

## Facilitating Apophenia to Augment the Experience of Pervasive Games

Neil Dansey

Advanced Games Research Group  
School of Creative Technologies  
University of Portsmouth, UK  
[neil.dansey@port.ac.uk](mailto:neil.dansey@port.ac.uk)

### 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 in 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.

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