

Accounting for User Needs and Motivations in Game Design

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Abstract

Computer games are now developed around the world, and the UK and Japan are still among the major developers of computer game software. Notwithstanding the games industry having overtaken the Hollywood box office in terms of revenue, user centred research on computer game playing preferences and cultural variation in playing habits is a largely unexplored field.

Preliminary research was carried out to develop our basic understanding of how and why computer games are used within British and Japanese culture. The research explored two questions: do computer games have different meanings and uses in Britain and Japan? If so, are they embedded in personal and social identity?

Observational and empirical data from British and Japanese teenagers and adults suggested cultural variation in game playing habits and preferences, across the age groups. Data were reviewed in relation to intrinsic and interpersonal motivations and needs motivations and a tentative model that illustrates and explains cultural variation in computer game playing will be presented.

This model, a work in progress, recognises that we exist within a social and political environment comprised of beliefs and values, and that we have needs that must be fulfilled for us to develop. These needs interact with our intrinsic and interpersonal motivations and the model suggests that some motivations may interact more strongly with certain needs.

Findings have crucial implications for usability practice and game design. By carrying out usability testing of games with targeted players from different cultures, we can modify components of the game, fine tuning them to optimise the balance of motivations to meet the needs of different players. Successful global game design can become reality.

Human factors has a central role to play in the process, highlighting the continuous need for user centred testing in game design. While we can suggest how players motivations and needs interact, and illustrate how different elements dominate at different stages in the player's life, usability testing is always necessary and crucial to evaluating a game design and delivering a game that meets the requirements of the consumer.

Introduction

“If we were always to judge from reality, games would be nonsense. But if games were nonsense what else would there be left to do?”¹ Tolstoy may have written these sentences years ago, but they still resonate today as so many people consider games, fantasy, and play, to be diametrically opposed to what they consider the more important things in life; namely work and the real world. These critics of games argue that games are at best a waste of time, and at worst a sign of a deep-rooted deviance. Unfortunately while this approach might help people maintain their existing sense of moral superiority, it does nothing to explain the enduring popularity of games throughout oral and written history.

In recent years we have seen an explosion of interest in computer games as home computers have gone from expensive and unique, to affordable and commonplace. Computer games are now the latest thing in the gaming world, and interesting to study as they are still an emergent form of gaming, mass entertainment and popular culture.

Computer games are now developed around the world, and the games industry has overtaken the Hollywood box office in terms of revenue. As modern lifestyles place ever-increasing demands on our time, and considering all of the entertainment available, there must be some significant reasons why people choose to play computer games. However, user centred research on computer game playing preferences, and cultural variation in playing habits, is still a largely unexplored field.

One reason for this lack of research may be the enormous quantity of games, their varying quality, and the fact that typically computer games are played in our precious free time. How can we evaluate between all of these variables, and explain the choice of computer games relative to the other leisure activities people could choose to engage in?

However, when observing computer game players, they usually appear to be both interested in and captivated by the game they are playing. Many players put such value on games that they are even willing to part with money to play a game, whether by purchasing a product or pushing coins in to an arcade machine. What motivates players to decide to play computer games, why do they choose the games they play, and what satisfaction do they get from the game playing experience, especially as the rewards gained may be subtle and vary from player to player?

Thomas Malone argued that players are intrinsically motivated to play games.² Malone’s work is considered seminal to understanding

¹ Leo Tolstoy cited in Iona Opie and Peter Opie, *The Language and Lore of School Children*, (London: Oxford University Press, 1959), 338.

² Thomas W. Malone, *What Makes Things Fun to Learn? A Study of Intrinsically Motivating Computer Games*, Cognitive and Instructional

motivation and computer gaming, but it is commonly acknowledged that any experiments to test subtle and complex theories of motivation in games are unable to account for varied motivations and their relationship to the vast array of external rewards available to players. This lack of accountability typically leads to either a direct contradiction between theories, or ambiguities in the definition of either intrinsic motivation or rewards. However, while potentially incomplete, theories outlining the necessary features of intrinsically motivating environments do not need to be viewed in competition to one another. In fact, many features can contribute to the motivational and reward environment, and the optimal balance of them will vary from person to person.³

So, why are people motivated to play a computer game instead of engaging other activities? Theories of intrinsic and interpersonal motivations are useful tools for understanding important features for game design and how to make a game fun, but they do not explain why a person is motivated to play a game in the first place.⁴ Could the answer be skills? Some have argued that the key to a computer game's appeal must involve an aspect of contest, or putting skills to the test.⁵ Malone has also stated that we should consider the popularity of games over time, as the novelty of a new game can wear off and it will not always be top of the popularity list, although it could remain a steady favourite.⁶ Indeed, more recently it has been suggested that computer games have evolved greatly and we need to take a second look at the design of "modern games." Gamers expect new, cool features in new titles, with games making it easy for players to form and find subgroups within a community, forming a "natural community" with an obvious common interest.⁷

So what might be some of the drawbacks to these diverse approaches? Lepper and Malone's theories are useful and highly regarded,

Sciences Series, CIS-7, SSL-80-11 (Palo Alto: Xerox Palo Alto Research Center, 1980), and Thomas W. Malone and Mark R. Lepper, "A Taxonomy of Intrinsic Motivations for Learning," in *Aptitude, Learning and Instruction, Vol. 3: Conative and Affective Process Analyses*, ed. R. Snow and M. Farr (Hillsdale, New Jersey: Lawrence Erlbaum, 1987), 111-140.

³ Malone, *What Makes Things Fun to Learn?*

⁴ For theories of Intrinsic and Interpersonal motivation see Malone and Lepper, "A taxonomy of Intrinsic Motivations for Learning."

⁵ John V. Dempsey et al., *An Exploratory Study of Forty Computer Games*, College of Education Technical Report 97-2 (Mobile, Alabama: University of South Alabama, 1997).

⁶ Malone, *What Makes Things Fun to Learn?*

⁷ Jeff Dyck et al., "Learning From Games: HCI Design Innovations in Entertainment Software" (paper presented at Graphics Interface 2003, Halifax, Nova Scotia, June 2003).

but it has been suggested that they give little consideration to an individual's cognitive beliefs and how their beliefs and values may influence their interest in a game and motivation to play it.⁸ After all, individuals exist within a social, educational, political and economic system. Therefore, when examining preferences in games and game design we should also consider the cultural, physical and communal environment that the player is imbedded in.

The cultural aspect of games is common knowledge in the games industry, where geographically defined consumer predispositions are typically recognised as genre preferences.⁹ When viewed globally, it is clear that different cultures have strong cross-cultural affinities for some genres while other genres are appreciated for completely different, and sometimes oppositional reasons. Other genres simply don't translate at all; at best they may become cult games, but in general they are unknown. The enormous success, in Japan, of *Tokimeki Memorial* and *Princess Maker* are examples of this phenomenon. Neither of these games are popular in Europe or North America, and many people would consider the content and gameplay as deviant.

These culturally based preferences for games suggest that to understand an individual's, or a group's, motivations and preferences, it is necessary to study them in relation to the social and cultural infrastructure they operate within. Viewed this way, gamers can be seen as representing contemporary urban leisure subcultures generating meaning and identity in the social worlds games open to them.¹⁰

The consequence of all this is that when researchers study only one culture/market, with its own regulated and constrained title releases, they limit themselves to studying playing preferences amongst games that have been preselected as being perceived to be appropriate. To better understand how computer games appeal to target users, we need to turn the research process around. Instead of focusing only on the games people are playing, we need to also study the players, as people, in their cultural grounding and social interactions, to try and understand how they interact and what they gain from playing computer games. By focusing on individuals, their motivations, and their relations with others, we can understand the dynamics of collective action and possibly discover "those

⁸ Shyh-Chii Tzeng, "Optimizing Challenges and Skills in the Design of an Educational Computer Game and Exploring Adolescents' Gaming Beliefs" (paper presented at Association for Educational Communications and Technology, Atlanta, Georgia, November 2001).

⁹ Jim TerKeurst, *Games are Like Fruit: Japanese Best practice in Digital Game Development* (Dundee: University of Abertay Press, 2002).

¹⁰ Gary Alan Fine, *Shared Fantasy: Role-Playing Games as Social Worlds* (Chicago: The University of Chicago Press, 1983).

cultural elements that are not necessary components of the games played, but are constructed by the members of the subsociety.”¹¹

According to Maslow’s Motivation Theory, a person’s needs are organised into a hierarchy of relative basic needs that must be fulfilled before the individual can grow as a person to the stage where they can be self-fulfilled. Maslow recognised that the hierarchy is not rigid, and can in fact undergo reversal, for example, with a person’s need for self-esteem being stronger than their need for love.¹² Maslow’s theory helps to understand why different people choose and like certain types of games, but only helps understand how games are played across different cultures when comparative evidence of the existing balance of motivations can be obtained and the similarities, contrasts and contradictions considered.

The authors propose that a relationship exists between dominant needs and interpersonal motivations. Support for this assertion is drawn from work in progress that helps explain computer game preferences and cultural variation in computer game playing. One conclusion that becomes evident when considering motivation and computer games in this way, is the central role that user centred design and testing can play during the game development process; especially when aiming to design games that will successfully cross cultural boundaries.

A Model Explaining Game Playing Preferences

The model illustrated on the following page was developed to integrate all the motivations ascribed as to why people choose to play computer games (see Figure 1). Drawing from existing theories of motivation, and recognising personal and social motivations to play games, it also considers motivating needs arising from cultural, social and environmental demands. The model emphasises usability testing as an invaluable tool to determine how changes in age, experience and environment may alter motivations and game playing preferences. The model can also be used for explaining and optimising motivation and ensuring that a game’s design meets the needs of the target players.

Users, and usability testing form the foundation for the model, as observing interactions and game play between players is central for enabling a researcher to understand the players’ preferred balance of features of intrinsic motivation in the game. Combining observations of game play between multiple players, with the preferred balance of features of intrinsic motivation, can indicate the dominant interpersonal motivation. It is proposed that the preferred balance and dominance of these intrinsic and interpersonal motivations will relate to the most salient

¹¹ Fine, *Shared Fantasy*, 28

¹² Abraham Maslow, *Motivation and Personality*, 3d ed., (New York: Harper and Row, 1970).

need of the players. However, a causal relationship between needs and motivations is not inferred, but rather that some motivations interact more strongly with some needs.

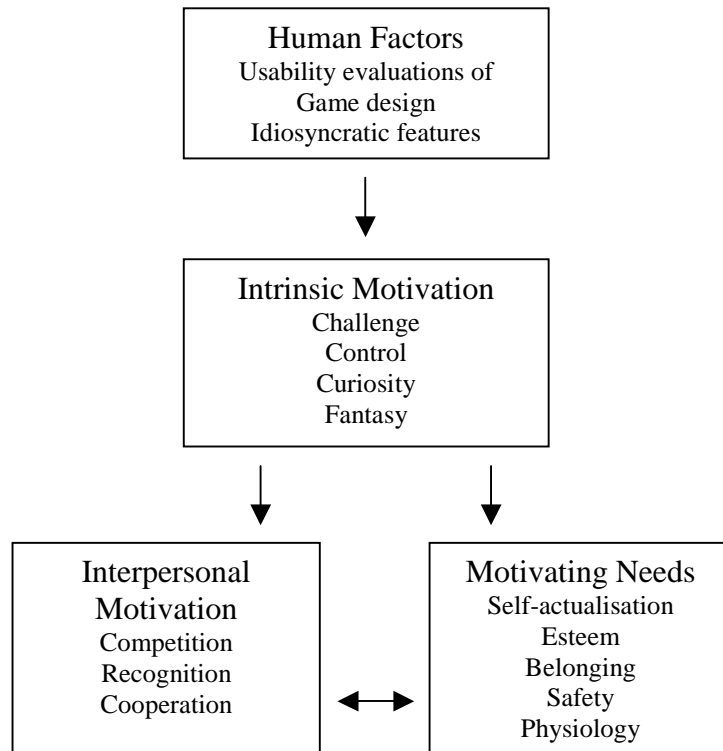


Figure 1: Human Factors in Relation to Gaming Motivations

The model can be used to assist human factors researchers recognise the interaction between people's motivations to play games and the needs that players must fulfil. By introducing human factors and usability testing into the game development process, the game content and idiosyncratic features can be modified to manipulate the balance of challenge, curiosity and control for optimal appeal to the target users. Usability testing will also help identify if target users prefer intrinsic or extrinsic fantasy in the games they choose to play. Knowing this information could potentially be an invaluable resource for game developers and publishers, and could provide a way for academics and researchers to consider what the main motivations for game playing are across cultures, and how these motivations relate to peoples needs and their identity within subgroups.

The Model in Practise

It has been inferred by some researchers that gaming is a social, and not a serious achievement oriented activity, with frequent game players being more extravert and less achievement-oriented than occasional game players.¹³ We will now build from this suggestion using it to explore variation in gaming across ages and cultures.

1. Interaction of Belonging Needs and Motivations

A player wishing to fulfil the need to belong may be motivated to play computer games that have a stronger sense of cooperation rather than competition. In this case recognition would be being identified as part of a team. Usability evaluations would be central for designing a game with the right balance of intrinsic motivations to meet the belonging need of the players, enabling them to cooperate within the game and identify as part of a team or group.

Comparing Japanese and British teenagers aged 14-15 years, we found that Japanese teenagers were 300% more likely to play in very social arcade environments. Observations made in Japanese arcades identified large groups of teenagers socialising together. Parents were seen with their small child interacting with other parents and providing young children with an opportunity to meet and play games together. Some arcade games were of appropriate height for small children to use, other games provided multi player opportunities for adults and children, such as sitting in a canoe and steering it to play the game. Time in arcades appeared to be spent meeting, socialising and sharing gaming rather than playing alone or competing against one other person.

It can be argued that the social aspects of gaming were so important to Japanese players that it constrained genre preferences and game selection. For example, experimental data from British players supports their enjoying a wide variety of games, while in Japan only car racing, role-playing and fighting games were reported to be played by at least 20% of the participants.

On the other hand, by the time Japanese students reach university, their belonging needs are being met by other activities. Data from Japanese undergraduates indicated that gaming is not a major activity in their life, with 80% of students playing computer games once a month, or less. In these experiments, undergraduate students preferred to play individually against the game AI while the others shared in the experience by vocalising support and empathy for the player. Playing this way, each player received statistics about their game performance and these statistics

¹³ Robert F. McClure and F. Gary Mears, "Video Game Playing and Psychopathy," *Psychological Reports* 59 (1986): 59-62.

were discussed and ranked. Thus there was competition, and an overall winner, but it was indirect competition between the players, as each person's experience with the game AI was different.

Findings suggest that in Japan gaming is more of a social activity than an achievement-oriented activity. Games are played in a shared and cooperative way, to be recognised as a member of a group or sub-group with its own distinct idioculture, or as part of a larger community, or to fulfil a need to belong.¹⁴ In Japan competitive gameplay is commonly played against the game AI, ensuring that competition between people is less confrontational.

2. Interaction of Esteem Needs and Motivations

A player who wants to fulfil the need for esteem may be motivated to play computer games that favour competition over cooperation. Here, recognition would be as a skilled opponent and ultimately as a winner. Usability evaluations in this scenario would find the right balance of intrinsic motivations to meet the esteem needs of the players, enabling them to be recognised as strong, skilled competitors.

Findings from interviews and questionnaires indicate that UK teenagers at secondary school prefer to play with another person, rather than against the game AI. Data showed that UK teenagers were 50% more likely than Japanese teenagers to play at a friend's house. UK participants also reported playing many types of game, but new games were practised at home, with the learned skills of mastered games being demonstrated to peers through the process of playing a competitive game. Therefore, in the UK competitive game playing mainly takes place in a home with friends, with few players going to arcades. With dominant esteem needs, UK teens played a wide variety of genres with 90% of Participants playing at least once a week. In the UK game playing is seen to endure with age, as esteem needs remain strong. More than half of the undergraduate Participants played games at least a couple of times a week. They reported enjoying playing alone to get used to a game and practise moves, developing skills, before playing with another person.

Findings suggest that in the UK, while gaming is a social activity, it is achievement oriented. Competitive games that allow for the demonstration of skill and mastery are preferred. Games are generally used to display achievement and raise esteem.

¹⁴ Fine defines idioculture as "a system of knowledge, beliefs, behaviors, and customs peculiar to an interacting group to which members refer and employ as the basis of further interaction" in: Fine, *Shared Fantasy*, 136.

4. Discussion of Implications of Model: The Value of Usability Testing for Understanding Gaming Preferences Across Cultures

The model suggests that the balance of interpersonal motivations can be grounded within a social and cultural context, and usability evaluations are critical for establishing the right weighting of features of intrinsic motivation, within the game design, to meet the needs and social motivations of the player.

Usability testing of console games that were in development provided insight into players' attitudes towards what makes them enjoy a game, and why they want to continue playing it. Prototypes that were used cannot be named, but aspects of them can be described.

When testing a prototype cartoon game with 8 to 12 year olds, initially some children selected a small character that they thought looked cute and would be fast. However, after using that character once, and losing to their opponent, the children asked to change character as it was perceived to be slow and weak. Typically the children would then choose to play with the character that had beaten them in the previous game – even when the game designers had made both characters have identical strengths and speed. Observing pairs of opponents, where one player was consistently winning, revealed that the losing player characteristically didn't think the game was fun and wouldn't want to play it again. By allowing each opponent to play at a different and better-matched difficulty level, both players reported that they were having fun. The weaker opponent was able to compete for longer, and have some fun fighting, allowing the stronger player time to demonstrate their skill and gaming moves before declaring victory.

These findings have been replicated in subsequent usability tests. Undergraduates played a prototype multi-player car racing game in groups of eight. The adults were able to articulate that beating a much weaker opponent is not satisfactory because of the lack of challenge. Players wanted to demonstrate their skill and expertise by winning a "fair competition."

Children and adults in the UK tend to prefer playing games that they excel at and frequently win. However, it is important to evaluate the initial level of challenge present in the game and its optimal increments. "Unfair competition" can frustrate both opponents. Games help children recognise their skills, abilities and the enjoyment of being good at something. Being good at a game can provide children with an almost cult status amongst peers as they demonstrate their skills to their friends and are revered for them. British adults do report enjoying the social aspect of playing games, but this also relates to having conversations and discussions about the game, demonstrating one's knowledge of the skills involved with completing levels.

Findings may also be representative of cultural variations in infrastructure. The following example shows how observations and reports of game playing might not reflect a usual pattern of behaviour, and illustrates how important it is in Japan to meet the demands of the society.

Japanese high school pupils reported that they were playing games less often than they'd like to as exams were approaching. Some teenagers had even stopped playing games altogether. The education system in Japan, and Japanese society, promotes academic excellence and it is important to do well at school and go to a good university. Teenagers who were interviewed attended evening classes during the week and cram school on Saturdays. With little free time, and probably no sibling to play with at home, it is arguable that teenagers choose to play games that do not put them under more pressure to compete to beat their friends and rather, enable them to share in a group identity with their peers. Game material also readily crosses media in Japan, so even when they can't play games they have access to the material through television, comics and cards. As game playing becomes part of a larger group identity, or community, a lack of space and privacy at home will increase the popularity of playing games at an arcade. This type of game playing declines once at university because it is no longer useful. For Japanese adults, games may be played occasionally for fun, but they have largely been replaced by adult activities that fulfil the need to belong to a group. They are not used to fulfil esteem needs as these needs are met by being associated with a good university, and ultimately a company.

In contrast, UK teenagers have more free time to socialise and join clubs, are more likely to have siblings and their own private space in which to entertain others, so they have a sense of community or belonging. In addition, UK teenagers may have less pressure to succeed at school, as it is less of a social norm, or demand, to excel academically. This may explain why UK teenagers play games alone to perfect their skills, and then use games competitively to demonstrate skill and mastery in a way that is acceptable to, and revered by, their peers, raising their self-esteem.

Additional findings have specific implications for bridging some of the common cultural gaps experienced by the games industry. Comments raised while evaluating the car racing game emphasised the importance of having culturally meaningful content in games. Players reported finding it difficult to engage with the game because level names were given in a language that they were not familiar with. Similarly, they wanted to see environments and scenery that they recognised, be able to choose and drive their dream cars, few of which were present in the game. Music and soundtracks were other areas of content that needed to be culturally grounded and appropriate. Familiarity with language and game content at the most basic level is a crucial consideration when designing a game, perhaps even the most important consideration. These findings suggest the centrality of incorporating socially and culturally relevant

material in to game design, and highlight the constrained nature of the player's relationship to the game.

Conclusion and Future Directions

This early research suggests that games are used differently to support personal and social needs and motivations. Developers must consider these issues when designing games for differing groups. Obviously any sort of research making these claims needs considerable development. For instance, the role of fantasy in games and whether preference for intrinsic or extrinsic fantasy varies across cultures is still uncharted research territory. As suggested by Fine, future research could also extend beyond this, seeing fantasy as constrained by the social expectations of players and of their social world.¹⁵ Focusing on the players' definition of the gaming situation and how they orient themselves to the game could provide insight as to how game playing captivates the player and promotes identification within the game. Additionally, a focused study of player's self reports of the goals that gaming provides will highlight variation in preferences for a fixed goal in a game, whereby the game has a clear culmination; or events (smaller goals), that emerge within a game that has no clearly defined endpoint.

The model suggests a relationship between belonging needs, or esteem needs, and interpersonal motivations, but the relationship between self-actualisation and motivations to play computer games still needs explication.

By furthering research, studying goals and player fantasy within games and targeting those who are motivated to fulfil growth needs, the games market could innovate, providing material that crosses cultures and allows gamers to fulfil their needs at every stage of their development.

¹⁵ Fine, *Shared Fantasy*.

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