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# Designing a Game to Model Consumer Misbehavior

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## ABSTRACT

Traditionally, computer games have been used for entertainment and more recently, education. However, the potential for games to be used in other contexts is now becoming an area of interest for researchers. We propose that games can be used in areas such as social behavior research, particularly in the area of consumer misbehavior. Using game design that supports research problems and provides an affective, engaging experience for players who participate in the research allows for the exploration of problems that have previously been difficult to address for social behavior researchers.

## Author Keywords

game design, consumer behavior, affect

## GAMES, ENTERTAINMENT, EDUCATION AND MORE

While computer games have traditionally been created solely for entertainment purposes, serious games are increasingly being developed for a number of significant purposes. These serious games include military games, government games, educational games, corporate games, healthcare games, and political or religious games [20]. Examples of serious games include *Brain Training*, which was developed to assist the elderly retain or improve their cognitive function (healthcare game) [21]; *Markstrat*, which was developed to teach students how marketing decisions affect simulated marketplaces (educational game) [31]; and *America's Army*, which was developed as a training and recruitment tool for the United States army (military game) [35].

Given this significant developments in serious games, it is fruitful to consider how gaming technology could be further applied to other innovative areas such as social behavior research. We propose that elements of game design theory could be useful to researchers that are attempting to capture the reasons that people behave the way they do. As an illustration, we outline an approach to applying game

design theory to a specific domain of social behavior research: consumer misbehavior.

Initially, we discuss how game design might be used to investigate consumer misbehavior. Second, we summarize the domain of consumer misbehavior and its key driver, emotion. Third, we outline the challenges of investigating consumer misbehavior. Fourth, we will identify how applying game design theory to create a game that elicits consumer misbehavior allows us to address these challenges. Finally, we summarize the proposed future research that will implement this game design.

## GAME DESIGN AND CONSUMER MISBEHAVIOR

We propose that consumer misbehavior would be best explored by designing a game that is aimed at creating flow and engagement in a player (i.e., a research participant). The purpose of the game, according to the researchers, is to elicit behavioral responses from the player. However, the purpose of the game presented to the players must incorporate an element of fun and challenge [33]. If the game is not fun or does not allow for immersive play, the response of the players does not approach the high level of involvement required to accurately assess consumer behavior [14].

Given this, we suggest that a graphical computer game be created that contains a series of tasks that players must complete in order to achieve consumption-related objectives. The challenge for researchers is to ensure that the tasks are difficult enough that players are free to engage in misbehavior, but are compelling enough to keep the player immersed in the game. To illustrate the domain of tasks that the game could involve, we first summarize the field of consumer misbehavior and identify its key driver: emotion.

## What is Consumer Misbehavior?

Consumer behavior is the "study of the processes involved when individuals or groups select, purchase, use or dispose

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of products, services, ideas, or experiences to satisfy needs and desires” [29]. Traditionally, the study of consumer behavior has assumed that consumers behave in a rational and compliant manner when they purchase, use, and dispose of products and services [30]. However, recent research suggests that consumption situations are often marred by consumer misbehavior [16, 23].

Consumer misbehavior is defined as “behavioral acts by consumers which violate the generally accepted norms of conduct in consumption situations” [13]. These behaviors include vandalism, retaliation, and violence [16]. However, these behaviors are conceptually different to other more appropriate (but negative) behaviors such as making a legitimate complaint to an organization, switching brands for a short period, or switching brands permanently.

Consumer misbehavior is pervasive: Statistics Canada report that almost a third of nurses are assaulted by their patients [7]. Other recent examples of consumer misbehavior include an enraged high-profile actor who assaulted a hotel concierge over a phone fault [9] and a disgruntled tenant who fatally wounded an Australian real-estate receptionist over a discrepancy in his bill [5].

As these examples illustrate, consumer misbehavior has adverse psychological, financial, and social costs for organizations, their employees and other consumers [13, 15]. The severity of these outcomes of consumer misbehavior highlights the necessity of understanding and managing misbehavior in order to lessen its impact.

#### **What Drives Consumer Misbehavior?**

In order to manage consumer misbehavior, it is important to understand its drivers. Recent research has moved away from a purely cognitive focus to identify emotions as key drivers of consumer misbehavior [18, 28]. An emotion is defined as “a mental state of readiness that arises from cognitive appraisals of events or thoughts...and may result in specific actions to affirm or cope with the emotion” [2].

For instance, people who feel angry rather than fearful are more likely to complain to a service provider than retaliate against them. Conversely, people who feel ashamed and powerless may be more likely to engage in vengeful behavior (e.g., verbal or physical abuse).

#### **What are the Challenges of Investigating Consumer Misbehavior?**

Despite acknowledging the importance of emotions, our understanding of consumer misbehavior is marred by the limitations of traditional research methods, which typically include self-report responses. The difficulty in using this approach to investigate emotion and behavior is the inability of people to accurately recall or predict their emotional state and subsequent behavior [3]. In addition, social desirability bias makes consumers reluctant to admit to misbehavior, even in an anonymous or confidential survey [18].

Aside from these self-report issues, consumer misbehavior is a sporadically-occurring (low base-rate) phenomenon, which renders observational techniques highly inefficient and impractical. Furthermore, it would also be highly unethical for researchers to fabricate a “real” situation that would prompt misbehavior from consumers. Thus, there is a need for measurement instruments that can more accurately elicit emotional responses and consumer misbehavior in a resource-efficient and ethical manner.

Given these issues, a popular alternative to investigate consumer misbehavior is the use of role playing, where respondents are asked how they (or someone else) would feel or behave in certain situations [14]. Traditional research has been conducted using written role playing scenarios [27], which are often criticized for being low in involvement and thus producing questionable results [14]. Methodological research indicates that the optimal technique to increase the level of respondent involvement with a scenario is an elaborate simulation game [14]. A simulation game allows the researcher a level of control over the situation that is very difficult to achieve in other media.

#### **HOW CAN GAME DESIGN BE USED TO INVESTIGATE CONSUMER MISBEHAVIOR?**

Research in consumer misbehavior is plagued with challenges. However, we propose that these challenges could be resolved by developing a computer game. A computer game provides a controlled environment that is ethically responsible but will support the investigation of the full range of consumer misbehavior. In addition, games provide players with a familiar environment that provokes certain expectations, based on the theory of game design. Among those expectations are rules governing how the game world is constructed, the game mechanics within the world, the narrative, and the elements of a game that induce flow [24, 25]. Players also have expectations of their interactions with non-player characters in the game [11], which is where the richest possibilities for exploring consumer misbehavior reside.

In order to support research in social behavior, there are a number of aspects of game design that need to be addressed. These aspects include the player avatars and perspective, possible approaches to narrative structure, some of the relevant game mechanics, non-player characters (NPCs) and how these choices affect the engagement of the player in the game. These aspects of game design will now be addressed.

#### **Avatar and Perspective**

One notable aspect of computer games is that players simultaneously identify with their game avatars while considering them a separate entity. Players often refer to their avatar in the first person, indicating that they feel that what happened to their avatar in the game also happened to themselves [34]. Somewhat contrarily, players also seem to

separate their character from themselves, and they play the game visualizing the action “through” their character [36].

We propose that this duality of self with respect to the avatar can promote a state of mind in the player that allows them the freedom to become emotionally engaged in the game, as well as maintaining a level of separation that creates a feeling of safety. This balance between engagement and remoteness from the events allows players to engage in social misbehavior without feeling that they are hindered by moral judgments or socio-cultural taboos. They are able to misbehave, if they choose, without fear of reprisal or judgment on the part of the researchers.

Therefore, it is critical that the design of the game allows players to maintain this balance of engagement and separation. The game should use a first person view, so that the avatar is not seen, and therefore removes the player’s ability to identify with a specific representation of them in game. However, they should be able to see their hands taking action (as many first person games allow), so that they can develop a sense of agency and emotional immersion in the actions that they take.

#### **Narrative Structure**

Of the four types of narratives that have been identified as relevant to computer games, two of those are of particular interest to social behavior researchers. These are emergent and enacted narratives [17]. While other forms of narrative (e.g., embedded and evoked) are interesting forms of narrative for entertainment and perhaps educational purposes, it is enacted and emergent narratives that provide the most scope for exploring consumer misbehavior. Based on previous game experiences, players expect to be able to construct a narrative (i.e., emergent narrative) or to follow a narrative that has been laid out for them by game designers (i.e., enacted narrative) [17].

An emergent narrative could be used to provide a sandbox-like environment [17] where researchers are interested in allowing players freedom of behavior and actions. The types of behavior that can be observed in an emergent narrative are open ended and less predictable than those that occur in other forms of narrative, allowing for the possibility of previously unexplored behavior. Emergent narratives can be created by building an open-ended game environment, which is bound by general rules that govern player interactions. The interactions that players engage in with the environment and other characters in the game can be focused on illuminating consumer misbehavior.

For example, a player’s character is placed in a mall and has a number of needs to satisfy, similar to *The Sims* [12]. Taking specific actions, such as buying food from a fast food store, would satisfy or lessen the character’s hunger (or need for food). Players would not be given a pre-defined set of tasks, or a specific narrative to follow, but would be encouraged to explore the area in order to create their own story and develop their character in their own way.

Consumer misbehavior can be explored in this situation by making tasks harder to achieve or making the results of taking action somewhat unclear. Employees (represented by NPCs) can be deliberately obtuse, or customers can find that the products that they require are not available. However, to ensure that the game is still rewarding enough the players will continue to engage with it, the level of reward and information must be managed carefully. Difficulty can be managed by parameterizing the values associated with the rules of interaction between the player, the world and NPCs.

Conversely, an enacted narrative could be achieved by using cut scenes and directing players to follow a narrative structure that has been pre-determined. The narrative can be branching, although the results of the branches are usually deterministic. The player engages in a series of tasks that are progressively more difficult, as with a traditional entertainment-focused computer game [24].

In this context, tasks that players might have to achieve include returning a faulty product, engaging a service such as a haircut, or attempting to get information about pricing or availability of goods from a store. Players are given specific objectives to achieve, of which they are informed by cut scenes or NPCs whose task it is to progress the narrative forward. The tasks may be dependent on achieving other tasks, requiring the play to take a series of interdependent actions.

A game that is created using enacted narrative allows consumer behavior researchers to understand player behavior in a tightly controlled situation, where tasks are given in a pre-determined order and the expected outcome is always the same. The point of interest to researchers is the difference between players, which lies in their approach to the tasks, the actions they take, or the difficulty they experience in achieving their objective.

#### **Game Mechanics**

It is also important to explore how game mechanics can be manipulated in order to carefully elicit consumer misbehavior, as well as ensuring that the environment still appears to be game-like to the player. Of the five types of game mechanics that have been identified [1], only game rules and time are salient in this context and thus will be explored in depth.

The first game mechanic that is salient to explore is the game rules. There are three types of rules governing game play: topological rules (e.g., certain rules are dependent on the player being in a specific location), time-based rules (e.g., the player can take action only within a certain amount of time), and objective-based rules (e.g., the player’s progress through the game depends on achieving an objective) [1]. Topological rules will not affect the progress of the player in the proposed game, but time and objective-based rules should affect the ability of the player to progress through the game.

In both forms of narrative that have been proposed (emergent and enacted), players are expected to achieve objectives, particularly in the enacted narrative. We envision that some of the objectives will be necessary before the player is able to progress any further in the game, making the game objective-based. For instance, if a player wishes to return a product in order to gain store credit to buy another product, the option for looking for other products will not be made available until the store credit transaction is complete.

Time-based rules will also affect the player, in either form or narrative. For example, we propose putting a time limit on activities such as ordering food in order to stave off an undesirable level of hunger. Conversely, we might use long time limits on things such as waiting in queues, in order to make the player's character agitated and potentially ill-tempered.

Using time and objective-based rules allows us to put pressure on the player in order to observe their behavior when faced with possibly stressful consumption situations. Forcing the player to achieve a difficult objective before allowing them to engage in a more pleasurable one gives the researchers the potential opportunity to observe players becoming frustrated at a delayed pleasure. Using time-based rules allows us to manipulate the amount of time available to players, in particular to put them in a situation where they do not have enough time to achieve their goals. Players are then required to find an alternate means of achieving their objective, which may include theft, abuse of characters representing employers and other negative behaviors, all of which are supported in the game.

The second game mechanic that is salient to explore is the issue of time. There are three aspects of time that need to be explored: representation (i.e., if time is arbitrary or real-world), pace (i.e., if the game stops for players to take turns or continues on without pause) and teleology (i.e., if the game has a clear winning state or not) [1]. The two aspects of time that are relevant to the proposed game are pace and teleology.

The pace of the game is continuous and therefore has a real-time pace. Players do not take turns with other characters or player opponents, as the game is not intended to be combative in any way. Therefore, the only time that matters is how time is progressing for the player and what effect that has on their ability to achieve their objectives. For example, if a player has to withdraw money from a bank in order to purchase food at a supermarket, time will continue to pass in the game if they are queued at the bank. This passing time may put pressure on the player to achieve a time-based objective, such as getting to the supermarket before it closes.

The teleology of the game is that there should be a clear winning state in both the emergent or enacted narrative options for this game. An enacted narrative generally would have an endpoint [6], but a clearly defined endpoint is

unusual for an emergent narrative. While the path to the winning state would be quite clearly defined in an enacted narrative, the situation would be different in an emergent narrative. Instead of providing the player with a list of tasks that need to be achieved in order to reach the winning state, the player would arrive at the winning state when the needs of their character have been met, however they choose to accomplish that.

One example of a winning state or endpoint in the proposed game would be that the player has been given the task of setting up their own business. In an enacted narrative, they would be given a more detailed set of tasks that they need to achieve before the business would be operational (e.g., locating a premises, choosing a business name, opening a business bank account, etc.). In the emergent narrative, the player would be free to set up their business by following their own ideas about what that task involves. The endpoint would be the successful opening of the business.

The benefit to social behavior researchers of using this approach to time in games is the variety of behaviors in which players can engage. The time pressure that can be created by making the game real-time may cause the player to behave differently than they would in a situation where their success is not time-dependent. Having a clear endpoint allows players a sense of reward that can mitigate the frustration they may have felt when they experienced difficulties in achieving their assigned tasks.

#### **Non-Player Characters (NPCs)**

The game will be single player, therefore much of the possibilities for player behavior that is interesting to researchers reside in the interactions that take place between players and NPCs. Therefore, it is crucial that the design of the NPCs be carefully considered in order to make them as realistic and evocative as possible.

We propose that the NPCs be based on the embodied conversational agent architecture [8], which is aimed at creating NPCs that focus on conversing with the player and other characters. They are also able to move around and interact with the environment and the player, by standing near the player, handing them objects or responding to actions taken by the player, such as contact with the player's avatar [4].

The NPCs need to be able to engage in conversation with the player, specifically about the tasks that the player needs to achieve and their willingness or otherwise to help. Therefore, the topics of conversation available to the NPC should be very context-specific. However, the NPC needs to be able to engage in a range of emotional responses, both dependent on and independent to the player's actions. Dependent emotional responses can be used to escalate a situation that may have been started by the player. Independent emotional responses can be used to provoke a response in the player that precipitates misbehavior. This can be achieved by adding an emotion aspect to the design

of NPCs, which can be manipulated depending on circumstance and the character's personality [10]. Emotional cues can be reinforced through the use of appropriate body language and facial expressions.

In this context, an NPC might represent a bank teller. The bank teller might respond to a request for funds by denying the player. Their body language and facial expression might indicate embarrassment to the player at having to convey this news if the NPC does not wish to escalate the situation. Alternatively, the NPC might escalate the situation by using aggressive body language, formal sentence construction, and a harsh verbal tone.

The NPC does not need to be able to converse on topics other than the financial transaction. This has the added benefit of creating frustration in the player due to the NPC's lack of information disclosure, which may lead to consumer misbehavior. An alternative NPC such as a bank manager, however, might be able to calm the situation down by providing support to the player as well as more readily providing information. In this situation, researchers would be able to observe players escalating into misbehavior, as well as the de-escalation of the situation by other characters.

#### **Affect and Engagement**

Using the elements of player enjoyment that were identified in the Game Flow model [33], we can evaluate whether the proposed game will create feelings of affect and engagement in players. It is necessary to create player immersion in the game, as this state of mind allows players to access the combination of cognitive and emotive evaluation of situations that is required to study consumer misbehavior.

Making the game challenging in order to provoke negative emotions associated with consumer misbehavior deliberately contradicts some elements of the Game Flow model, such as Clear Goals and Feedback [33]. Part of the process of generating frustration, anger or helplessness within the player is to make the goals less clear and presented at a relatively late point in the game. Feedback should be provided sporadically or with insufficient detail. This is a deliberate choice by the researchers that is designed to affect players differently than they would be affected by a game that is solely focused on entertaining the player.

For example, we return to the idea of starting a business. Lack of clear goals can be included in the game design by deliberately obscuring or withholding information about how many people in the same geographical area operate similar businesses, how much rent the player is likely to pay for their location, or how much business the player should expect. Insufficient feedback can be achieved by making it unclear throughout the business planning whether the player can afford to position themselves in location they have chosen. Players are free to adjust their behavior throughout

the process, but the adjustment would not be as a result of feedback from the game or the NPCs. However, players would be provided with adequate feedback at the completion of their task.

The lack of clear goals and appropriate feedback must be compensated by carefully addressing the other elements of the Game Flow model, such as Immersion, Challenge, Control and Player Skills. At the time of game implementation, player immersion would be addressed by using affective, realistic visual and audio that acts to keep the player involved in the game environment [32].

The game will be designed so that players have control over their avatar and its interactions within the world. Taking control of the avatar away from the player might provoke a lack of agency that lessens the effect of other elements of the game. The game is intended to be challenging, and in some cases, difficult, but the opportunities to misbehave will allow alternate routes to successfully completing a task. Therefore, the player will always have the requisite skills to progress through the game.

All of the examples presented throughout this paper are designed to be challenging to the player. However, the player will have the skills and enough control over their avatar and the world to be able to complete their objectives, ensuring that player needs with respect to players kills and control are met.

#### **FUTURE WORK**

Future research involves developing a set of scenarios that will form the basis of the game content, followed by designing and implementing the computer game. The final step is to allow participants to play the game in order to provide researchers with information about consumer misbehavior, as well as evaluating the effectiveness of the game in creating the required level of flow and immersion.

The first step is to conduct studies to gather some contextual inputs. Some examples of contextual inputs include actual consumption situations and realistic employee responses to problems within these consumption situations. This information will be gathered from employees that deal with customers. Scenarios might include actions such as getting a haircut, going to the bank, going to the doctor, eating in a restaurant, or shopping for consumer goods. We intend to provide a number of scenarios to appeal to a wide gender and age demographic.

The second step involves designing a computer game that uses a number of conversational agents. The incidents identified in the first study will be converted into a number of scenarios that will form the basis of the design of the game and the behavior of the NPCs. These scenarios will be combined into a game to form escalating progressive challenges that will elicit consumer emotions.

The behavior of the conversational agents and the settings will then be programmed into a task-oriented game, using

the 3D software development kit (SDK) Valve Source Engine. The Valve Source Engine is desirable because it includes a large degree of modularity and flexibility, advanced rendering, lip syncing, and facial expression technology (necessary for the expression of emotions). The physics system is also efficient and powerful, allowing for agents to move and act realistically in the game environment, encouraging player engagement.

The final step involves allow participants to play the game in order to provide researchers with information about consumer misbehavior. We propose that a large number of “average” consumers be recruited so that the researchers can observe their behavior as they complete the tasks of the game. Any incidences of misbehavior will be noted and discussed with the participants during their debriefing session.

## CONCLUSION

In this paper we have outlined how game design theory can be used to address the challenges that confront social behavior researchers. We have described the specific context of use –investigating consumer misbehavior– and illustrated how the use of a carefully designed computer game can support many important research objectives.

This game design has both practical and methodological implications for the marketing field. Practically, this game could be modified to act as job training tool for people who deal with consumer misbehavior. Methodologically, this game has implications for consumer misbehaviour research due to its interactivity, controllability, and flexibility. These benefits combine to provide more insight into social behaviour in a consumption situation than traditional research methods, making games a valuable tool for business researchers.

Finally, this paper has demonstrated that game design theory can be beneficially applied to other research contexts. Utilising games in contexts other than entertainment and education serves to illustrate the importance and relevance of games to other facets of our society.

## REFERENCES

1. Aarseth, E., Smedstad, S. & Sunnanå, L. (2003). A Multidimensional Typology of Games. In *Proceedings of Level Up: Digital Games Research*, eds M. Copier & J. Raessens, University of Utrecht, 2003.
2. Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The role of emotions in marketing. *Academy of Marketing Science Journal*, 27(2), 184.
3. Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist*, 54(7), 462-479.
4. Bickmore, T., & Cassell, J. (2004). Social Dialogue with Embodied Conversational Agents. In J. v. Kuppevelt, L. Dybkjaer & N. Bernsen (Eds.), *Natural, Intelligent and*

*Effective Interaction with Multimodal Dialogue Systems*. New York: Kluwer Academic.

5. Bilowol, J., & Marszalek, J. (2007). *Man shoots woman, turns gun on himself*. Retrieved February 9th, 2007, from <http://www.news.com.au/couriermail/story/0,23739,21043356-3102,00.html>
6. Brand, J. & Knight, S. (2005). The Narrative and Ludic Nexus in Computer Games: Diverse Worlds II. In *Changing Views: Worlds in Play*, DiGRA 2005.
7. Canadian Mental Health Association. (2007). *Mental illness in the workplace: The elephant in the room*. Retrieved 20 February, 2007, from <http://www.cmha.bc.ca/bottomline/research.html>
8. Cassell, J., Bickmore, T., Vilhjalmsón, H., & Yan, H. (2001). More than just a pretty face: Conversational protocols and the affordances of embodiment. *Knowledge-Based Systems*, 14, 55-64.
9. CNN. (2005). *Russell Crowe appears in court*. Retrieved February 9th, 2007, from <http://www.cnn.com/2005/SHOWBIZ/Movies/06/06/crowe.arrest/>
10. Drennan, P. (2004). Conversational Agents: Creating Natural Dialogue between Players and Non-Player Characters. In Rabin, S. (ed.), *AI Game Programming Wisdom 2*. Hingham, MA: Charles River Media, Inc.
11. Drennan, P., Viller, S. & Wyeth, P. (2004). Engaging Game Characters: Informing Design with Player Perspectives. *Entertainment Computing – ICEC 2004: Third International Conference*, Lecture Notes in Computer Science, 3116, pp 355- 358.
12. Electronic Arts Inc, The Sims. Retrieved 28 February, 2007, from <http://thesims.ea.com/>
13. Fullerton, R. A., & Punj, G. (1993). Choosing to misbehave: A structural model of aberrant consumer behavior. *Advances in Consumer Research*, 20, 570-574.
14. Greenberg, J., & Eskew, D. E. (1993). The role of role playing in organizational research. *Journal of Management*, 19(2), 221-241.
15. Harris, L. C., & Reynolds, K. L. (2003). The consequences of dysfunctional customer behavior. *Journal of Service Research*, 6(2), 144-161.
16. Harris, L. C., & Reynolds, K. L. (2004). Jaycustomer behavior: an exploration of types and motives in the hospitality industry. *Journal of Services Marketing*, 18(4/5), 339-357.
17. Jenkins, H. (2003). Game Design as Narrative Architecture. In Wardrup-Fruin, N. & Harrigan, P. (eds), *First Person: New Media as Story, Performance and Game*. Cambridge, MA: The MIT Press.
18. Keeffe, D. A. (2005). *When things go wrong: Cognitive, emotional and behavioral responses to service recovery strategies*. University of Queensland, Brisbane.

- 19.Laros, F. J. M., & Steenkamp, J.-B. E. M. (2005). Emotions in consumer behavior: A hierarchical approach. *Journal of Business Research*, 58(10), 1437-1445.
- 20.Michael, D. & Chen, S. (2006). *Serious Games: Games that Educate, Train and Inform*. Boston, MA: Thomson Course Technology PTR.
- 21.Nintendo, Dr Kawashima's Brain Training. Retrieved 28 February, 2007, from <http://www.braintraining.com.au/>
- 22.Performis. (2006). *OHS Observations: News, Views and Updates on key operational issues in OHS*. Retrieved 20 February, 2007, from [http://www.ohs.com.au/documents/OHS%20Obs%2005-%20Labour%20Hire\\_060302.pdf](http://www.ohs.com.au/documents/OHS%20Obs%2005-%20Labour%20Hire_060302.pdf)
- 23.Reynolds, K. L., & Harris, L. C. (2005). When service failure is not service failure: An exploration of the forms and motives of "illegitimate" customer complaining. *Journal of Services Marketing*, 19(5), 321-335.
- 24.Rouse, R. (2005). *Game Design Theory and Practice*. Plano, Texas: Worldware Publishing.
- 25.Salen, K. & Zimmerman, E. (2004). *Rules of Play: Game Design Fundamentals*. Cambridge, MA: The MIT Press.
- 26.Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: Further exploration of a prototype approach. *Journal of Personality and Social Psychology*, 52(6), 1061-1086.
- 27.Smith, A. K., & Bolton, R. N. (1998). An experimental investigation of customer reactions to service failure and recovery encounters: Paradox or peril? *Journal of Service Research*, 1(1), 65-81.
- 28.Smith, A. K., & Bolton, R. N. (2002). The effect of customers' emotional responses to service failures on their recovery effort evaluations and satisfaction judgments. *Academy of Marketing Science Journal*, 30(1), 5-23.
- 29.Solomon, M.R., Dann, S., Dann, S. & Russell-Bennett, R. (2007). *Consumer Behaviour: Buying, Having, Being*. Frenchs Forest, NSW: Pearson Education.
- 30.Solomon, M. R., Surprenant, C., Czepiel, J. A., & Gutman, E. (1985). A role theory perspective on dyadic interactions: The service encounter. *Journal of Marketing*, 49(1), 99-111.
- 31.StratX Simulations, Markstrat Online. Retrieved 27 February, 2007, from [http://www.stratxsimulations.com/markstrat\\_online\\_home.htm](http://www.stratxsimulations.com/markstrat_online_home.htm)
- 32.Sweetser, P. & Johnson, D. (2004). Player-Centred Game Environments: Assessing Player Opinions, Experiences and Issues. *Entertainment Computing – ICEC 2004: Third International Conference*, Lecture Notes in Computer Science, 3116, pp 321 – 332.
- 33.Sweetser, P. & Wyeth, P. (2005). GameFlow: a model for evaluating player enjoyment in games. *Computers in Entertainment*, 3 (3).
- 34.Taylor, T.L. (2002). Living Digitally: Embodiment in Virtual Worlds. In Schroeder, R. (ed), *The Social Life of Avatars: Presence and Interaction in Shared Virtual Environments*. London: Springer-Verlag.
- 35.United States Army, America's Army. Retrieved February 28, 2007 from [www.americasarmy.com/](http://www.americasarmy.com/)
- 36.Young, B-M. (2005). Gaming Mind, Gaming Body: The Mind/Body Split For a New Era. In *Changing Views: Worlds in Play*, DiGRA 2005.