The Spectrum of States: Comedy, Humour and Engagement in Games

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Abstract

In this paper, we offer a distinction between comedy and humour. This distinction is employed to examine the intentional, scripted comedy and the context-driven, ludic emergence of humour in the game Portal. The game is examined, through content analysis of the game's transcript, using Berger's categories and techniques of comedy and Apter and Martin's Reversal Theory of Humour. The results of this pairing of theoretical approaches suggest there is an oscillation in the affective state of the player between the telic and paratelic states defined in Reversal Theory. These shifts in affective state contribute to the engagement of the game play. The highly engaged autotelic state in which the player is fully immersed in the game environment, named Flow by Csikszentmihalyi, occurs in both the goal-oriented telic state and the playful paratelic state. Breaking down the perception of the telic and paratelic states as being a binary opposition allows for a fuller understanding of affective states, engagement and Flow.

Keywords: Comedy, Humour, Engagement, Flow, Games, Cake, Affective States

1 Introduction

The appearance of humour in games is not uncommon; from the so called 'Golden Age' of adventure games in the early 1990's with the first two Monkey Island games (LucasArts 1990, 1991) and Day of the Tentacle (LucasArts 1993), to the most recent addition to the Grand Theft Auto (GTA) series, GTA V (Rockstar North 2013), humorous characters, events, gameplay and storylines have played their part in providing engaging game experiences. This paper examines the production of comedy and humour in the game Portal (Valve Corporation 2007a). Portal was selected as the case-study, rather than more recent games including its sequel,

Portal 2, because it has been widely considered an exemplar of the use comedy in game design and it has influenced popular culture and more recent games (Grönroos 2013; McNamee 2011).

After offering a distinction between comedy and humour the paper maps the techniques of comedy employed in the game's script and the moments of humour that emerge from the game play. The content analysis of the transcript uses the categories and techniques of comedy proposed by Berger as a coding device (Berger 1997, p. 3). The humour of the game play is explored using Apter and Martin's Reversal Theory of Humour (Apter 1982; Martin 2007) which posits the goal-oriented telic state the playful paratelic state. Using these two theoretical approaches allows for analysis of the intentional, scripted development of comedy and context-driven, ludic emergence of humour.

The concept of Flow, the autotelic state, as developed by Mihaly Csikszentmihalyi describes the interplay of skills and challenges as part of an individual's intrinsic motivation to perform a task. The state of Flow is described as "a very positive condition; people should feel happy, strong, concentrated and motivated" (Csikszentmihalyi & Csikszentmihalyi 1988, p. 260). Recent studies have argued that there is a complex set of relationships between the telic, paratelic and autotelic states and that the autotelic state is just as readily achieved from either the telic or paratelic state (Houge Mackenzie, Hodge & Boyes 2011, p. 522). The analysis of Portal reveals that the autotelic experience of engagement is supported by both the telic, goal-oriented game play and the playful, process-oriented, paratelic elements of humour.

2 Humour Theory and Comedy

Raskin (1985) describes the breadth and diversity of humour theory by noting the "terminological chaos created by an abundance and competition of such similar and adjacent terms as humor, laughter, the comic, the ludicrous, the funny, joke, wit". Research in the domain of humour theory largely falls under three broad categories: humour, comedy and laughter. Of these, laughter is by far the most diverse area of study because laughter results from an extensive range of causes, the

humorous being just one. Even when comedy is defined as a genre as there is little agreement as to the necessary elements of the form. Bentley (2012) illustrates this observing that "in the teeth of logicians and lexicographers one is content to read comedies without knowing exactly what comedy is".

For these reasons, working definitions are necessary to draw out the distinction between humour and comedy. Towards this end, the Oxford English Dictionary defines humour as:

7a. That quality of action, speech, or writing, which excites amusement; oddity, jocularity, facetiousness, comicality, fun.

7b. The faculty of perceiving what is ludicrous or amusing, or of expressing it in speech, writing, or other composition; jocose imagination or treatment of a subject (2013b).

Whereas the same dictionary defines comedy as:

1. A stage-play of a light and amusing character, with a happy conclusion to its plot.

2a. That branch of the drama which adopts a humorous or familiar style, and depicts laughable characters and incidents (2013a).

The Macquarie Dictionary defines humour in a similar fashion (2009b, p. 818), but its definition of comedy makes explicit the concept that comedy, as a genre of drama, is demarcated as "that branch of the drama which concerns itself with this form of composition" (2009a, p. 345). A comedy is a composition; a purposefully constructed medium that utilizes recognizable forms and features.

By comparing these definitions, a distinction between humour and comedy is offered. Humour is the ability to perceive or express the intentional or unintentional comic elements of life. Comedy is an intentionally structured cultural product that employs particular forms and conventions to create the affect of amusement in an audience.

2.1 Techniques of Comedy

Author Asa Berger's *The Art of Comedy Writing* (1997) contains a definitive list of comedic techniques that he developed whilst teaching creative writing classes. "These techniques tell what *makes* people laugh. They do not tell us *why* people laugh or find something humorous. That is a subject about which there is a great deal of controversy…" (Berger 1997, p. 4). Berger manages to combine what *makes* people laugh with techniques that describe *how* to make people laugh. He argues that there are forty-five techniques (see Table 1.) that fit under "four basic categories: 1. humor involving identity; 2. humor involving language; 3. humor involving logic (and a fourth category that I'm not completely satisfied with); 4. humor involving action or visual phenomena" (Berger 1997, p. 3).

Berger argues there are forty-five techniques (no fewer, no more) that comedy writers and all humorists have used, do use, and must use. This paper examines the game Portal as a case study to ascertain if there is evidence of Berger's techniques being used to develop the comedy in the game.

2.2 Humour Theory – an overview

Henri Bergson (1911) provides a fundamental theoretical proposition by outlining a "new law" of comedy, whereby "We laugh every time a person gives us the impression of being a thing" (1911, p. 58). Central to this proposition is the idea that there is an incongruity

LANGUAGE	LOGIC	IDENTITY	ACTION
Allusion	Absurdity	Before/After	Chase
Bombast	Accident	Burlesque	Slapstick
Definition	Analogy	Caricature	Speed
Exaggeration	Catalogue	Eccentricity	
Facetiousness	Coincidence	Embarrassment	
Insults	Comparison	Exposure	
Infantilism	Disappointment	Grotesque	
Irony	Ignorance	Imitation	
Misunderstanding	Mistakes	Impersonation	
Over literalness	Repetition	Mimicry	
Puns, Wordplay	Reversal	Parody	
Repartee	Rigidity	Scale	
Ridicule	Theme/Variation	Stereotype	
Sarcasm	Unmasking		
Satire			

Table 1 – Berger's Categories and Techniques.

between the 'human' and the 'non-human'. Incongruity, or "reciprocal interference" (Bergson 1911, p. 96) occurs when the mechanical is "encrusted" (p. 37) on the human and, crucial for this study, when the human is encrusted on the mechanical. Incongruity, with or without resolution, has been seen as a cornerstone concept in many humour theories (cf. Morreall 2009; Raskin 2008; Ritchie 2004). By examining the game Portal and its central character of GLaDOS (Genetic Lifeform and Disk Operating System) this paper also explores the question of whether Bergson's "new law" may be inverted: Will we laugh when a mechanical agent gives us the impression of being a person?

Attardo (1994) offers a mapping of humour theories under the three broad headings (p. 47). This organisation of theories, following Raskin's "tripartite classification" (1985, pp. 30-40), provides an overview of the domain of humour studies (see Table 2.).

This tripartite classification visually suggests these groups are somehow mutually exclusive. This grouping of theories is, however, more accurately analysed as offering different perspectives on the phenomena of humour. Raskin argues, "**incongruity-based** theories make a statement about the **stimulus**; the **superiority** theories characterize the **relations** or **attitudes** between the **speaker** and the **hearer**; and the **release/relief** theories comment on the feelings and psychology of the **hearer** only" (Raskin 1985, p. 40, emphasis in original). While theories may not be mutually exclusive in the absence of a theory that explicitly relates to the intentional production of comedy, they prove useful only in analysis of humour.

Incongruity	Hostility	Release
Contrast	Aggression	Sublimation
Incongruity / resolution	Superiority	Liberation
	Triumph	Economy
	Derision	
	Disparagement	

Table 2 — A mapping of humour theories.

Reversal Theory, a theory which sits uncomfortably under the classification of 'Incongruity', was originally developed as a psychological theory of motivation (Apter 1982). It was subsequently developed as a theory of humour (Apter & Desselles 2012; Martin 2007). For all that the theory does posit the necessity for incongruity to exist to produce the affect of humour, incongruity is only one of the contributing elements. Further, the theory does not overtly deal with the issue of whether incongruity requires resolution. There are three essential elements of the theory:

1. humor occurs when an observer is in a playful state of mind;
2. the observer perceives the same identity (person, object, statement, event) as having two incompatible attributes (meanings, qualities); and,

3. one of those meanings or qualities diminishes that identity (Apter & Desselles 2012).

The first element is that the observer must be "in a playful state of mind". Apter argues that they must to some degree be cut off from reality in a "protective frame"(Apter & Desselles 2012). The protection allows them to act with no fear of serious consequences. This state of mind is known in Reversal Theory as the "paratelic state" (Apter 1982; Apter & Desselles 2012; Martin 2007). The absence of the playful state of mind is termed the "telic state". This is the serious, goal oriented state of mind in which a comic situation could be perceived as irritating, threatening or offensive. "In other words, in the paratelic state the arousal from a joke or other comic situation will be felt as pleasurable stimulation, as a kind of excitement. In the telic state it will, in contrast, generate some kind of unpleasant emotion, such as anxiety or anger" (Apter & Desselles 2012).

Apter's Reversal Theory of humour "proposes that humor involves the perception of a cognitive synergy (i.e., two concurrent but contradictory interpretations of the same object), in which the second interpretation of an object involves a diminishment relative to the first…" (Martin 2007, p. 77). The two critical elements of this description of the theory are the concepts of 'cognitive synergy' and 'diminishment'. Apter uses the term 'cognitive synergy' to "describe a cognitive process in which two contradictory ideas or concepts about the same object are held in one's mind at the same time" (Martin 2007). Frequently in art, science and humour the creativity of the activity is described as the ability to combine incongruous or seemingly unrelated ideas in a single object (De Mey 2005). For Apter (1982), the difference between art and humour is found in relationship between the two elements of the cognitive synergy. In humour, one of the elements is in some manner diminished or devalued, whereas in art, one of the elements of the cognitive synergy is elevated in value relative to the other. The cognitive synergy is, in a manner, resolved. However, the theory doesn't overtly explain if this resolution is the necessary condition for the production of the affect of humour.

This theory suggests that the "trick of creating humor" is to balance the demands of obtaining high levels of arousal while supporting the protective frame that in turn supports the paratelic state. The concept of framing has a long history in sociology of organizational behaviour as exemplified by the work of Goffman (Goffman 1986). Likewise, within the context of computer games, Adams discusses the concept of the pretended reality, or the 'magic circle' as a "boundary that divides ideas and activities that are meaningful in the game from those that are meaningful in the real world" (Adams 2013). The magic circle is a boundary that a player chooses to cross, in essence exiting the real world and entering the reality of the game; this game reality may have similarities with the real world, most commonly in the workings of the world (physics, social interactions and environments), however the game reality and its quirks are accepted as the norm in the game context. This shift from real world

to game world is analogous to Apter's setting up of a protective frame to allow for a paratelic state.

The metaphor of the 'magic circle' has been widely critiqued as being too binary in nature, setting up an artificial divide based on unsubstantiated distinctions between play and work (Stenros 2012). For this reason it is preferable to adapt the 'magic circle' metaphor to talk of the distinction between the telic and paratelic states rather than the 'real' and 'unreal' worlds. If it is true that the 'trick' of creating humour is to support a paratelic state within a protective frame, then an examination of Portal should reveal how this "trick", or technique, has been used to develop the humour and comedy found in the game.

3 Portal – a case study

Portal is a first person, puzzle-platformer by Valve (Valve Corporation 2007a). It was originally released in 2007 as part of The Orange Box, a collection of five games powered by Valve's Source Engine (Valve Corporation 2007b); of the five games, Portal was considered a surprise favourite, not in short due to its unique gameplay and witty writing (CBS Interactive Inc. 2008; Watters 2008). The concept for Portal originates from Narbacular Drop (DigiPen Institute of Technology 2006), a student project from the DigiPen Institute of Technology, wherein the player is tasked with helping a princess escape a sentient dungeon by means of movable portals. Following a demonstration to Valve representatives, the students responsible for Narbacular Drop were employed by Valve and adapted its concept to Portal. As a result of the critical acclaim that Portal received Valve developed and released a sequel, Portal 2 (Valve Corporation 2011) in 2011. Portal 2 continued the story of Portal's characters, reusing and expanding upon its gameplay and comedic elements. However, this paper focuses on the original Portal game as it has been widely considered an exemplar of the use comedy which has influenced popular culture and future games (Grönroos 2013; McNamee 2011).

The game of Portal is set at the Aperture Science Testing Facility, featuring an increasingly complex series of 'Test Chambers'. Progression through the Test Chambers is based around the titular concept of manipulation of and movement between two linked portals, created by using the Aperture Science Handheld Portal Device (Valve Corporation 2007a). The use of interconnected portals presents a series of challenges based on twists of spatial awareness, puzzle solving, and physics manipulation. This adventure through the testing facility features two central characters; Chel, the mostly silent protagonist of the game who is only ever seen through portals placed in the same room; and GLaDOS (Genetic Lifeform and Disk Operating System), the Artificial Intelligence antagonist in charge of the Aperture Science Testing Facility, and the main source of dialogue.

The player traverses test chambers under the watchful eye of GLaDOS, whose commentary on the player's progress is the source of much of the comedic elements in the game. The gameplay of Portal on PC follows the conventions of first-person shooters; movement forward, backwards and sideways via the WASD keys, horizontal and vertical rotation of the view via the mouse, jumping via the spacebar, shooting the portal device using the two mouse buttons, and interacting with movable objects using the E key.

The initial chambers of Portal introduce the player to movement and manipulation of objects, and the key portal concept. GLaDOS's opening of a portal to permit leaving their glass walled cell acts as the player's first introduction to the non-Euclidean nature of portals; it is also through this portal that the player is shown their character, Chel, for the first time, and the only time in the game when such a perspective is forced.

The player quickly gains the use of the Portal device, allowing them to open a single portal that will link with an existing portal in the test chamber. The player soon learns through experimentation that portals can only be created on concrete wall panels, serving as a subtle visual guide through levels. Within the first chambers, the player is introduced to interaction mechanics, such as the Aperture Science Weighted Storage Cube to solve the first puzzle, placing the Cube on the Aperture Science Heavy Duty Super-Colliding Super-Button (Valve Corporation 2007a). The cube on button mechanic is repeated throughout the game as one of many means of progressing to the exit of each chamber. Successive test chambers increase the complexity of this mechanic by adding challenges such as sequence and timing puzzles. Adding danger to this process, the game introduces the Aperture Science High Energy Pellet (Valve Corporation 2007a), a deadly projectile, unaffected by gravity, that is used to power doors, lifts or platforms when placed in an appropriate receptacle.

Once the player gains access to the Portal device upgrade, allowing placement of both portals, they are able to enact more complex portal mechanics, primarily the use of momentum for traversal or, as the narrative develops, bypassing barriers. Controlling where the two portals are placed allows the player to experiment with often disorienting movement techniques. One of which involves creating loops that allow the player to reach terminal velocity (falling infinitely), the momentum of which is then used (often through trial and error) to launch the player across the room, reaching the previously inaccessible exit. As the narrative develops, and the difficulty of test chambers and environments increase, the puzzles involve using the portals to maneuver with or around environmental hazards, platforms, machinery, cubes, buttons, high energy pellets and doors.

The following sections will present an analysis of Portal that suggests that comedy techniques were deliberately employed in its construction and that the perspective shifting nature of the game play is analogous to the shift from the telic to paratelic state of the player.

3.1 Comedy Techniques

A content analysis of the Portal script (Ayelis 2009) was undertaken using two techniques. First, the text of the script was processed using Leximancer to reveal the key words used in the script, their relative frequency and their relationships. Second, the script was examined using

Berger's list of the forty-five techniques of comedy. This second analysis, conducted using a player generated transcript of the dialogue (Ayelis 2009), revealed the need to differentiate between the comedy of the character GlaDOS and the comedy of the game environment and play.

The concept map generated from a Leximancer analysis of the Portal script (see Figure 1) groups the majority of terms around the Aperture Science Testing Facility. The outlying concept groups, such as 'cake', represent topics that appear tangential to the main thrust of the script. Terms that have the highest frequency are in the central pink circle. These terms are all related to the testing environment (chamber, test, testing, record etc.) whereas the more outlying terms are related to the player (reward, cake, alone, alive, safe, die etc.). The most outlying circle is related specifically to the game characters called turrets. These characters feature strongly in the concept potentially because they have a surprisingly rich and frequently repeated dialogue. This suggests that the analysis of the script needs to examine the game characters, specifically GLaDOS, and the game environment as separate but related comic entities.

GlaDOS is, using Dormann and Boutet's Comic Character Patterns, a Comic Sociopath; "A character that lacks moral judgment and is without sensitivity to the emotions of others, but is designed in a humoristic way" (Dormann & Boutet 2013). The comedy of GLaDOS' performance as a sociopath is generated using techniques that fall under the categories of Language, Logic and Identity.

GLaDOS occasionally makes allusions to world outside the game universe. At the conclusion of the third puzzle she says, "Please proceed to the chamber-lock. Mind the gap" (Ayelis 2009). This is an allusion to the disembodied warning announcement played in London underground railway stations. This statement is a comical allusion to the fact that the railway announcement voice really doesn't care if you mind the gap or not. This is an early hint that GLaDOS also does not care about the player's safety. She also, in song over the game credits, makes a disparaging allusion to Black Mesa, a rival company to Aperture in the Half Life (Valve Corporation 1998) universe in which Portal is situated.

"Maybe you'll find someone else

To help you.

Maybe Black Mesa...

THAT WAS A JOKE HAHA! FAT CHANCE!" (Ayelis 2009)

This particular allusion is a form of in-joke, a joke intended for an audience with a particular knowledge of the games industry.

Befitting the insensitivity of her character GLaDOS is prone to over-explain and unnecessarily define elements of the game universe. In the first challenge she says, "Please place the Weighted Storage Cube on the 1500 megawatt Aperture Science Heavy Duty Super-colliding Super-button" (Ayelis 2009). Likewise in the following challenge she says, "Very good. You are now in possession of the Aperture Science Handheld Portal Device. With it, you can create your own portals. These
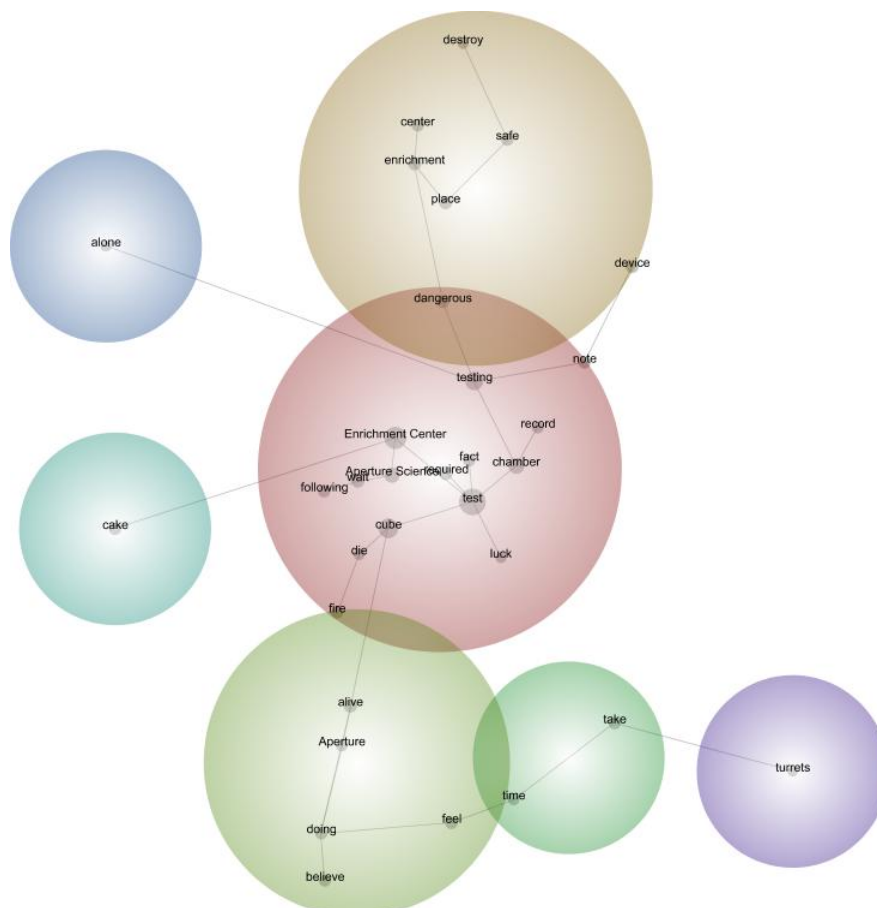

Figure 1 - Leximancer Concept map of the Portal Script

inter-dimensional gates have proven to be completely safe. The device, however, has not. Do not touch the operational end of the device. Do not look directly at the operational end of the device. Do not submerge the device in liquid, even partially. Most importantly, under no circumstances should you..." (Ayelis 2009). This use of definition helps develop the character of GLaDOS but it also develops the tone of the relationship between GLaDOS and the player. The failure to complete the instruction hints at the mounting madness of the sociopath.

In the sixth challenge GLaDOS facetiously praises the player, "Unbelievable! You, <SUBJECT NAME HERE>, must be the pride of <SUBJECT HOMETOWN HERE>" (Ayelis 2009). Utilising the structure of a form letter underscores her attitude toward the player. As the game develops these facetious, mild insults become overt insults; insults aimed directly at the player. After challenge nineteen when the player has completed all of the 'testing' stages and is roaming the Aperture Science facility, she says, "This is your fault. It didn't have to be like this. You're not a good person. You know that, right? Good people don't end up here" (Ayelis 2009). In the early stages of the game GLaDOS talks, in the third person, about the testing, the equipment and the facility. Once the testing is complete she uses second person to directly address the player to deliver long-winded, over-explained insults. "I have your brain scanned and permanently backed up in case something terrible happens to you, which it's just about to. Don't believe me? Here, I'll put you on... 'Hellooooo.' That's you! That's how dumb you sound! You've been wrong about every single thing you've ever done, including this thing. You're not smart. You're not a scientist. You're not a doctor. You're not even a full-time employee. Where did your life go so wrong?" (Ayelis 2009).

This use of second person voice develops steadily through the game play. A promise made at the being of the game is that there will be cake when the testing is complete; however, in the twelfth challenge the player gets the first direct clue that GLaDOS cannot be trusted. "As part of a previously mentioned required test protocol, we can no longer lie to you. When the testing is over, you will be... Missed" (Ayelis 2009). This is an example of ironic under-statement. As facetiousness developed into insult, irony develops into sarcasm. Berger argues that where insults are direct, sarcasm is oblique (Berger 1997). GLaDOS, in the final section of the game, refers to the player's "Personnel File" to provide a description of the player, "'Unlikable. Liked by no one. A bitter unlikable loner whose passing shall not be mourned.' SHALL NOT BE MOURNED. That's exactly what it says. Very formal. Very official. It also says you were adopted. So that's funny too" (Ayelis 2009). By employing the device of the personnel file GLaDOS is deflecting the responsibility for the insult. Further, indulging in the childish taunt of 'you're adopted' highlights her sociopath character. Of the language-based techniques described by Berger GLaDOS directly uses Allusion, Definition, Facetiousness, Insults and Irony. The distinction between these, and the choice of the

examples given, is somewhat arbitrary as all of these techniques can be employed in concert.

Of the logic-based techniques GLaDOS uses Catalogue, Repetition, Reversal and Unmasking. Catalogue is related to language technique of Definition, however, Catalogue is used to comically link cause and effect. In the second challenge the player is told, "You're doing very well. Please be advised that a noticeable taste of blood is not part of any test protocol, but is an unintended side effect of the Aperture Science Material Emancipation Grille, which may, in semi-rare cases, emancipate dental fillings, crowns, tooth enamel, and teeth" (Ayelis 2009). The word "emancipated" is, obviously, a euphemism for a harsher reality, as is the double-speak of "semi-rare". This technique is used to parody workplace safety instructions.

GLaDOS repeats particular instructions, frequently in groups of three, just to comically reverse the logic of the situation. In the second challenge she says, "For your own safety, do not destroy Vital Testing Apparatus. Certain objects may be vital to your success. Do not destroy Vital Testing Apparatus. At the Enrichment Center we promise never to value your safety above your unique ideas and creativity. However, do not destroy Vital Testing Apparatus" [emphasis added] (Ayelis 2009). This is immediately followed with, "Vital Testing Apparatus destroyed". The player did nothing to create the reversal it is simply the untrustworthy nature of the game universe.

Part of GLaDOS character as a comic sociopath requires her to project a persona that pretends, at least initially, to care for the player. This leads inevitably to moments of unmasking. In the final conflict of the game the player has the opportunity to dismantle GLaDOS and to destroy the components. After one of these moments GLaDOS says, "You are kidding me! Did you just stuff that Aperture-Science-Thing-We-Don't-Know-What-It-Does into an Aperture-Science-Emergency-Intelligence-Incinerator? That has got to be the dumbest thing that- Whoa, Whoa, WHOAAA... Heh heh heh heh... Good news. I figured out what that thing you just incinerated did. It was a Morality Core they installed after I flooded the enrichment center with a deadly neurotoxin to make me stop flooding the enrichment center with a deadly neurotoxin. So get comfortable while I warm up the Neurotoxin Emitters". This quote exemplifies many of the techniques of language and logic already covered but, most importantly, through unmasking it sets up the game play logic for this final conflict.

This unmasking talks to the 'real' identity of GLaDOS. However, GLaDOS, whilst maintaining her own identity, employs techniques that Berger lists under the category of Identity: Mimicry and Scale. Mimicry uses many of the language-based techniques and is often used to deride the player. "Didn't we have some fun, though? Remember when the platform was sliding into the fire pit and I said 'Goodbye' and you were like 'NNOO WWAAYY', and then I was all 'We pretended we were going to murder you'. That was great" (Ayelis 2009). The mimicry here casts the player as a juvenile who is wont to use 'like' and similar language structures.

Much of what GLaDOS says in the early stages of the game obliquely insults the player. As argued earlier, the directness of the insults increases as the game progresses. In the eleventh challenge the player wins an upgrade to the portal-making device. Here GLaDOS uses the technique of scale. "The device has been modified so that it can now manufacture two linked portals at once. As part of an optional test protocol, we are pleased to present an amusing fact. The device is now more valuable than the organs and combined incomes of everyone in <SUBJECT HOMETOWN HERE>" (Ayelis 2009). This techniques toys the concept of scale in two ways. First, value as a scale, this suggests that there is a valid equivalency between the value of human organs and income. Second is the scale of the universe outside of the game universe. Here the scale of the 'real' world is reduced to fit into the scale of the game universe. This is particularly fitting for the comic sociopath character of GLaDOS.

All of the twelve techniques so far identified are found in the dialogue of GLaDOS, however, the game universe itself presents evidence of a further seven techniques: Satire, Absurdity, Before/After and three techniques of Action; Chase, Slapstick and Speed.

The game, as a universe, is deep satirical. Painted on the walls of the Enrichment Center is the line, "The cake is a lie". This has become an Internet meme that expresses a sense of disillusionment with the promises of reward for behaving in a socially acceptable manner and in the value of the reward itself (McCoral 2010). For comic effect the game engages with Durkheim's theory of Anomie and Merton's Strain Theory which both examine the behaviours that emerge when the 'means' to an 'end' is somehow restricted (Agnew & Passas 1997). The cake is a lie, however, the player continues to play by substituting their own goals and rewards and by adopting behaviours that work for them rather than the system.

The absurdity of the game universe is exemplified by the existence of a radio that is permanently set to 85.2FM and only plays an instrumental muzak track. Not only is the frequency unusual (FM frequencies traditionally end in an odd digit) but also the radio appears in multiple challenges for no apparent reason. Frequently the elevator music is heard before the radio is actually found. The object itself lends nothing to the actual game play so its existence must say something about the 'playful' nature of the game universe and its designers. The radio is also a game within a game that subverts the ongoing goal-oriented play by offering a diversion – find that radio.

The game caricatures and satires many aspects of real life such as safety warnings and information screens. At the beginning of each challenge a board displays the possible dangers ahead and graphically promises 'cake'. Icons comically representing the hazards represent bizarre warnings that only make sense in the game universe but reference real world alternatives. In a larger sense the game is a caricature of intelligence testing.

The game also toys with the identity of the player. It is possible for the player to look through a portal and watch themselves undertaking the maneuver they are about to do. There is a cognitive dissonance in this possibility, a comic incongruity that allows the first person player to see themselves as second person actors in the game. Again, this is a diversion from the goal of the game. The players are tempted to try to 'catch up' with themselves. The gender of the player may also come as a surprise for some players.

Much of the comedy of the game comes directly from the physics of the game universe, the category Berger calls Action. The techniques of Chase, Slapstick and Speed are used to great effect. "Energy Pellets", that can kill the player, move in predictable paths and can literally chase the player. However, in the game universe portals operate in a non-Euclidean manner completely disrupting the logical link between up and down and left and right. The Energy Pellets may appear from an unexpected direction. This surprise has some comic value but the far greater surprise for the player is the recognition, usually after the fact, that the path of the pellet exactly followed the non-Euclidean logic of the player's placement of portals. The surprise is one of unexpected consequences.

The techniques of Slapstick and Speed follow a similar logic. It is possible for a player to set up a situation where they infinitely fall through a series of portals gaining greater and greater speed. At moments in the game it is actually necessary to meet a challenge to engage in this kind of impossibility.

3.2 Humour Techniques

Apter's Reversal Theory suggests that the "trick of creating humor" is to balance the demands of obtaining high levels of arousal while supporting the protective frame that in turn supports the paratelic state.

Some of the comedy arises from the interaction of the game play, the skill of the player and the logic of the game universe. This combination of elements is intended to trigger the affect of humour, however, the ludic (unscripted) nature of the experience means that the comedy emerges out of situations that the game designers did not fully plan (Frasca 2003; Sweetser & Wiles 2005).

For example, the graffiti on the walls of the Portal game space may initially appear to the player simply as set dressing. As the game progresses the words, "The cake is a lie," repeated in a list, are written in a form that suggests another player reached this point in the past. Together with "Help", "Hello? May I help you?", prison-like tally marks and smudged handprints these words stand as a warning. At advanced levels of the game, where the problems to be solved become increasingly complex and frustrating, the words comically mirror the player's feelings. Further, these words, this Internet meme, have taken on a meaning greater than the initial purpose. This is an example of humour rather than comedy as the humour has emerged from the interaction of the player and the space rather than being constructed as comedy. The player constructs their unique meaning in the context of their game play.

Success in the Portal universe requires the player to take on the logic and physics of the game. This has two crucial outcomes. First, the player is immersed in game play that includes a subversion of real world physics that allows the players to move objects in an impossible

manner and to watch themselves in action. Second, they player must take on a goal that is not explicitly stated. Any goal that is promised, for example the cake, is a lie. The player must reinvent both the means and the ends.

For humour to work, according to Apter and Martin, the player must be in a playful state of mind, the player observes an object/event/identity as having two incompatible or incongruous attributes, and one of the attributes is diminished in meaning. It is tempting to assume that a player playing a game is already in a playful state of mind. However, the goal seeking nature of game play may well remove this possibility. A player may well be in a telic state, a serious goal oriented frame of mind. To move the player to the paratelic state and to protect them in that state requires the game to reward the player for acting in a paratelic manner. The game achieves this by allowing the player to 'accidentally' succeed. This occurs when the player stumbles upon the solution by attempting a maneuver that has unintended, and often humorous, positive consequences or by dumb luck, the surprise of which also generates humour.

The relationship between the player, the logic and physics of the game universe, and their ability to literally see themselves in action presents multiple incompatible and incongruous attributes. The perspective shifting nature of the game play is analogous to the shifting from the telic to paratelic state. These states of mind are transitory in nature. The player needs to have a goal to proceed through the game, otherwise they simply would not engage in the challenges. However, the game through the techniques of comedy entices the player to engage in an oscillation between the telic and paratelic manner.

For humour to develop out of these interactions with the game universe some attribute must be in some manner diminished. As argued earlier Portal is a deeply satirical game that diminishes and questions the value of goal seeking as an activity. It caricatures testing, enrichment and improvement. The 'cake' meme carries the meaning that the offer of a reward as motivation for action is fallacious. To win when playing Portal the player needs to accept that playing to win within the proscribed means is a bogus strategy connected to an equally bogus reward, cake.

4   Engagement, Engrossment and Flow

This analysis has shown that Portal is an environment laced with constructed comedy, emergent humour and a narrative designed to satirise goal-seeking behaviour. The question is now, how do these elements contribute to engagement?

Within the Oxford English Dictionary, the term "engagement" stems from the verb "engage", within multiple contexts meaning to bind, attach, or entangle, often within a voluntary action (Oxford English Dictionary 2014). Engagement refers to the action of being engaged; in the context of video games this concept is the subject of much debate, and often used in the absence of a standard definition. The term "immersion" is also used often in game research literature, and is inextricably linked with engagement. The definition of immersion refers to the "dipping or plunging into liquid... and transference into other things" (Oxford English

Dictionary 2014); in the context of video games, immersion is implied to refer to becoming absorbed in the game as though the player were in the game. These two concepts of engagement and immersion, though linked, are quite different. Douglas and Hargadon (2001) indicate that this key distinction between engagement and immersion lies within how content is experienced.

Put simply, immersion is a process through which one becomes drawn into, or deeply involved in the material or story, whereas engagement implies a more active participation with the material. The active engagement with material, whether solving puzzles, understanding concepts or overcoming challenges (Douglas & Hargadon 2001; Woo 2011) has quite clear links with user interaction with video games. Though there is some disparity in the interactions between engagement and interaction, as one could be seen as linked with and leading to the other, the immersive and engaging capabilities of video games can lead the audience member/s to experience what Mihaly Csikszentmihalyi (1990) coined as the 'Flow' state (Douglas & Hargadon 2001).

Csikszentmihalyi describes nine attributes of the Flow experience:

1. There are clear goals every step of the way.
2. There is immediate feedback to one's actions.
3. There is a balance between challenges and skills.
4. Action and awareness are merged.
5. Distractions are excluded from consciousness.
6. There is no worry of failure.
7. Self-consciousness disappears.
8. The sense of time is distorted.
9. The activity becomes autotelic (it becomes an end in itself) (Csikszentmihalyi 1997a, pp. 111-3).

It is generally agreed upon that the concept of Flow (Csikszentmihalyi 1990) is an identifiable and key element in the concepts of engagement and immersion. The Flow state is referred to in common vernacular as the feeling of being "in the zone", with a limited awareness of one's surroundings as attention is given entirely to the focus of the activity. The Flow state is an autotelic (intrinsically rewarding) state of extreme concentration or absorbed focus that can lead to being unaware of the passage of time. Achieving the Flow state, combined with challenge, progression, and skill, can result in an optimal experience (Cox et al. 2012; Csikszentmihalyi 1990; Jennett et al. 2008). These optimal experiences are considered fun, and intrinsically motivating, when balance is achieved between the challenge of the game and the skill of the player (IJsselsteijn et al. 2007). Though Flow is presented as a continuum of experiences, it is considered by some to be binary in nature; one can either be in the zone, or not in the zone (Cox et al. 2012, p. 79).

In Douglas and Hargadon's analysis of engagement, immersion and Flow (2001), and Cox and colleagues' (Cox et al. 2012; Jennett et al. 2008) concept of the three stages of immersion, itself a continuum of experiences:

the first stage is Engagement; the second stage engrossment; and the final stage total immersion, or the aforementioned Flow state.

The conception of the autotelic experience as self-rewarding and fun has been used to argue that the autotelic state is more closely related to the paratelic state than the telic state (Houge Mackenzie, Hodge & Boyes 2011, p. 523). The Flow state requires a balance to be struck between the challenge of a task and the skill of the performer: too little challenge or too much skill results in boredom; too little skill or too much challenge results in anxiety. It is this anxiety that destroys the 'magic circle'. However, as Rea argues, paratelic and telic flow could be achieved in a highly complex flow state of serious playfulness. "This state of serious playfulness is characterized by a 'dynamic stillness.' It is not merely the stillness of telic repose nor the dynamics of paratelic excitement. Rather it is a synchronous interweaving of stillness and dynamics" (Rea 1993, pp. 84-5).

By accepting the possibility of an autotelic state dynamically flipping from the telic to the paratelic and back goes some way to removing the paradox of describing game play as a playful, goal-oriented activity.

5   Conclusion

It is evident that techniques of comedy have been intentionally utilised throughout Portal and that, whether intended or unintended, elements of humour emerge as a result of both comedic technique and gameplay. Further, it is evident that part of the comedy and humour is based on the incongruous human/machine character of GLaDOS which supports the conclusion that Bergson's law does stand when inverted; we will laugh when a mechanical agent gives us the impression of being a person.

The shifts in affective states, from telic to paratelic, can be said to be triggered by both constructed means, through comedic techniques, or emerging through activity with surprising consequences. The shift from the paratelic to the telic state seems a more natural occurrence, where the game's goal is brought to the forefront, in most cases reaching an exit, prompting further action, in turn triggering affective state shifts. This oscillation between telic and paratelic states is analogous to finding the balance between challenge and player ability, or the auto-telic state of Flow, the optimal experience or fun (Csikszentmihalyi 1997b); each of which are considered intrinsically motivating. Understanding this process through the lenses of Berger's forty-five comedic techniques and Reversal Theory, in essence a theory of motivation, can aid research into the reasons why players play games. In case of Portal, which satirically derides social norms and play structures, what motivates a player to keep playing? The partial answer to this question is that the player is seeking the autotelic affective state and that this state can be achieved from either the telic goal-oriented or the paratelic process-oriented affective state. Accepting that Portal is highly satirical and dismissive of traditional, goal-seeking behaviours suggests that both the telic and the paratelic states can lead to the highly engaged autotelic state of Flow.

6   References

Adams, E (2013): *Fundamentals of game design*, Pearson Education.

Agnew, R & Passas, N (1997): 'The Nature and Determinants of Strain: Another Look at Durkheim and Merton', in N Passas & R Agnew (eds), *The future of anomie theory*, Northeastern University Press, Boston.

Apter, MJ (1982): *The experience of motivation: The theory of psychological reversals*, Academic Press, London.

Apter, MJ & Desselles, M (2012): 'Disclosure humor and distortion humor: A reversal theory analysis', *Humor*, vol. 25, no. 4, pp. 417 – 35.

Attardo, S (1994): *Linguistic Theories of Humor*, Mouton de Gruyter, Berlin ; New York

Ayelis (2009): *Portal: Game Script*, CBS Interactive Inc, http://www.gamefaqs.com/pc/934386-portal/faqs/50477, Accessed 21 August 2014.

Bentley, E (2012): *The Playwright as Thinker : A Study of Drama in Modern Times*, University of Minnesota Press, Minneapolis.

Berger, AA (1997): *The art of comedy writing.*, Transaction Publishers, New Brunswick, N.J.

Bergson, H (1911): *Laughter: An essay on the meaning of the comic.*, Macmillan and Co., Limited, London.

Butler, S (2009a): *"comedy"*, 5th edn, Macquarie Dictionary Publishers Pty Ltd, Sydney.

Butler, S (2009b): *"humour"*, 5th edn, Macquarie Dictionary Publishers Pty Ltd, Sydney.

CBS Interactive Inc. (2008): *Portal: Summary*, http://www.metacritic.com/game/pc/portal, Accessed 14 August 2014.

Cox, A, Cairns, P, Shah, P & Carroll, M (2012): 'Not doing but thinking: the role of challenge in the gaming experience', in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 79-88.

Csikszentmihalyi, M (1990): 'Flow: The psychology of optimal experience', *Harper&Row, New York*.

Csikszentmihalyi, M (1997a): *Creativity: flow and the psychology of discovery and invention.*, First edn, Harper Collins, New York.

Csikszentmihalyi, M (1997b): *Finding Flow*, BasicBooks, New York.

Csikszentmihalyi, M & Csikszentmihalyi, IS (eds) (1988): *Optimal Experience: Psychological studies of flow in consciousness*, Cambridge University Press, Cambridge; New York.

De Mey, T (2005): 'Tales of the Unexpected: Incongruity-Resolution in Humor Comprehension, Scientific Discovery and Thought Experimentation', *Logic and Logical Philosophy*, vol. 14, pp. 69-88.

DigiPen Institute of Technology (2006): *Narbacular Drop*, DigiPen Institute of Technology, Redmond, WA, USA.

Dormann, C & Boutet, M (2013): 'Incongruous Avatars and Hilarious Sidekicks: Design Patterns for Comical Game Characters', paper presented to DiGRA 2013

Conference: DeFragging Game Studies., Atlanta, USA, Aug 26-29.

Douglas, JY & Hargadon, A (2001): 'The pleasures of immersion and engagement: Schemas, scripts and the fifth business', *Digital Creativity*, vol. 12, no. 3, pp. 153-66.

Frasca, G (2003): 'Ludologists love stories, too: notes from a debate that never took place', paper presented to Digital Games Research Conference, University of Utrecht, The Netherlands, 4-6 November, http://ludology.org/articles/Frasca_LevelUp2003.pdf.

Goffman, E (1986): *Frame Analysis: An Essay on the Organization of Experience*, Northeastern University Press, Boston.

Grönroos, A-M (2013): 'Humour in Video Games: Play, Comedy, and Mischief', Masters thesis, Aalto University.

Houge Mackenzie, S, Hodge, K & Boyes, M (2011): 'Expanding the Flow Model in Adventure Activities: A Reversal Theory Perspective', *Journal of Leisure Research*, vol. 43, no. 4, pp. 519-44.

IJsselsteijn, W, de Kort, Y, Poels, K, Jurgelionis, A & Bellotti, F (2007): 'Characterising and measuring user experiences in digital games', in *International conference on advances in computer entertainment technology*, vol. 2, p. 27.

Jennett, C, Cox, AL, Cairns, P, Dhoparee, S, Epps, A, Tijs, T & Walton, A (2008): 'Measuring and defining the experience of immersion in games', *International journal of human-computer studies*, vol. 66, no. 9, pp. 641-61.

LucasArts (1990): *The Secret of Monkey Island*, LucasArts, San Francisco, CA, USA.

LucasArts (1991): *Monkey Island 2: LeChuck's Revenge*, LucasArts, San Francisco, CA, USA.

LucasArts (1993): *Manic Mansion II: Day of the Tentacle*, LucasArts, San Francisco, CA, USA.

Martin, RA (2007): *The Psychology of Humor: An Integrative Approach*, Elsevier Academic Press, Burlington, Massachusetts.

McCoral, G (2010): *Know Your Meme: The Cake is a Lie*, Cheezburger, Inc, http://knowyourmeme.com/memes/the-cake-is-a-lie, Accessed 20 August 2014.

McNamee, J (2011): *What, with Your Bare Hands?*, http://themachination.net/blog/what-with-your-bare-hands/, Accessed 20 August 2014.

Morreall, J (2009): *Comic Relief: A Comprehensive Philosophy of Humor*, New Directions in Aesthetics, Wiley-Blackwell, Chichester, UK.

Oxford English Dictionary (2013a): *"comedy, n.1"*, Oxford University Press, http://www.oed.com/view/Entry/36848?rskey=bzb2t1&result=1, Accessed 18 September 2013.

Oxford English Dictionary (2013b): *"humour | humor, n."*, Oxford University Press, http://www.oed.com/view/Entry/89416?rskey=3UBAcq&result=1, Accessed 18 September 2013.

Oxford English Dictionary (2014): *OED: The definitive record of the English language*, Oxford University Press, http://www.oed.com.

Raskin, V (1985): *Semantic mechanisms of humor*, D. Reidel Publishing Company, Dordrecht, Holland.

Raskin, V (ed.) (2008): *The Primer of Humor Research*, Mouton de Gruyter, Berlin; New York.

Rea, DW (1993): 'Reversal theory explanations of optimal experience', in JH Kerr, SJ Murgatroyd & MJ Apter (eds), *Advances in reversal theory*, Swets & Zeitlinger, Amsterdam.

Ritchie, G (2004): *The Linguistic Analysis of Jokes*, Routledge, London, UK. New Youk, USA.

Rockstar North (2013): *Grand Theft Auto V*, Rockstar Games, Edinburgh, Scotland.

Stenros, J (2012): 'In Defence of a Magic Circle: The Social and Mental Boundaries of Play', in R Koskimaa (ed.), *DiGRA Nordic 2012 Conference: Local and Global – Games in Culture and Society*, Tampere, Finland.

Sweetser, P & Wiles, J (2005): 'Scripting versus Emergence: Issues for Game Developers and Players in Game Environment Design', *International Journal of Intelligent Games and Simulations*, vol. 4, no. 1, pp. 1 - 9.

Valve Corporation (1998): *Half-Life*, Sierra Entertainment, http://www.valvesoftware.com/games/backcatalog.html, Accessed 11 August 2014.

Valve Corporation (2007a): *Portal*, Valve Corporation, Bellevue, WA, USA.

Valve Corporation (2007b): *Source Engine*, http://source.valvesoftware.com/, Accessed 11 August 2014.

Valve Corporation (2011): *Portal 2*, Valve Corporation, Bellevue, WA, USA.

Watters, C (2008): *Portal Review*, http://www.gamespot.com/reviews/portal-review/1900-6190126/, Accessed 13 August 2014.

Woo, G (2011): *'Immersion' vs 'Engagement'*, http://www.goodgamesbydesign.com/2011/03/immersion-vs-engagement/.