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Gender dynamics and the social and spatial organization of computer gaming

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The increasing popularity of computer gaming and its associated technologies are evidence of the increasing convergence of new technology and leisure practice. The size and popularity of the games industry stands out in contrast to the relative lack of understanding of computer gaming as a serious leisure activity. Previous research on computer gaming has tended to focus on the negative aspects of gaming such as aggression, addiction, and social isolation, rather than viewing it as an activity which forms an important part of many peoples' leisure lifestyles. This paper examines the relationship between gender and the social and spatial organization of computer gaming. The concept of leisure constraints and resistance are utilised to examine the extent to which technologically-mediated leisure activities, such as computer gaming, are part of wider changes in female access to private and public leisure spaces. Computer gaming is still perceived as a highly gendered activity which has the potential to reinforce traditional conceptualizations of masculinity, femininity and associated leisure activities. However, the popularity of domestic and online gaming among females, and the development of female gaming clans, highlights that leisure activities and spaces are becoming less gendered, and can provide sites for resistance to societal notions of the gender appropriateness of leisure activities.

Introduction

Computer games[1] have been part of domestic leisure for over 25 years. The black and white block graphics of the tennis game Pong first made their way onto peoples' television sets in the mid-1970s, and since then the popularity of these games has created an industry worth over $6 billion in the USA alone last year (IDSA, 2001). Gaming technologies have evolved from a virtual square ball being bounced between two virtual rectangular bats, to near photorealistic images based on the real life movements and physics of humans and objects. However, the academic understanding of this leisure activity has, until recently, remained relatively limited. While there is a developing body of computer gaming literature, there is still a tendency to place games and gaming within discourses associated with the media effects debate. Within these discourses games are predominately understood as technological stimuli that produce measurable, and largely negative, effects in the people exposed to them. Investigations that attempt to place gaming within a broader social context are still very much in their infancy. This paper is an attempt to contribute to this emerging body of work by distilling previous and current research and repositioning gaming within its social and spatial context to investigate the gender dynamics of this leisure activity.

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The first section of this paper provides a context to contemporary computer gaming by offering a brief overview of the popularity of the activity and profitability of the industry. This demonstrates that the prevalence of computer gaming and the constitution of gaming communities (real, virtual and imagined) have often been radically underestimated in the academic literature. This section also provides a summary of the major concerns raised over the consequences of computer gaming, and the theoretical and methodological limitations of associated research. However, the major focus of the paper is the examination of the gendered aspects of computer gaming in relation to its social and spatial organisation. We argue that there is evidence of the reproduction of the gendering of specific skills, abilities and activities through computer gaming, consistent with the reinforcement and reproduction of societal gender roles. However, theoretical developments in feminist leisure theory and increased female participation in this activity suggest a more complex view of gender and gaming which incorporates possibilities for resistance to traditional conceptualisations of masculinity and femininity, as well as their reinforcement. The paper demonstrates that the gendering of computer gaming has often been oversimplified, ignoring the range of game genres and gaming spaces, and the complexity of the leisure activity in relation to broader societal gender dynamics.

Computer gaming as a contemporary leisure activity

Computer gaming has been transformed into a popular form of mass entertainment through developments in the multiplicity of the platforms and gaming genres available, changing social contexts of play, and the expanded functionality of gaming consoles. Computer games are now not only played on the family television but on portable hand-held gaming devices, mobile phones, personal computers and digital watches. Games include the highly publicized 'shoot-em-up' games such as *Doom*, *Quake* and *Unreal*, but also strategy games, increasingly sophisticated simulation games, role playing games, sports games and (increasingly more common outside Japan) dancing games.

The actual size of the computer gaming market and its influence on routine leisure is often underestimated. Industry figures suggest that almost three quarters of people under 30 have played a computer game, and that the leisure software industry is worth approximately $3.5 billion in the UK (Screen Digest/ELSPA, 2000). The size of this market can be usefully illustrated by comparing it to that for e-commerce. While business-to-consumer (B2C) e-commerce has recently been the focus of much media, academic and consultancy attention, the market is still worth considerably less than that for gaming, especially when considering that about 40% of all B2C e-commerce in the UK is purchase of computing hardware and software (McMeekin *et al.*, 1999).

These figures also call into question the prevalent stereotype of the solitary, adolescent, male gamer, and this is demonstrated by available figures on gamer demographics. For example, recent USA figures from the Interactive Digital Software Association (IDSA) suggest that 42% of computer gamers are over 35 (IDSA, 2001).

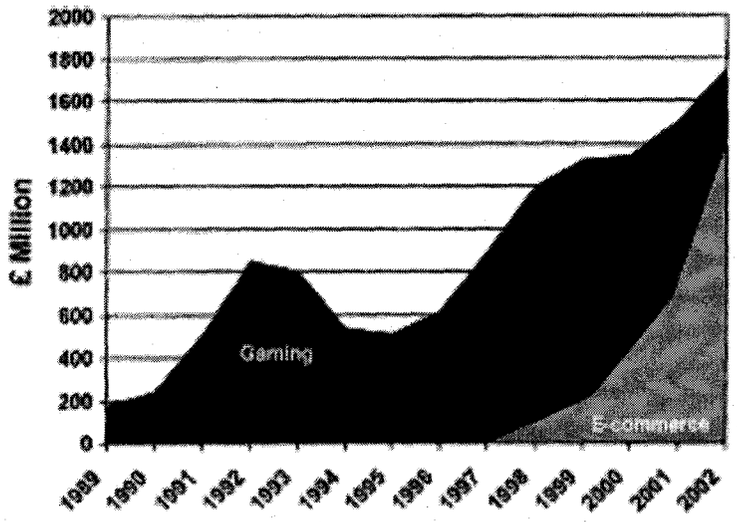

Fig. 1. UK gaming and e-commerce markets.

The UK has a significant games market in terms of the development and consumption of gaming hardware and software. According to the major gaming trade association, the European Leisure Software Publishers Association (ELSPA), in 1998 leisure software earned more in exports than other entertainment media. It totalled £503 million compared with £427 million for TV and £444 million for film. Similarly, although leisure software exports rose from £192 m in 1997 to £284 m in 1998, imports also grew and the balance of trade for 1998 stood at £219 m. This compares with the UK film industry that generated a surplus of £53 million while TV recorded a deficit of £248 million.

Given that the size of the market offers some rough indication of the range of the larity and profitability of computer gaming it is necessary to examine the frequency of, and motivations for, playing computer games and becoming part of the associated culture. In terms of the frequency of gaming, Griffiths and Hunt (1995) found that 31% of their sample played computer games everyday, 33% played for 1–2 hours per day, with 18% playing 2–3 hours. More recent figures suggest that 10% of children aged 2–18 play computer games for more than 1 hour a day (Rideout *et al.*, 1999). There has been relatively little research on the motivational aspects of computer gaming, but Griffiths and Hunt (1995) also reported that 31% began playing computer games with friends, with 75% citing fun as the main reason for playing. These figures are comparable with evidence from other studies (e.g., Funk, 1993; Griffths, 1997; Colwell *et al.*, 1995; Funk and Buchanan, 1996).

The consequences of gaming

The increasing visibility and participation in computer gaming has understandably led to a focus on the consequences of involvement with this new media. Since the increasing popularity of computer gaming during the 1980s and 1990s concerns

have been raised by academics, parents and governments about the potentially negative consequences of frequent gaming. Attempts have been made in the USA to link computer gaming with adolescent gun crimes such as the Columbine massacre, highlighting a trend towards the legal and commercial regulation of young peoples' leisure activities. These concerns, and the research which has attempted to address them, have focused on the following areas; the physical effects of the use of technology itself, the effects of lack of physical exercise, and addiction/compulsion in those spending significant amounts of leisure time playing computer games (Spence, 1993; Griffiths, 1997; Maeda *et al.*, 1990). Concerns have also been raised over the educational consequences of over reliance on computer gaming as a leisure activity, although the claim that children and young adults who spend a significant amount of their leisure time playing computer games may truant, neglect homework and generally be less interested in their education is largely unsubstantiated (Griffiths, 1997; Creasey and Myers, 1986).

The main focus of research, however, has been the hypothesized negative psychological consequences of computer gaming, and in particular the encouragement of violent and aggressive behaviour in real life. Research in this area generally takes one of two opposing theoretical perspectives; 'catharsis' (Fesbach and Singer, 1971) or 'social learning theory' (Bandura, 1986). Catharsis theory states that computer games can be used to release aggressive or violent impulses (Fesbach and Singer, 1971). Social learning theory takes the opposing view, that computer games lead to the modelling of the violent and aggressive behaviour represented in computer games real life (Bandura, 1986). This approach draws heavily on the methodological and theoretical basis of research on the effects of film and TV violence (e.g., Bandura, 1986).

The literature posits a number of consequences of viewing film and TV violence and playing computer games, particularly in children and adolescents (Dill and Dill, 1998). These include; the increased priming and elaboration of aggressive thought networks (Berkowitz, 1984, 1990; Anderson and Morrow, 1995); the weakening of inhibition against behaving aggressively and an increase in the acceptance of using violence to resolve conflict (Berkowitz and Geen. 1967; Dill and Dill, 1998); and modelling and reinforcement of aggressive behaviours (Bandura, 1973, 1986,

This research generally uses one of three methodological designs; observational studies (e.g., Irwin and Gross, 1995), self-report studies (e.g., Griffiths and Hunt, 1995), and experimental studies (e.g., Anderson and Morrow, 1995). Each of these approaches has subsequently been criticized (see Griffiths, 1997), and their focus on different methodologies and demographic groups make drawing substantive conclusions regarding causality difficult (see Griffiths, 1999; Bryce and Rutter, 2002b; Dill and Dill, 1998, for a greater discussion of the theoretical, methodological and statistical limitations of research). Such research has also been criticized theoretically for overestimating the ability of game content to influence the development of specific attitudes and behaviours in different demographic groups, and for conceptualising gamers as passive and vulnerable to representations of violence within games (Bryce and Rutter, 2002b).

The focus of previous research on the psychological consequences of gaming contrasts with the variety of social networks and technological innovations which

constitute computer gaming (Bryce and Rutter, 2002a). There is still a lack of research on computer gaming which goes beyond textual analysis and media effects research to draw upon contemporary media and cultural studies (e.g., Hermes, 1995; Miller and McHoul, 1998), audience research (Lull, 1990; Moores, 1993, 2000), and the sociology of consumption (e.g., Warde and Martens, 2000; Harvey *et al.*, 2001).

The incorporation of these theoretical perspectives allows the development of a more complex concept of the relationship between gender and the social and spatial organisation of computer gaming. Previous research on computer gaming has been criticised for failing to recognise the diversity of gaming experiences between different game genres, gamers and gaming spaces and has argued the need to investigate computer gaming from a broader perspective. Elsewhere (Bryce and Rutter, 2002b) we have suggested the need to follow the development of computer gaming as a leisure activity, and explore the manner in which it is experienced especially in many in relation to issues of gender, leisure access and participation.

Against such a backdrop the specific issues to be considered in the rest of this paper are:

- The gender-dynamics of computer gaming, and the extent to which there are constraints to female access and participation.
- The social and spatial aspects of computer gaming.
- The blurring of boundaries between traditionally conceptualised leisure spaces (e.g., domestic-commercial leisure spaces, public-private leisure spaces).

Computer gaming and leisure constraints

The leisure constraints literature has investigated the way in which various factors influence an individuals' ability to gain access to, and participate in, desired leisure activities. Leisure constraints have been defined as 'anything that inhibits peoples' ability to participate in leisure activities, to spend more time doing so, to take advantage of leisure services, or to achieve desired levels of satisfaction' (Jackson and Henderson, 1995, p. 32). As such issues including gender, race, income, class and health status have all been examined in the literature, although the major focus has been on gender (Shaw, 1994). Associated with this is the concept of resistance to leisure constraints, and Shaw (2001) provides a detailed examination of different theoretical perspectives on resistance to leisure constraints. Whilst these arguments cannot be examined in any great detail in this paper, the concept of resistance has potential relevance to the examination of the gendered nature of computer gaming.

Research suggests that females of all ages are disadvantaged in their leisure choices and activities by constraints such as time, income, class, marital and parental status, and the ways in which gender influences access to, and participation in, leisure spaces and activities (Henderson, 1990; Shaw, 1994). Research has investigated the ways in which males and females differ in their preference for various leisure activities, their access to leisure, and the control of female access to leisure by males (Deem, 1986; Bella, 1989; Henderson, 1990;

Shaw, 1994; Samuel, 1996). More recent research has examined barriers to female access to technology, ICT use, and associated technologically mediated leisure activities such as internet use and computer gaming (Schumacher and Morahan, 2001; Bannert and Arbinger, 1996). From this perspective it has been argued that these technologies are associated with a highly gendered and masculine culture (Cockburn, 1981; Bryce and Sullivan, 2001).

This is consistent with the claim that computer gaming is perceived to be a masculine activity and is more prevalent among males than females (Buchanan and Funk, 1996; Colwell *et al.*, 1995; Griffiths and Hunt, 1995). Although males appear to be more frequent gamers, even those studies from the early and mid 1990s suggest that a large percentage of females of a comparable age range report playing computer games for approximately 1–2 hours a week. For example, Funk (1993) found that 75% of females, compared with 90% of males played computer games in the home. Colwell and Payne (2000) provide evidence that 88% of those 12–14-year-old females surveyed played computer games on a regular basis. Given these figures it seems puzzling that the notion of gaming as a masculine leisure activity should persist so strongly.

In the next section of the paper, reasons for this persistence are examined in relation to two aspects of computer gaming; the gendered nature of game content and the spaces in which gaming occurs. This approach suggests that the gendered nature of computer gaming is more complex and pervasive than simple gender comparisons of the frequency of gaming suggest. The gendering of game content and spaces also requires consideration in the context of societal gender dynamics and their influence on the production and consumption of contemporary leisure activities.

Game content

The most frequently advanced argument concerning the gendered nature of computer gaming relates to the representation and consumption of game content. Textual analyses suggest that game content contains gendered, patriarchal and stereotypical representations of females, and a general lack of female game characters (Dietz, 1998; Greenfield, 1996, Kafai, 1996; Kinder, 1996). It has been claimed that included female game characters fulfil traditionally feminine roles, as the helpless damsel in distress awaiting rescue, or the 'prize' for completing game tasks (Gailey, 1993). Considering this alongside the dominance of 'masculine' game themes (e.g., war, competition, sports, acquisition, etc.), and high levels of game violence, computer game content has been claimed to be uninteresting or offensive to females (Dietz, 1998; Greenfield, 1996; Kafai, 1996; Kinder, 1996; Provenzo, 1991). As such the gendering of gaming has certain similarities with Wajcman's (1991) perspectives on female access to employment within the technology industries, as the incentives and encouragement to participate are futile if the culture to be accessed is one that is masculine, hostile or unattractive to females. In an environment which has such strong textual predispositions to masculine interests, then the gaming world becomes 'radically other', (Jenkins, 1992. p. 112) to females and there is little space or motivation for female participation.

The conclusions of such content based research are drawn from the analysis of a limited number of games from the early 1990s. This, combined with the growing diversification of game genres, suggests that whilst research findings from the early 1990s may have been representative of game content of that period, it is problematic to claim a similarly straightforward gendering of the content of contemporary games (Bryce and Rutter, 2002c). Systems for regulating sexualized and stereotypical representations of female game characters and depictions of violence towards women, as well as the industry focus on including more non-stereotypical female characters, has complicated claims regarding the gendered representations of game content (ELSPA Advertising Standards, 1997; Bryce and Rutter, 2002c).

However, there is a more fundamental issue to be addressed with content analytic approaches in that they fail to engage with the real and specific experience of consuming a game text, its social context and the way it is intertwined with other everyday practices. Theoretical perspectives within cultural and media studies have suggested ways to address this problem by highlighting the importance of examining the reception of media content in the context of everyday life and experiences. This makes the claim of a causal relationship between representations of females in game content and the nature of consumption of that text by female gamers problematic. Research examining the use and construction of meanings of media content has illustrated the productive consumption of texts as well as highlighting the gendered use of various texts (Abercrombie and Longhurst, 1998; Jenkins, 1992; Radway, 1987).[2] Such work has suggested ways in which females may construct alternative meanings of the themes and content of computer games, identify with masculine characters, or construct their own oppositional or self-contradictory reading of texts (Gailey, 1998; Yates and Littleton, 1999; Bryce and Rutter, 2002c). Yates and Littleton (1999) also highlight the need to examine the social construction of computer gaming in the context of everyday life, domestic structures and leisure practices. This provides further understanding of the relationship between the gender dynamics of computer gaming and societal gender dynamics, and is an important aspect of developing an understanding of how computer gamers perceive and experience gaming (Bryce and Rutter, 2002c).

Spatial organization of computer gaming

Given this, the complexity of the gendering of game content and its reception requires examination in context and *in situ* as the spaces in which games are played are crucial in understanding the complex ways in which computer gaming is gendered and female participation constrained. A focus on space rather than text allows a view of gaming which takes into account the networks of people involved, access to the site of gaming, and the social and power dynamics which surround and affect the experience of gaming. Further, this represents a move towards the study of the more transient aspects of computer gaming as public and private spaces become 'gaming spaces' for a period of time through either formal or informal action.

Computer gaming spaces are increasingly diverse in their temporal and spatial arrangements as the activity becomes more widespread, culturally significant and technologically mobile. Gaming occurs within established public spaces (e.g., arcades, bars and service stations), domestic spaces and online, virtual spaces[3]. Below the gender dynamics of these different gaming spaces are considered in terms of constraints to female access and participation, and possibilities for the reproduction or resistance to the gendering of leisure spaces and activities. It does this by briefly highlighting practices which exist outside the computer games and technologies themselves but are central to the experience of gaming.

Public gaming spaces

It has been suggested that the relationship between spaces and social roles is an important aspect of the development of gendered identities (Ahrentzen, 1992; Bryce and Sullivan, 2001). The gendered use of spaces (Goodman, 1997; Gunnarsson, 1997) has particular relevance to an examination of female access to leisure and the experience of computer gaming. Public leisure spaces have been claimed to be highly gendered and patriarchal (Hey, 1984; Wearing, 1998), and the association of these spaces with masculinity places constraints on female access to these spaces and concepts of 'appropriate' female behaviour within them.

Prior to the development of computer gaming, games such as chess, cards, and dominos have been played in public leisure spaces such as pubs and bars, and variations of darts, quoits and air rifle shooting have traditionally been part of the spectacular leisure and consumption of fairgrounds. Traditional games within these spaces have, over the last twenty years, been supplemented by pinball machines and more recently a wide range of arcade games from *Space Invaders* in 1978 and *PacMan* in 1980, to current offerings including quiz games, titles based on TV, film and sport licenses and variations on shoot-em-up and beat-em-up themes. During this same time, public gaming arcades have developed as a separate, male dominated leisure space (Griffiths, 1991), and the predominantly male computer gaming industry and user base has developed a claim on other spaces for gaming.

Elsewhere the authors have provided evidence of the domination of males in public competitive gaming from observations of the UK Console Championships (UKCC)[4] and England's I-Series LAN (Local Area Network) parties[5] (Bryce and Rutter, 2002c), and although specifics may change in international comparisons anecdotal evidence suggests that such gender disparities are common. In these gaming spaces, the few females present tend to fulfil acceptable feminine roles such as mothers and girlfriends providing support and encouragement for the male competitors. Female competitors were conspicuously absent (Bryce and Rutter, 2002c). By exploring such events, the gendered aspects of computer gaming can usefully be conceptualized in relation to differential access to private and public gaming and leisure spaces, and this may explain the apparent invisibility of female public gaming.

Female gamers frequently report that the competitive and masculine nature of public gaming spaces makes them unwelcoming or threatening. Being non-stop 24 hour events, LAN parties can be sites in which pornography is exhibited and

exchanged. Although this is something which has been recognized and challenged by the organizers of the I-Series and other LAN events, it remains an illustration of one way in which gender differentiation is established and maintained in these spaces. This, together with the perception that computer gaming is a male leisure activity, also reinforces stereotypical reactions towards female gamers from male competitors. This further reinforces psychological constraints or barriers to female participation in public gaming spaces. This creates a circular and reinforcing process whereby stereotypical representations of gaming and its associated spaces place and reinforce restrictions on female access and participation.

Domestic gaming spaces

Private and domestic spaces have been conceptualised as feminine through their relationship to domestic and family labour, and have historically been viewed as the primary site of female leisure (McRobbie, 1991). The encroachment of masculine leisure and consumption practices into the home raises new issues in exploring the gendering of activities within the domestic space and the manner in which these practices are negotiated.

Despite the invisibility of female gamers at public gaming events, there is evidence of the popularity of female computer gaming within domestic leisure spaces (e.g., Cowell and Payne, 2000; Griffiths and Hunt, 1995; Buchanan and Funk, 1996; Bryce and Rutter, 2002c). As domestic spaces have been traditionally conceived as the site of female leisure, it may be argued that the constraints on female participation and access to computer gaming in these spaces might be less rigid than in public gaming spaces, and that domestic space provides a less gendered gaming environment in which female access and participation is more easily negotiated. Indeed female computer gaming is most common in domestic spaces. However, the manner in which it is still controlled and marginalized routinely deprives female computer gaming of central status within the household and position it as part of the traditionally perceived feminine bedroom culture (McRobbie and Garber, 1976; McRobbie, 1991; Livingstone and Bovill, 2001).

Where computer gaming takes place within a household's living room or using the main family television set, this often utilizes technology controlled by male members of the household. This control is literal as well as symbolic: in both the UK and USA the way in which television and VCR access is controlled by males in the home has been explored. Research has shown how females avoid learning to set timers on video recorders so that is does not become another household job for which they must take responsibility (Gray, 1992). In addition home viewing decisions, control of the remote control and even positioning of the television in the household are generally things for which male members of the household take control (Morley, 1986; Bellamy and Walker, 1996).

Similarly, it has been demonstrated that although males dominate computers in public competitive gaming there is evidence that they also dominate them in domestic spaces. Schott and Horrell's (2000) ethnographic work has shown how in families male members of the household will take on the role of 'expert' in gaming situations undermining female skills and knowledge, as well as access to the games machines. This power relationship is also apparent even when they

belong to a female member of the household. Such evidence highlights the need to consider the social organisation of computer gaming and the fact that gender dynamics continue to operate in gaining access to gaming technologies within domestic spaces. Like public gaming access and participation, female gaming within domestic settings is embedded within broader social relations and in this case in the context of the family.

However, computer gaming is also part of the leisure activities of families and existing social networks, and is also a means of creating new networks of social relationships. Online gaming communities have created clan groups, social networks and friendships based around gaming knowledge, skills and competition (Bryce and Rutter, 2002b). The social aspects of computer gaming are often underestimated, despite the increasing sophistication of technological innovations in multiplayer and online gaming. This may encourage female domestic gaming and erode the stereotypical view of gaming as a solitary, male activity. The social and affiliative aspects of leisure are one of its important functions, and has been claimed to be a particularly important aspect of female leisure activity (Iso-Ahola, 1997; Grusec and Lytton, 1988).

Virtual gaming spaces

The growth of access to computers in the home and Internet connections, as well as the recent development of gaming consoles which have network capability, has increased participation in online gaming and virtual gaming communities. IDC (2000) have estimated that during December 2000, almost 24 million Americans (approx 28% of Internet users) visited game-orientated web sites (this compares with 2.4 million UK users), and they predict that 40 million US households will be playing games online by 2004. Similarly, the rapid rate of diffusion of Internet access is demonstrated by the 'Which? Annual Internet Survey 2001' which estimates that currently 36% (approx 16 million) of people in Britain have accessed the Internet in the last year (Which?, 2001).[6]

Gaming in these spaces offers a curious hybrid of simultaneous immersion in public and private leisure spaces (Bryce and Rutter, 2002c). The merging of gaming platforms and network technologies in online gaming offers the potential to extend social networks and allow public competitive gaming in domestic spaces. This has implications for the spatial organization of leisure, through the blurring of geographical space and game space. In these situations gaming is neither entirely domestic nor public as it occurs in virtual space (see Bryce and Rutter 2001, for a discussion and taxonomy of 'presence' in gaming). Competitive gaming may take place in virtual online spaces where gamers compete against opponents in the same virtual game space whilst they may, in reality, be located in geographically diverse locations. The competitive aspect of these spaces makes them similar to other competitive leisure spaces such as football fields, athletic tracks etc. (and the UKCC and LAN parties described above), although the technologically-mediated nature of online gaming, and the blurring of its temporal and spatial organisation contrast with more traditional leisure experiences.

For female gamers, the anonymity of virtual game spaces provides the opportunity to compete against male opponents free from the markers of

gender, and reduces stereotypical behaviour towards female gamers (Bryce and Rutter, 2002c). Participation in these spaces may consequently lead to greater female participation in public competitive game spaces by building confidence in gaming skills and abilities, enabling females to feel they can compete on an equal social and skill basis with male gamers (Bryce and Rutter, 2002c). However, anecdotal evidence suggests that some female gamers continue to experience sexist and offensive behaviour from male gamers in these spaces (Morris, 1998), and this is consistent with research indicating gendered behaviour in other online spaces (Herring, *et al.* 1996). However, the continuing participation of females in these spaces suggests the need to examine the extent to which such male behaviours act as a barrier to access and participation in online gaming spaces. The numbers of female gamers who play online suggest that this may, in some cases, act as a further challenge. As one female gamer, PMS-Aurora is quoted in (Morris, 1998);

> I've had tons of bad experiences online playing, but also a whole bunch of great ones . . . And the entire gaming environment has been changing a lot lately, it is much less acceptable now to harass women for playing than it used to be. Online gaming has brought me hundreds of new friends, both male and female who all show a love of fragging, slaying and taking over worlds.

Conclusions

Computer gaming is a popular activity which forms part of the contemporary leisure lifestyles of a significant number of children, young people and adults. It is increasingly part of existing social networks and involved in the creation of new social networks of gamers. We have argued that the importance of computer gaming is not to be found only in studies of technological innovation or analysis of gaming texts, but in the routine and negotiated practices that constitute and surround this leisure activity.

Gaming practices and spaces are undergoing rapid social and technical changes which have implications for the organization and experience of this activity. Whilst there is evidence that gender is, to a large extent, an important influence on access and participation in gaming spaces and practices, there is some evidence that gendered perceptions of gaming are changing. Online groups such as 'grrl gamers', female online gaming clans (teams) and web communities have developed, illustrating that for some females computer gaming is a serious leisure activity, despite the attitudes and behaviour of male gamers. In real world environments it is apparent that while female gamers are still very much in the minority and marginalised in their participation, there is some evidence of their attendance at gaming events such as the I-Series.

This is consistent with the increased participation of females in other leisure activities which have been previously perceived to be 'masculine' (e.g., football, rugby and extreme sports). A significant number of females are seeking parity with male counterparts in a variety of traditionally masculine leisure activities, and are enacting oppositional stances to categorisations of gender appropriateness, access to leisure spaces and consumption. Although not all female gaming can be viewed as a conscious act of political resistance, female gaming can be seen

within the context of a growing challenge to the constraints placed on female leisure in contemporary society (Shaw, 2001; Wearing, 1998). While these specific political questions are outside the remit of this paper, we argue more broadly that examining gaming can add to the understanding of the dynamics of contemporary leisure activities and experiences, and theoretical perspectives in the leisure literature (e.g., gender and leisure constraint, distinctions between private and public leisure spaces etc.).

As with traditional sport, computer gaming may represent an activity in which resistance and renegotiation of gender stereotypes can occur. The spatial organization of gaming and the blurring of boundaries between private and public leisure spaces are implicated in the gendering and experience of gaming. It is also important to recognize the social nature of gaming, which has been facilitated by greater technological sophistication (e.g., multiplayer and online gaming). It is also important to consider the influence of game genre on gendered experiences of gaming. It is likely that constraints on access and participation will differ between online first person shooter (FPS) games (e.g., *Quake 3*) and online massively multiplayer games (e.g., *Everquest*). The themes examined in this paper highlight the continuing influence of technological innovation on the experience of gaming in relation to the social function, spatial organization, and gender dynamics of computer gaming. These issues have implications for the experience and consequences of computer gaming as a popular, technologically-mediated leisure activity.

Notes

1. In this paper we use the term 'computer gaming' to cover gaming whether played upon a console, a digital TV, LCD display, a PC, Macintosh or self-contained devices such as a Gameboy.
2. As any involvement with computer games is active in that they have to be played, there is an apparent difficulty in separating text and experience. It might be argued that the experience of gaming (in terms of the argument of Jenkins, 1992) is female in that gameplay – one's own personal and subjective experience of the game – is of primary importance. Although we cannot address this issue within this paper it is worth noting the frequency of discussions around technical, strategic and industrial issues that are had within gaming communities.
3. Although not specifically addressed here gaming spaces can also be mobile as hand held devices whether they are dedicated games devices such as Nintendo's Gameboy and Gameboy Advance or multifunctional devices such as mobile phones electronic diaries or PDAs become increasingly common.
4. The UKCC was a national gaming competition held in association with the Daily Mirror, supported by *Official Dreamcast Magazine*, *Official UK Playstation Magazine*, *N64 Magazine* and organised by The London on gaming company, The Playing Fields. It was the UK's first national console event to encompass all three of the current major consoles; with 64 gamers competing on each console Playstation, Nintendo 64 and Dreamcast.

5. LAN parties are multi-day events at which gamers congregate to play a wide range of multiplayer games over a network usually built especially for the event. Games may be informally organised as tournament play head to head or in already established team (or clans) or in a more formal league or games style in which there are prizes for winners.
6. This intention here is to demonstrate size and growth of Internet use and online gaming, the authors have no intention of minimising the importance of the economic class, ethnicity, gender, age and other factors will still have real influence on access and use to new technologies and the service they offer.

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