "...didn't do so well...".

Participant 106 experienced some confusion over which thoughts would be considered "worthy" of a point. He created a file on his computer desktop so he could record the points scored, the appearance of which paradoxically reminded him of the game when he booted the computer up. Interestingly, he also stated that sometimes he updated the file without even thinking about why he was doing it. At the end of the 48 hours, he stated that he did not feel particularly disappointed at not scoring many points "...since there was no reward for winning anyway".

Similarly, participant 107 experienced little enjoyment of the game, stating that because he was busy he "...simply forgot about it", and that even when he remembered the game he didn't play competitively, and "...certainly didn't sit there and wait for a minute to go by so I could rack up another point". Moreover, while remembering the game, participant 107 reported that he felt like he was merely counting, rather than playing.

Findings from Game C

Participant 105 reported that he enjoyed playing the game. He commented that it reminded him of a game he used to play - he was actually referring to *The Game*. Participant 105 also reported that he lost very quickly because he perceives conflict a lot, in videos, computer games and in personal situations.

Participant 106 also experienced conflict while he was playing computer games, but deducted a point for every *session* he spent playing a violent game, as he classified an entire play session (rather than each minute within that session) as a single perception. Other points were lost during cognitive conflict, when deciding what to have for dinner. However, participant 106 did not feel as aggravated by losing points as he did during Game A,

because he found it easy to switch his focus to "...something devoid of conflict".

Findings from Game D

Participant 105 seemed to score higher in this game than he did in the other games, reporting that he lost count of the points he accumulated. Much of his response was focused on how many forms the concept of 'expression' *could* take, rather than what forms it *did* take. However, he seemed to enjoy the game, as he ended his account with the comment "Was still fun though".

Participant 106 seemed to enjoy playing this game more than the other games. The concept of 'expression' was perceived via artistic expression within his surroundings, including images on the Internet and music in the background. He stated that it was much less stressful than Game A, because of the positive reinforcement (rather than punishment) received for interpreting the game space. However, despite the more positive tone of his comments, he reported that he "...didn't care much neither for losing nor winning".

Participant 107 sought 'expression' in positive responses from other people, by "...doing something to help them, or generally trying to make them feel more positive about themselves". Because he was trying to do this without revealing that he was playing a game, he commented that scoring points was a lot more difficult than he had expected, and he consequently lost the game.

DISCUSSION

It is interesting that for both Games A and B participant 105 managed to forget about the game, however his response to Game A was noticeably more positive (i.e. he actually stated that he enjoyed the game) when pragmatically the only difference was his final score, which in both cases would have hardly changed. Participant 106, on the other hand, clearly found Game A to be a nuisance, because of a lack of control.

Game B got a negative or neutral response from all participants, so it would seem that providing a simpler game and rewarding players just for being players is not enough to sustain interest.

While Game C received a neutral or mildly positive response, it seemed to be quite thought-provoking, as participant 105 commented that it reminded him of *The Game* (the randomisation of the play order meant that

he had not played Game A by this point) and participant 106 was forced to think about how to quantify a gaming session which was filled with conflict, creating a 'session-based' interpretation as opposed to a 'minute-by-minute' or 'event-based' interpretation. Participant 106 in general appeared to have made the most effort with the games, and gave comprehensive answers to questions throughout the study, even for the games which he did not enjoy. Looking at his games-playing habits, he usually spends most of his gaming time playing role-playing computer games, whereas the other two participants had a greater tendency towards action games. Role-playing games are one of the computer game genres which permit a greater amount of internally-validated actions. Players are often given a wide range of options within the game, but choose to restrict their actions to a realistic subset, based on the context of the character they are 'role-playing'.

In contrast to the other three games, Game D was generally well-received by all of the participants. This game was one of the more complex games, it rewarded the player for interacting with the system, and was thematically-positive. The speculation of participant 105 over the potential of the game's additional ambiguity indicates that the game was thought-provoking, and in conjunction with Game C this would agree with the recommendations of Gaver et al [4] with regard to ambiguity in design. Also during Game D, participant 107 modified his everyday behaviour in order to play the game, by doing positive things to people in order to try to elicit an expressive response. As discussed elsewhere [2], this modification of behaviour could be a useful by-product of playing such games, in particular for health or education benefits within *serious games*.

In response to the follow-up questions about overall enjoyment of the games and the study, the respondents agreed that participation in the study was enjoyable. This indicated that the study was successful at avoiding unnecessary stress to the participants during each 48-hour period of play. When asked whether they would consider playing such games in the future, participant 105 commented that he did already, as him and his friends play *The Game*. Indeed, participant 105 preferred Game A, which was derived from *The Game*.

The favourite game of participant 106 was Game D, because "...it encouraged doing something engaging in its own right without

penalising for involuntary actions". Despite this, participant 106 stated that he didn't "...see much point in continuing [with the games in general], as neither a victory nor a loss seems meaningful given the current set of basic rules". This suggests that the inclusion of at least *some* tangible or significant rewards, such as competition or external-validation, might be beneficial for future games of this ilk.

Whether the findings have implications for the design of future games with internally-validated rules is yet to be ascertained. One observation which is particularly apparent from the findings is the lack of participation, which means that conclusions reached in this paper remain very tentative until more data is available. Several more participants are currently taking part in the study in order to provide some of this extra data.

CONCLUSION

The long term aim of this research is to investigate decentralisation of gameplay, so it is not fixed to specific times, spaces, people, and contexts. As discussed in this paper, contextually-ambiguous rules could contribute to this end. It was proposed earlier in this paper that alongside the temporal, spatial and social aspects of pervasiveness proposed by Montola (2005), a complementary, *contextual* dimension to pervasiveness might exist. If pervasiveness is the act of making the player feel as if their everyday life is being pervaded by the game, then it would seem that using contextual ambiguity within rules could be used to achieve this. Games with contextually-ambiguous rules allow the players to flesh out the details of the experience using inspiration from wherever they choose, including their everyday surroundings, and several games (*Prosopopeia*, *Uncle Roy All Around You*, *SFO*, *The Game*) already use various amounts of these rules. Four games were devised in order to explore this phenomenon further, and while participation was limited, tentative conclusions can be drawn.

Firstly, it would appear that a more complex game with rewards for seeking interpretations seemed to please players the most, and from the follow-up questions it would seem that providing more significant rewards would increase participation. Another tentative conclusion from the study is that the one participant who plays mostly role-playing games engaged far more with the study than the others, so therefore it could be that the player-types associated with role-playing

games might be a suitable target audience for games with internally-validated rules.

The two most popular games were Games C and D, which suggests that the more complex design, with room for interpretation rather than just an awareness of the game, is favourable. Furthermore, the most popular game was Game D, which suggests that providing positive rewards for active participation, rather than penalising the players for participation, is favourable. It would also seem that Game A, although it was an adaptation of a popular game, was subject to a mixed reception when played in practice.

One final conclusion which can be drawn from the study is that the lack of participation might be indicative of an inappropriate research environment. For future studies a more naturalistic approach will be taken, using games which are known to be popular, and participants who already play these games. Therefore, the next stage of the research is to interview people who play *SFO* and *The Game*, in order to further explore their experiences.

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