Taylor & Francis
Taylor & Francis Group

Behaviour & Information Technology

ISSN: 0144-929X (Print) 1362-3001 (Online) Journal homepage: http://www.tandfonline.com/loi/tbit20

Interdisciplinary criticism: Analysing the experience of riot! a location-sensitive digital narrative

M. Blythe , J. Reid , P. Wright & E. Geelhoed

To cite this article: M. Blythe , J. Reid , P. Wright & E. Geelhoed (2006) Interdisciplinary criticism: Analysing the experience of riot! a location-sensitive digital narrative, Behaviour & Information Technology, 25:2, 127-139, DOI: 10.1080/01449290500331131

To link to this article: http://dx.doi.org/10.1080/01449290500331131

Published online: 04 Mar 2011.

Submit your article to this journal

Article views: 171

View related articles

Citing articles: 7 View citing articles

Full Terms & Conditions of access and use can be found at
http://www.tandfonline.com/action/journalInformation?journalCode=tbit20

Download by: [NATIONAL TAIWAN UNIVERSITY OF SCIENCE AND TECHNOLOGY] **Date:** 07 December 2016, At: 22:14

Behaviour & Information Technology, Vol. 25, No. 2, March-April 2006, 127–139

Taylor & Francis
Taylor & Francis Group

Interdisciplinary criticism: analysing the experience of *riot!* a location-sensitive digital narrative

M. BLYTHE*†, J. REID‡, P. WRIGHT† and E. GEELHOED‡

†University of York, Department of Computer Science, York, England
‡Hewlett Packard Labs, Bristol, England

This paper reports the findings from quantitative and qualitative studies of Riot! – a location-sensitive interactive play for voices. The paper begins by introducing Riot!; it then explores the growing literature on theories of experience and goes on to report the findings from three empirical studies of the event: a questionnaire-based survey of 563 participants; 30 semi-structured interviews with groups and individuals; and in-depth ethnographic case studies of four participants. It was clear from the survey that most people had enjoyed Riot! However, the interview data demonstrated that they had also experienced frustration even where overall enjoyment ratings were high. This is explored in relation to perception of the system and goal definition. The ethnographic case studies identify barriers to engagement in terms of individual identity and orientation. A critical theory-based analysis of Riot! further explicates the user experience in terms of literary devices such as characterisation and the development of narrative expectation.

The studies identify a number of usability problems such as inconsistency of interaction and non-reversibility that caused frustration. The critical analysis also identifies problems with the script such as the presentation of linear narrative in a non-linear medium. It accounts for widely differing accounts of the experience with reference to the participant's individual orientations or habitus. The paper demonstrates the value of an inter-disciplinary approach for exploring the commonality and particularity of user experience.

1. Introduction: Riot!

Location-aware technologies make possible new interactive experiences that blur the lines between traditional media (e.g Braun 2003, Flintham *et al*. 2003, Benford *et al*. 2004). The evaluation of such experiences must go beyond traditional concerns with usability to include enjoyment and engagement. This paper takes a multi-methodological and interdisciplinary approach to the evaluation of Riot! This is part on an ongoing project to develop theory and methods for experience-centred approaches to Human–Computer Interaction (HCI).

Riot! was developed by Hewlett Packard Labs, Mobile Bristol and two local writers – Ralph Hoyte and Liz Crow. It was described as an interactive play for voices and set in Queen's Square, a large Georgian public square in Bristol, England. It utilised hand-held computing technology and the Global Positioning System (GPS) to deliver audio files triggered in relation to public space. It was made available to the general public in a three-week long research trial and over 700 people tried out the experience. Participants were issued with a small backpack containing an iPAQ personal digital assistant (PDA), GPS receiver and headphones. They were told to explore the pedestrian area of the square and that their movement would trigger sound files. They could take as much time as they wanted to explore the square and then return to the tent to give back their equipment and fill in a short questionnaire. They could also pick up a one-page handout that gave them a brief overview of the historical context of the riot and the way the location system works with a map indicating some of the key buildings of the time. This is shown in figure 1.

*Corresponding author. Email: M.blythe@psych.york.ac.uk

Behaviour & Information Technology
ISSN 0144-929X print/ISSN 1362-3001 online © 2006 Taylor & Francis
http://www.tandf.co.uk/journals
DOI: 10.1080/01449290500331131

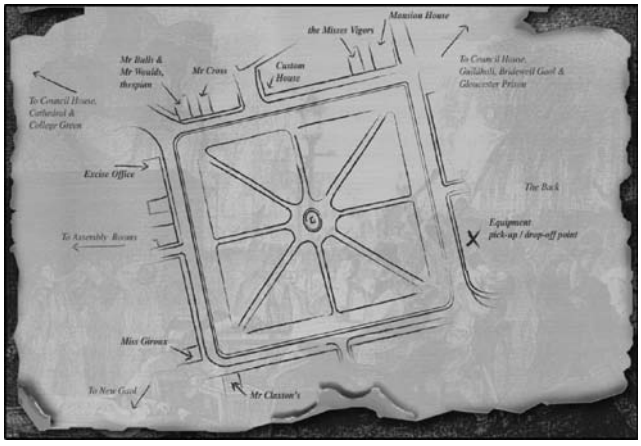

Figure 1. The map on the handout.

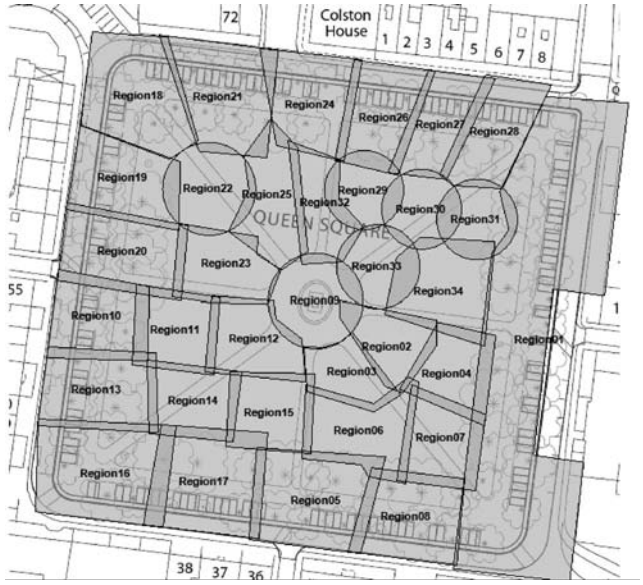

Figure 2. The layout of the regions in the square.

The sound files were short vignettes, which made up an interactive play. The play was based on a real riot that had taken place in Queen's Square one hundred and seventy three years earlier. In 1831 a bill was put before the British parliament, which aimed to give more people the vote. When it was rejected there were riots in Nottingham, Derby and Bristol. More than five hundred people were killed in Bristol when troops charged the crowd. The Reform Act of 1832 became law the following year; the play then was set against an ongoing struggle for universal suffrage.

The sound files presented scenes from the riot, for example the rioters' voices as they plundered the surrounding buildings, the merchants as they fled for their lives and the Dragoon Guards as they sabre-charged through the crowds cutting the rioters down. The soundscape was created using a framework for the rapid authoring of mediascapes (Hull *et al*. 2004).

Thirty-four regions covered the 150 m wide square; associated with each region were up to three different sound files (see figure 2). Most of the regions would randomly play one of the associated sound files so that if you returned to the region after hearing the whole of the first file, you would hear a completely different file. Others had very complex logic; for example there is one scene where rioters play a piano and another scene on the opposite side of the square where you hear them dragging the piano out of a house. The writers wanted to ensure that if you had already heard the piano-playing scene then you would not hear the piano-dragging scene because it would not make sense.

This paper is not an account of the design process; it is an evaluation of the Riot! user experience. The evaluation of an experience like Riot! presents a number of challenges for HCI studies. Although traditional aspects of usability are very important to the success of an interactive play, equally important are the artistic effects created, and this is less familiar ground for HCI. This paper then attempts to draw on other disciplines with long histories of scholarship on this kind of critical evaluation. The paper begins with an overview of recent theoretical accounts of experience. It then reports findings from three studies of the user experience of Riot! drawing on survey data, semi-structured interviews and ethnographic case studies. Insights gained from these studies are further illuminated by a critical theory based analysis of the Riot! text. The approach then is multi-methodological and interdisciplinary.

2. Theories of experience

This section reviews literature from a range of disciplines – including HCI – that are relevant to the analysis of the Riot! experience. There is a central problem for all theories of experience described and it is this: experience cannot be guaranteed. What engages and enchants one person might bore and irritate another. Clearly there is a cultural commonality that allows for the phenomenon of artefacts that have very general appeal across large demographic groups. However, it is equally evident that the most popular artefacts may be disliked as fervently as they are loved. These problems are familiar in domains like literary theory, film and media studies. In critical theory the word 'text' is understood very broadly and can refer to music, image or other media. Marc Davis (2003) draws on reception theory to argue that there are two poles to a text. One is artistic – this is created by the artist and can be thought of as singular; the other is aesthetic – this is the reader's response to the artefact and this is plural. We bring

as much to the text as the text brings to us in order to form a gestalt – something greater than the sum of its parts (ibid). It is important then to distinguish between the artistic pole of the artefact (what the author/designer puts in place) and the aesthetic pole (how it is received). The artistic pole can be designed; the aesthetic cannot. In this sense, experiences can be designed, but they cannot be standardised. This paper is primarily concerned with how Riot! was received although the writer's intentions are referenced as context.

2.1 *HCI and user experience*

Over the last five years there have been several attempts to provide theories and frameworks for user experience in HCI. A number of these have taken a cognitive science approach (Jordan 2000, Hassenzhal 2003, Hull and Reid 2003, Norman 2004) while a number of others have adopted a more pragmatist or phenomenological approach (Forlizzi and Ford 2000; Davis 2003, Forlizzi and Battarbee 2004; McCarthy and Wright 2004). The diversity of these approaches is perhaps not surprising given the complexity and richness of experience, but there are a number of common issues and themes that run through these differing accounts. An experiential account of interaction can be distinguished by a concern for analysing sensations and emotions as well as perceptions and behaviours. McCarthy and Wright (2004) have described this as putting 'felt life' at the centre of HCI.

To an extent the aim of all of the work in HCI is to inform design. Although they are provisional the objective is to create a body of knowledge that will tell designers: how to make pleasurable products (Jordan 2000), how to do experience design (Shedroff 2001), and how to make products that make us smile (Norman 2004). Although these kinds of concerns are relatively new to HCI, other disciplines have long histories of engaging with such problems. There are then a number of literatures that are of relevance to an interactive play like Riot! These include: performance theory, museum studies and critical theory.

2.2 *Performance theory*

The canon of literature on performance theory, dramatism and dramaturgy spans decades and continents; its principal twentieth century proponents including Kenneth Burke (1969), Erving Goffman (1971), Victor Turner (1974) and Richard Schechner (1988). Burke's Dramatism considers the elements of the 'pentad' (act, agent, scene, agency and purpose) to be central to the understanding of any performance (Burke 1969). Victor Turner (1974) also constructed a subset of event categories for social drama: breech, crisis, redressive action and reintegration. Schechner argued that the terms 'breech' and 'reintegration' presuppose a consensus, but that consensus may be at best cosmetic and advocates the Japanese aesthetic of 'jo-ha-kyu' where 'jo' is a long festering breech, 'ha' a sudden crisis and 'kyu' a rapid climax (Schechner 1988: p. 191). Formulations of the elements of drama have been useful not only in the analysis of theatrical and ritual performances, but also in understanding social conflict and performance in everyday life (Goffman 1971). Peter Brook famously noted that all that is needed for an act of theatre is a man walking across an empty stage while someone else is watching him (Brook 1984). However, performance theory is concerned in both the context of theatre and everyday life with co-present performance. Riot! was a recording, not a live performance and therefore performance theory alone could not provide a sufficient theoretical background for the analysis of user experience in this context.

2.3 *Museum studies*

Museums and art galleries are increasingly using PDAs to augment their exhibits; the Tate Modern's iView for example, is a handheld device that provides users with a location-sensitive media tour that they can take at their own pace (www.nykris.com). Interactive technologies have also been developed, which allow people physically visiting a museum to share their experience with an online visitor (Brown *et al*. 2003). Recently there have also been trials of systems that allow tourists to share a city visit through tablet computers that share photographs, websites, commentaries and location (Brown *et al*. 2005). There is a very large body of research and literature on museum studies. Much of the research over the last 15 years has been focused on learning and most of it has been carried out in the United States (Hooper-Greenhill and Moussouri 2002). Museum studies draw heavily on theories of education such as Piaget's active learning and Bruner's discovery learning. However, there has also been work based on theories of play (ibid). As in HCI the work of Csikszentmihalyi and the concept of 'flow' have been influential. Csikszentmihalyi's study of 'flow' is one of the few psychological accounts of enjoyment; flow is characterised by a decrease in self-consciousness and time distortion in that an hour may seem like a minute. The conditions for flow have been identified as: a close match between skill and challenge, clear goals and constant feedback on performance (Csikszentmihalyi 1975). Flow is an intense experience and cannot account for less absorbing forms of enjoyment such as distraction (Blythe and Hassenzahl 2003). However, there have been attempts in museum studies to take a more holistic approach to experience. Falk and Dierking (1992) developed an 'Interactive Experience Model', which accounts for the personal and social context visitors bring to museums as well as the physical context of the museum itself. For Falk

and Dierking experience is an interaction between the personal, social and physical context:

> 'whatever the visitor does attend to is filtered through the personal context, mediated by the social context, and embedded within the physical context'
> (Falk and Dierking 1992: p.4 cited by Hooper-Greenhill and Moussouri 2002, p.14).

There are clear points of comparison with this conception of interactive experience and those that are emerging in the phenomenological accounts of experience in HCI. There are also parallels to the recent HCI frameworks in the work of Doering and Pekarik, cited in Hooper-Greenhill and Moussouri 2002 (1997) who use the 'entrance narrative' model, which is based on the way the visitors see the world, the knowledge they bring to the subject of the exhibition and also their personal experience (Hooper-Greenhill and Moussouri 2002: p.24). While there are clear points of convergence between the HCI frameworks on user experience and museum studies accounts of interactive experience, the emphasis on learning in the museum studies literature suggests that these approaches alone would not be adequate to evaluate an interactive play. Although Riot! was a historical play it was not didactic.

2.4 *Literary and critical theory*

Brenda Laurel's seminal work *Computers as Theatre* (1993) offered a range of insights through its pursuit of an analogy between HCI and theatrical drama. Much of the theory informing this work was based on an adaptation of Aristotle's poetics. She defends the application of such an ancient text of critical theory by pointing out that the poetics are not rules, but an analysis of dramatic forms, which have yet to be rivalled or replaced. However, the approach can be broadened to include other forms of analysis. As an analysis of the forms of Ancient Greek drama, Aristotle's poetics can be thought of as a precursor to the anthropological structuralism of Levi Strauss and the structuralist and post-structuralist literary criticism of the 1960s and 1970s. Literary criticism or critical theory as a discipline is radically eclectic and many university courses and departments are widening their scope to include media in general. Theoretical approaches to 'texts' as diverse as the poems of John Donne and 'readings' of characters in soap operas draw on a range of methods and approaches in the history of literary theory. This paper then draws on techniques such as close reading and theoretical accounts of narrative in order to further explore the experience of Riot!

2.5 *An interdisciplinary analysis*

The above brief review helps us focus on a number of key issues that we wished to address in the data collection and analysis of people's experiences with Riot! and suggests an interdisciplinary approach that explores the experience from a number of intersecting perspectives.

HCI researchers with an interest in experience acknowledge the continuing importance of usability. It is not possible to have an engaging experience with a machine that doesn't work. There is then a continuing concern in this analysis with aspects of usability; however, the approach is of necessity broader than that even at a purely technological level. There is a concern not only with how well the technology worked and how easily it could be used to access the content, but also with how successful users were in making sense of that content as a form of artistic expression.

Theories of experience in a number of domains tell us that an individual brings as much to an experience as the designer puts into it. This suggests the need to understand not only the broad social demographics of the users, but also to consider individual dispositions in order to account for different experiences. In the empirical studies that follow then, we have adopted a multi-method approach in order to generate an interdisciplinary criticism of Riot!

3. Method

The methodological approach was to begin with a broad impression of the experience from a large number of participants. A deeper focus was taken with semi-structured interviews. Ethnographic observations were then employed to gather as much detail as possible with a very small number of participants. The visitor's form recorded participants' age range, gender and how they had heard of Riot! When they returned their equipment they were asked to rate six questions in a graphic rating scale format (Stone *et al.* 1974). Thirty semi-structured interviews were conducted with groups and individuals. Questions were loosely structured to elicit views on: how in control they felt; to reflect on how being in the actual place affected the experience; and to discuss any social interaction. Ethnographic observations and interviews were conducted with four people to capture data before, during and after the experience.

4. The questionnaire survey

Of the 563 visitors who filled out a questionnaire, 45.4 per cent were females and 54.6 per cent males. Most people were in the 18 to 55 years old categories. Teenagers were under represented (1.8 per cent) and only 4.2 per cent of the sample were children. The vast majority of participants found the experience enjoyable, rating it in the seventieth percentile on a scale of 0 to 100, where 0 = not at all enjoyable and 100 = very enjoyable (mean = 74.5). They also rated highly the degree to which it conveyed a sense of

history (mean = 73.7). They rated their immersion levels in the mid-60s (mean = 65.3), but felt they explored a lot of Queen's Square (mean = 73.3). The effect for age on enjoyment of the experience was highly significant, $F(4,552) = 4.7$, $p = .001$ with younger and older people more likely to rate the experience higher than young adult and mid-lifers.

There were also significant differences in how enjoyable visitors found the visit in how they became aware of it: word of mouth, TV, newspaper, radio, email, website and poster $F(6,499) = 3.2$, $p = .004$. The main ways that people heard about Riot! were word of mouth (35.9 per cent) and TV (25.1 per cent). The BBC local news item on Riot! featured footage of a reporter wearing the haversack and headset while she walked around the square. The soundtrack featured some of the files that visitors would actually hear. This then was a very accurate portrayal of what someone visiting the square would encounter. Those that heard via word of mouth, on the other hand, had a lot less information.

Although the poster (see figure 3) was dramatic and evocative it did not offer many clues about what a visitor would find in the square. Many of the theoretical accounts of experience examined in section 2 emphasise the importance of expectation and anticipation. It may be that those that heard about Riot! from the TV report had a more accurate set of expectations than those that heard about it via other means, though this would be a speculative interpretation of the finding.

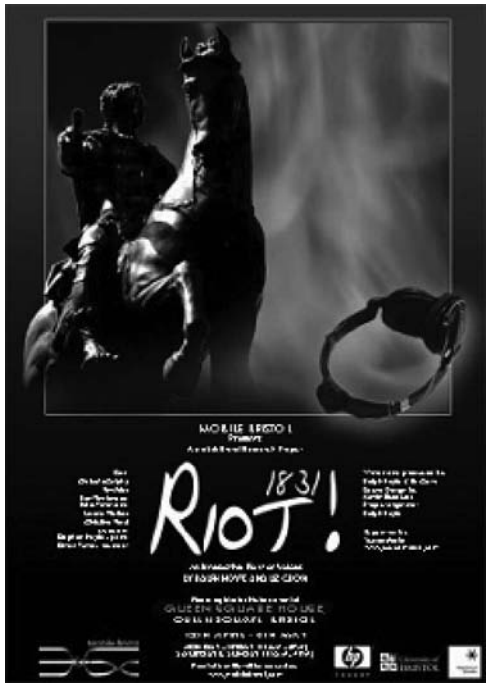

Figure 3. Poster advertising Riot!

5. The semi-structured interviews

Of the 30 interviews completed after Riot! 18 were group interviews (either with couples, friends, or families) and 12 were with individuals (five men and seven women). The data were categorised into themes; this section provides a broad picture of how the interviewees described the experience.

5.1 *Enjoyment and frustration*

When people expressed pleasure or said that they enjoyed, liked or thought something was really good it was coded under the broad category of 'Enjoyment'. For example, 'Really um good and some bits were quite funny'. In contrast, when people expressed aspects that they did not like, this was coded as 'Frustration', for example 'I think a couple of things like the technology itself is a bit flaky today, things would stop quite suddenly and then we would be walking quite a while and nothing would happen'. Table 1 summarises the aspects of the most frequently recurring comments in the enjoyment and frustration categories.

People liked the simple interaction model of walking to trigger sounds without the need to interact with a physical user interface. If they had an affinity to the area they enjoyed hearing the regional dialect and references to local landmarks. Many remarked on how pleasant the square was and that it was a nice comfortable spot to walk around. Some people enjoyed the unpredictability of the experience, which led to a sense of mystery and discovery. Other people enjoyed the feeling of experiencing something that no-one else was hearing at that time. Powerful positive sensations were: immersion, 'I didn't even see people. I kind of switched off and I was there at the riots'; participation, 'No you feel you are more in it not playing a part or anything but in it'; and surprise, 'I stood in a cannon which was really loud and scared me'. The visual sensation was not so positive; people looked at the trees, buildings and other people, but these were not particularly stimulating and were not necessarily linked to the narrative flow.

Table 1. Enjoyment and frustration.

Enjoyment	Frustration
– The quality of the sound and narrative	– Bitty or choppy interactions
– Hands-free walking	– Missed content
– Location	– Repetition of background sounds
– Unpredictability	
– Private moments in public space	– Repetition of the dragoon charge

When the system stopped and started unexpectedly it was very frustrating. People were particularly frustrated if a sound file that they were interested in was cut off and they could not get it back. They were also disappointed if they could not discover a particular file that they had been told about. There were also several complaints or criticisms of the background loop. In the first few days there was a barking dog in the background sound and this was extremely irritating. The loop was changed to exclude the dog and be a more general sound of hubbub, after which the criticisms were vastly reduced. Again, in the first few days of the trial one of the set pieces – the dragoon charge – was programmed to play every 15 minutes, regardless of where the visitor was. Unlike the other sound files movement did not trigger it and so participants could not stop it by moving out of a region. The designers initial expectation was that people would stay for around 20 minutes, but in fact they often stayed for over an hour. This meant that the dragoon charge was repeated up to three times, which really annoyed people. The software program was changed so that the dragoon charge only went off once after 15 minutes and no one complained about it after that.

The repetition of the dragoon charge can be thought of as inconsistency of interaction and non-reversibility. These are the kinds of usability problems that are well understood in HCI (e.g. Dix *et al*. 1998, Preece *et al*. 2002). The identification and where possible, rectification, of these problems enhanced the experience of the content. However, usability problems were not the only factors influencing the experience of Riot!

5.2 *Understandings of the system and narrative*

Most interviewees understood the concept of regions and the activation of files through movement. However, a number did not realise that there was more than one file associated with each region and no-one remarked on the logic inherent in the ordering of the files. The logic that was implemented was far too subtle for people to notice. Some people who returned more than once did realise that there was randomness in what was played and that each time they had a slightly different experience. Most people assumed that if you were next to someone you would hear what they were hearing though this was not the case.

Most interviewees realised that the play was based on real events, but the absence of any temporal sequencing was problematic and confusing. Some scenes took place inside buildings, some were of conversations or events in the square, and some were events that happened just off the square. The loose coupling between the scene and the location in the square was a disappointment to some people. Most of the interviewees did not recognise the opening file, which was the reading of the riot Act, as a starting point. In some cases they just did not hear it. No-one mentioned any common themes between adjacent regions. The overwhelming sense was one of randomness.

Although the designers did not deliberately structure goals or objectives for users, some imposed their own goals. Examples of these self-imposed goals were: to hear every file; to cover the entire square; to walk along each path; to understand what happened in the riot; to understand the system; to find particular files. These goals were reflected in patterns of movement. Police march, circles and path traversals are all symptomatic of a goal of covering the entire square; these are all familiar patterns of movement in museum studies. Challenge is an acknowledged factor in increasing the enjoyment of an experience (Joiner *et al*. in press). Riot! was not designed to have any explicit elements of challenge aside from the physical exertion needed to get around the square. It is interesting to note then that some participants found challenges for themselves, although they had not been explicitly designed. The lack of formal challenge could be regarded as a design failure; however, it could be argued that this kind of gap in the text (Davis 2003) is engaging because it allows users to appropriate the experience and find their own meanings within it.

5.3 *Place and content*

When people were asked how important it was that the experience was set in the square where the riots actually took place, most people felt that it was very important and would not be the same in a neutral setting. Some of the interviewees felt that the experience would have a particular resonance with people from Bristol: 'I think if I didn't live in Bristol I would not have enjoyed it so much because this relates to my life'. The location lent the play a sense of authenticity: 'Yes it is very atmospheric.' The perimeter of the square is tree-lined and a number of people speculated on the age of the trees and whether or not they would have been present in 1831. A frequent desire was to know which buildings were original and what the square would have looked like at the time.

The map indicated where some of the key buildings were and some of the events that happened away from the square. The representation led many to expect that if they walked to a particular building then a story related to that building would be heard. When this did happen it caused a positive reaction because their expectations had been matched by the action: 'one of the clips we got in the centre was of them climbing up on the statue on the horses back when you were standing next to the statue'. However, more often than not the content did not appear to be related and this caused disappointment: 'I was expecting when I walked over to the corner that was marked as the Miss Vigor I expected to hear something about the Miss Vigor whereas in fact it wasn't until I got right up to the

other end that I started to hear the bit about the Miss Vigor who obviously had a school.'

Whilst the writers did try to locate the clips near the relevant buildings, two factors made this unreliable. The first was GPS drift, which caused the region to shift depending on the number of satellites available. It was observed that every afternoon the content appeared to shift approximately 15 meters. This is a well-recognised problem and it has been suggested that GPS error should be incorporated and communicated into overall designs (Flintham *et al.* 2003), perhaps drawing on ambiguity as a resource as suggested by Gaver *et al.* (2003). This is a difficult challenge and some location-sensitive designs have opted for self-report mechanisms rather than GPS to establish location (e.g. Benford *et al.* 2004). GPS drift however was not the only factor that meant clips were not always directly related to the buildings; the second was the choice to have three random clips associated with each region. Unless all of the clips were directly associated with the adjacent building then the user experience would not be consistent.

For many of the participants then, there was a certain amount of frustration experienced, even where there was overall enjoyment and even elements of immersion. Some of the frustrations were immediately addressed by design changes such as not repeating the dragoon charge and excising the barking dog from the background loop. However, other frustrations were caused not by the technology, but the content. The next section will consider the particularity of experience in a consideration of four participants' responses and orientations.

6. The ethnographic case studies

Four participants were recruited through opportunity sampling; all names and some identifying details have been changed. Before Riot! the participants were interviewed about their attitudes to the city, art and technology; they were also shown the publicity generated for Riot! and asked to describe what they would expect to experience, based on the poster. Using a headphone splitter a researcher accompanied each participant through the Riot! event and asked them to think aloud (Dix *et al.* 1998) as they went along. In addition, immediately after the experience participants took part in a critical reflection interview and five months later they were asked to write an email account of what they remembered about their Riot! experience.

Tony was 35 years old and worked as a teacher in a primary school. He lived with a lodger in a terraced house in Bristol. Joe was a close friend of Tony; he was also 35, worked in the public sector in the Midlands, but visited Bristol most weekends in order to see his girlfriend Eva. Eva was a 27-year-old youth worker who rented a flat share in Bristol with a friend. These three were all known to the researcher and formed a friendship group, Sally was not known to the others. She was in her fifties, married with two children and worked for social services. Sally's time was far more limited than the other participants and there is consequently less discussion of her experience in the following account. Data were analysed with 40 open codes organised around the axial codes (Straus and Corbin 1990) of mechanics, aesthetics and orientation. Much of the data in the first two categories confirmed the findings of the interview data, but the orientation code focused on issues that were not discussed in the other studies.

6.1 *Habitus*

As the literatures in section 2 indicate, there are elements of experience that are unique to individuals. This section then considers the particularity of the case-study participants in terms of their orientation to the city, the arts and technology.

In '*Distinction*' the sociologist Pierre Bourdieu undertook a large and detailed survey of French taste. Throughout the data there were strong correlations between an individual's tastes and their social background. From these empirical findings Bourdieu developed a theoretical account of the development of taste, which looked not to aesthetics but to cultural capital. Here tastes acquire a social value with some activities thought of as distinguished and others as vulgar. For Bourdieu, lifestyle choices are not only related to class, but these choices make class manifest. In terms of cultural capital, watching TV, for example, is low status, requiring and accruing minimal cultural capital; more demanding or active leisure activities, such as reading or going to the theatre, are higher status activities. For Bourdieu our tastes are not dictated solely by individual responses to particular cultural artefacts. Our reactions to those artefacts are deeply entwined with our social, occupational and educational backgrounds, our 'habitus' – our set of acquired dispositions. For Bourdieu there could be no visceral response that was not shot through with social meanings and values (Bourdieu 1986).

Sally often listened to dramas on the BBC's Radio 4, a station that mainly appeals to the educated middle classes of Britain; she liked adaptations of classical novels. The last play she had seen at the theatre was Macbeth. She attended concert halls and the last thing she had seen there was a talk about Beethoven. The Riot! production fitted very well with Sally's habitus. As Eva observed, the performers sounded like Radio 4 actors; the subject matter was one that a Radio 4 production might tackle in a similar way. Like most of the middle-aged women represented in the survey, Sally found Riot! more enjoyable than younger people.

Eva was a relatively recent university graduate and was not yet on the 'property ladder', and her career path was not clear or determined. She remarked of Riot! that she had

'imagined very much more the Mike Leigh type thing'. Mike Leigh is a British film director known for gritty and realist dramas performed by actors who are improvising around characters and themes that have been intensively rehearsed over a number of weeks until the director can shape a story around them without recourse to a script. The dialogue is as clipped, broken and fragmented as the talk in a documentary. This style would have appealed much more to Eva. Her comments during Riot! were largely positive although she was critical of stereotypical characters and the actors' delivery: 'I'm having trouble expressing myself and I'm not in the middle of a riot. I think you would just... people's statements would be shorter, more unfinished, more staccato [...] it did feel like people were making considered statements. 'Unhand me, you ruffians' the voices would be more emotional [...] What it felt like was – you know when they make a radio play and they all sit round the table with their coconuts for horses' hooves and they're actually sat down like the Archers?' For Eva there was also a resistance to technology itself that went beyond expecting it to work. Eva was a committed environmentalist who did not believe in technological development for its own sake. These beliefs directed her political activism, but they also informed her choices in terms of technology consumption and the arrangement of her daily life. She had, for example resisted buying a mobile phone despite pressure from her friends in general and her boyfriend in particular. Eva felt that Riot! was too mainstream to appeal strongly to her.

Although Joe was a senior worker in the public sector and owned two houses (with the intention of letting one), he considered himself to be solidly working class in origin. His experience of education had not always been positive; he had left school with few qualifications but returned to education as an adult to complete a degree. Although his occupation and assets meant that he was a class traveller (Trondman 1994), his political loyalties and sense of self were with the class of his origin of which he was very proud. For Joe, Eva's world was quite alien and neighbours in her 'artsy' district were a source of amusement. They were 'trustafarians [...] white people with dreadlocks [...] not quite Rastafarians but they have trust funds'. He enjoyed Hollywood blockbusters and going to the pub; he wanted entertainment and not, as he saw it, pretension from the movies. For different reasons Joe's orientation led to a staunch resistance to Riot! He was critical throughout the experience and five months later his views had crystallised into this humorous but outright dismissal of the event: 'Had I been a paying customer to Riot I would have seriously tried to nick the [...] 'gizmo' as compensation'. It is interesting to note that all of the participants' accounts of the event five months later were far more critical and less nuanced than responses at the time. This again fits with theoretical accounts of experience, which note that the ways that we recount experiences over time colour our perceptions of them (e.g. Wright *et al*. 2003).

Tony identified himself quite closely with the 'art house cinema crowd'. He would not go and see a mainstream musical like *Miss Saigon*. He wanted to be challenged, rather than merely entertained. When asked to describe the kind of theatre he enjoyed, he wanted something 'risky', something that 'gets to the core of what life's about a little bit more so it might be about family breakdown or a genocide... just something that's a bit more thought-provoking than one of those mainstream lavish productions'. Riot!'s subject matter was certainly dark, dealing with a massacre and yet it was not perceived as 'risky' or radical by Tony. Tony described it five months later as 'All in all a worthwhile and interesting experience but not one that blew me away'. When the researcher described Tony's tastes to one of the writers, Liz Crowe, she speculated that he probably hated Riot! As Riot! was to be made available to the general public and to children, the kind of high-risk production that might have engaged Tony would very likely have appalled other groups. What audience then were the writers' aiming at?

The writers were asked whom they had in mind as an audience when they were writing the piece. Ralph imagined young adults; Liz did not really have a target audience in mind and added mock guiltily: 'I know you're meant to'. Ralph's target audience enjoyed Riot! least and Liz was not aiming at a particular demographic, but she knew it was not someone like Tony – an art house cinema fan looking for something experimental. Perhaps then, it could be argued that a better understanding of how the artefact would appeal to particular demographics would have resulted in a more robust product. Many artists reject this position and Liz's mock guilty, 'I know you're meant to', indicates such a rejection. Numerous artists, writers and directors insist that it is not possible to guess what an audience want and all that they can do is make the kind of thing that they themselves would enjoy. Although it could be argued that this position is untenable in the design of interactive systems, designing for demographic categories does not guarantee success in any medium. If it were that easy no cultural commodity would ever fail.

Our identity is more than the demographic group we currently belong to. To design solely for demographics would be to ignore the complexity of user experience and its relation to habitus. Although Eva was predisposed neither to the technology nor the content, Eva engaged with Riot! more than Tony or Joe and described looking for files as a 'treasure hunt' echoing the self-imposed goal construction described in the interview section. As an environmental activist, Eva had been in crowds of protesters and could relate the Riot! material directly to her own experience: 'I've been in crowds where it's turned a bit nasty and the riot police have come down on you; [...] one minute you're having a nice demonstration and you're feeling a bit

naughty and quite powerful as a group and it's like "let's have a bit of fun, let's show them what we think" and then people start to get edgy when they realise that the authorities are actually . . . you just get penned in somewhere and you get rows of guys on horses hemming you in and you try to leave, but all of a sudden they won't let you leave, and that's the point at which you go "oh, actually . . ." and the power thing switches and you get a bit scared and panicky, I thought they did that quite well.' Her sense of herself as an activist then enabled her to empathise quite directly with the experience being dramatised in the piece. Although she would not usually listen to this kind of play, the material engaged her because it related to a particular previous life experience.

Although certain forms of Buddhist practice may help individuals to focus solely on present moments, the literature in section 2 makes it clear that for 'most of us' each new experience is framed by a remembered past and an anticipated future. Each individual's experience of a cultural artefact is, in this sense, unique. One solution to the presence of individual differences in user response to cultural artefacts is to design for certain kinds of personae (e.g. Cooper 1999). There is general agreement not only in the HCI design community, but also in wider fields of design and cultural production that knowledge of the audience is crucial. However, as previously noted, designing for demographics does not guarantee success. There are also craft issues of design. The ethnographic study highlighted numerous felt experiences of disengagement, e.g. Joe 'It's barely keeping my interest though because there's no structure. Because it's so random, [. . .] the novelty thing is good first of all but it's not really keeping my interest.' While these can, in part, be explained by the individual's acquired dispositions or habitus, there are also issues to do with the construction of the artefact itself. Questionnaires, interviews and observation illustrate felt experiences, but they cannot fully explain it without a close reading of the artefact itself. The next section then considers the interactive play in terms of critical theory.

7. Critical theory analysis

This section draws on the readings of the participants in the ethnographic study as well as the first author's own experience and readings of the piece to consider the aesthetic barriers to engagement encountered by these participants in terms of literary devices such as characterisation and the construction of narrative expectation.

7.1 *Characterisation*

Although characterisation is central to drama there are surprisingly few accounts of it in literary and critical theory (Mullan 2005). One recent theoretical account of characterisation in the nineteenth-century novel argues that depth of characterisation is achieved in the interplay between major and minor characters; we feel, that we know Dorothea in the novel Middlemarch very well because we know relatively little about the other characters (ibid). The writers noted that it was very difficult to create depth in the characters in Riot! because the files were so brief. They felt that some of the characters ended up being two-dimensional because sustained stories weren't possible. In one scene for example, a prim governess leading her charges through the square tells them there may be men in the crowd, 'tempted to make a lewd comment. You must not be diverted'. Characters such as the frosty school governess are staples of British comic institutions like the *Carry On* films. While some of the scenes were appreciated as funny, the lack of depth could become a barrier to engagement. There were a great many scenes featuring drunken men and long-suffering women. The rioters were principally depicted looting, shouting, drinking and very seldom, if ever, discussing the reform issues that they were rioting about. Depth and complexity of character were for the most part stated rather than demonstrated. One character angrily protests: 'Just cos I wear a white band on my arm doesn't mean I have to be one of them!' There was no central protagonist in Riot! In a sense then, all of the characters were minor. If it is the interplay between minor and major that creates a relational sense of depth for central figures then this might explain the perceived problems of characterisation in Riot! While the fragmented presentation, the use of real place and people-names all lent an air of verisimilitude, Caricature and the stereotypical characterisation severely undermined it.

As a consequence of the limited depth of character the effects achieved in the script were largely bathetic. Although there were many tragic and terrible events portrayed in the script they did not necessarily move the participants in these case studies to anything more than a grimace or laugh. Dying children featured in a number of the files. Children were lost in the crowd; others joined the looting and were warned of a terrible fate awaiting them at the gallows. One woman cries out hysterically 'Oh my baby! My baby!' While there are few horrors worse than the loss of a child these scenes were constructed with such heavy tugs at the heart string, 'Oh Mother I'm dyin'' that they were resisted. Such resistance is well documented:

> 'Everyone knows the feeling of distrust and resistance always evoked by an author's evident predetermination. A narrator need only say in advance, 'Prepare to cry' or 'to laugh', and you are sure neither to cry nor to laugh'
>
> (Tolstoy 1898: p. 212).

Although this passage was written long before the technology delivering Riot! existed, the criticism remains relevant to the content being delivered.

7.2 *Authority and resolution*

Historical background and political analysis was by and large absent from Riot! Historians have described the Reform Act of 1832 as a 'mockery of representation'. Members of Parliament did not even pretend to be representative:

> 'the word 'democracy' conjured up in the minds of most of them the spectre of the French revolution [...] Cobbett recognised that the Reform Bill was a distraction from the cause of universal suffrage'
>
> (Foot 2004).

Although these rioters died protesting the rejection of the Reform Bill, when it became law the next year it enfranchised at most half a million people, around four per cent of the population (ibid). This level of background was by and large absent from Riot! and the lack of context was complained of by each of the case-study participants. None of them had very clear ideas about what Riot! had been about. Tony was not even sure when it had happened, which is extraordinary considering that the subtitle was '1831'.

Although these participants did not have a clear idea why so many rioters were killed they did have a vivid impression of the ways in which they died. The rioters fates are mapped out in detail when a narrator's voice intones a death toll with a seemingly endless list of names and cause of death. The appearance of the narrator broke with the format of the rest of the play. The file was longer than usual, but the difference was more than one of time. The narrator's voice offered a meta-commentary on the play. It was non-diegetic, outside the events of the play and commenting on them from a twenty-first century perspective. A voice, very similar to the continuity announcers on the BBC's World Service calmly and authoritatively intoned 'The Bristol riots of 1831. Up to 500 people dead, many more injured.' It went on to name the dead and describe the cause of death: 'Steven Bush, stablehand, 20. Shot through the chest, died almost immediately. John Morris, 12, shot through the bowels, since dead.' Wandering away from the roll-call it seemed possible that it would go on indefinitely conveying very powerfully the number of dead and their individuality: they all had names and died of particular and specific causes. In death then, a form of individuality is restored to the otherwise somewhat two-dimensional rioters. The plot of the play, and indeed the events on which the play was based, hinged on a collapse of authority. Often, in drama, resolution is achieved by restoring the order that has been disrupted. This was a return to the twenty-first century, a resolution then at the level of form, but not content. The conflict about reform was, perhaps aptly, never resolved; indeed visitors could wander back into it.

7.3 *Narrative expectation*

People's knowledge of narrative structures allows them to make sense of the action of a story and generates for them certain expectations as to what might happen next (Bruner 1991). The word narrative should not be understood narrowly. There is a large literature on the term, which is as complex and universal in human discourse as metaphor; narrative has been found in the discourse of professionals such as lawyers, historians, and psychiatrists (Branigan 1992). Narrative then may take the form of argument. One common schema of narrative is as follows:

1 Introduction of setting and characters
2 Explanation of a state of affairs
3 Initiating event
4 Emotional responses or statement of a goal by the protagonist
5 Complicating actions
6 Outcomes
7 Reactions to the outcome (Branigan 1992: p. 14).

Such schema are popular in film studies and are arranged in patterns at the levels of action, scene, episode, sequence and so on (ibid 17). They also echo the kinds of formulations of drama found in performance theory outlined in section 2: Burke's (1969) 'act, agent, scene, agency and purpose'; Turner's (1974) 'breech, crisis, redressive action and reintegration' or Schechner's (1988) 'jo-ha-kyu'. One of the problems encountered when applying these units of analysis is deciding which element of the text under consideration matches which term. There are usually multiple answers to the questions – what was done, who did it, how did they do it, and why? Nevertheless Riot! could be classified in terms not only of the necessary elements of a drama, but also those of linear narrative.

Linearity should not be understood as chronology. The film, *Pulp Fiction*, for example does not tell its stories in chronological order, but each of its stories has a beginning, middle and end. Similarly, a detective story is not told chronologically; we work from the end (the murder) to find out whodunit (the start). Linear narratives then may compel the questions – what happens next or what happened before.

A number of participants complained about a lack of 'narrative' in Riot! yet in fact it adheres to all of the elements of linear narrative identified in the schema above. There were introductions (however imperfect) to the setting and the characters; there was an explanation of the state of affairs (however limited) – they wanted reform; there were initiating acts, for example, the reading of the riot Act, assembling the troops; there were emotional responses – cynicism, anger, fear; there were complicating actions – looting, the charge of the troops and there were

outcomes – audible deaths, reactions to outcomes – grief, terror and so on. For all participants Riot! actually began with the riot act being read, although, as previously noted, most interviewees had not been aware of it. The file was triggered as soon as the participants walked into the square. While such a sudden start might seem dramatic, in fact it is rarely used in the theatre. Almost every Shakespearean play, for instance, begins with clowns or minor characters having relatively low key and unimportant conversations. This is to allow the audience to orient themselves to the stage, to settle in their seats as it were. In Riot!, very important (and climactic) scenes were conveyed immediately. This may have caused people to miss them altogether. Despite an absence of a unified story arc around central characters, Riot! structurally adhered to the conventions of linear narrative. Perhaps then the problem was not the absence of a linear narrative, as some participants believed, but the elements of linear narrative in a non-linear medium. In Riot! there were just enough elements of linear narrative to raise narrative expectations, but not to fulfil them.

Interactive storytelling in media such as role-playing games is non-linear. Here, users generate narrative with varying degrees of control from selecting scenes or viewpoints to creating new plots and endings (Braun 2003). Interactive story engines have been developed, based on Propp's formalist morphology of the elements of Russian folk tales (ibid), where different paths can be chosen from the same beginning point to reach the end in a number of permutations. In Riot! participants could select which scenes they would hear next, but they had no information about the choices they were making. In this sense their choices were blind, nevertheless the story was interactive and the medium was non-linear. Brenda Laurel has noted in recent interviews that it is very difficult for content providers, used to dealing with traditional media and linear narrative, to work in non-linear media. New ways of storytelling must be discovered.

The background loop conveying the general noise of the crowd was avowedly non-linear and for many participants this was one of the most successful aspects of the piece. When the repetition of the dog barking problem had been solved it created a sense of being in 'the eye of the storm'. This was one of the most effective elements of the soundscape and it is interesting to note that it was not initially planned. It was introduced because initial tests showed that users thought that the technology had broken down, if there was a long silence between scripts. A feature added partly through a concern with usability (feedback on whether the technology was working) added to the artistic achievement. Similarly, the serendipitous overlapping of files created some of the most moving moments of Riot! For instance, rioters were heard telling each other that the troops would never dare charge at the same time as the narrator read the list of the dead. Such effects were not deliberately designed, but they capitalised on the medium. For the most part however, the scripts produced, tended towards more traditional mediums and linear narrative.

The dragoon charge was problematic, not simply because it was repeated to some participants in the early days of the trial – it was linear. In it we hear a group of rioters discussing the appearance of the soldiers. Then we hear the charge, horses galloping, people screaming and dying. This is a sustained and linear narrative. The interactivity that had previously been enjoyed (moving in and out of clips) was lost; it did not matter how far the visitor moved, when the dragoon charge was triggered it would play for the next five minutes. Whether the length of the file was noticed or not is to an extent irrelevant. It introduced a strong element of linear narrative, which may have raised narrative expectations that could not be fully satisfied. Paradoxically it may have been an adherence to the demands of linear narrative then that created the frustration with fragmentation.

8. Discussion and conclusion

Both the artists and scientists involved struggled to find a label for Riot! It was described, among other things, as 'an interactive play for voices in an intelligent environment'. This somewhat clumsy title recalls the early terms for what we now call movies; Peter Bogdanovich refers to over 250 such terms including 'actorgraph, reeltaux' and 'narrative toned pictures' (Welles and Bogdanovich 1998: p. 23). Clearly the genre that Riot! and other interactive dramas currently developing belong to is still nascent. It is currently still difficult to find a language to talk about these new media. There is as yet, no critical discourse for the evaluation of such situated narrative; however, there are a number of disciplines that can be drawn upon.

HCI has been described as a magpie discipline taking elements from various disparate fields in order to illuminate its current problems. It can be argued that this leads to a superficiality in terms of both theory and method. However, as Roland Barthes argued: interdisciplinarity does not consist of gathering a number of approaches around a new subject. Rather 'interdisciplinarity consists in creating a new object that belongs to no one' (Barthes in Clifford and Marcus 1986). No single approach from any of the disciplines drawn on here could have been systematically applied to Riot! While important insights and orientations were drawn from usability studies, performance theory, museum studies and critical theory, no single perspective would have been adequate to the evaluation of Riot! A radical interdisciplinarity was necessary for the evaluation of user experience in this context. The user experience of Riot! was a consequence not only of design decisions and the implementation of the system, but also the individual participants' backgrounds and dispositions.

Experience is always made up of interpenetrating layers. Here there was the experience of the technology, the experience of the content, the experience of the place and the experience of the sum of these parts: the experience of a situated narrative.

The location of the play in the square where the actual historical events had taken place was important. It seemed to have more resonance and to matter more to people who were from Bristol. People began to look at a series of familiar markers in the landscape with different eyes, the square was in this sense defamiliarised (Shlovsky 1917). For Shlovsky defamiliarisation is one of the most important functions of a work of art; art makes us look again at the taken for granted, at our everyday assumptions. Although there was some frustration with the technology and this nascent art form, no-one who experienced Riot! could see Queen's Square in quite the same way again. The Situationists of the 1960s attempted to disturb what they termed the psychogeography of public space by, for example, disrupting public sign systems and maps (Hussey 2001). Location-aware mobile technologies offer more creative possibilities, opening up the psychogeography of public space as a medium for art.

This study of Riot! suggests that it is necessary to employ an interdisciplinary multi-methodological approach in order to capture the depth, richness and complexity of user experience. The survey data indicated very well the commonality of experience. These data showed, for example, that most of the visitors enjoyed Riot! and demonstrated that there were important demographic differences in their responses. The interview data went deeper into these common responses demonstrating that even where there was overall enjoyment there were elements of frustration, that some participants required goals to the extent that they would create them on the fly, that the loose coupling between the space and the drama was problematic. The ethnographic case studies focused on the particularity of experience. It took account of the participants' personal history, their habitus in order to place their reactions to Riot! in their particular biographical contexts. The critical theory analysis went further towards explicating the felt experience identifying problems of characterization, narrative construction and resolution. An analysis that relied on only one of these data sets would have been partial and incomplete.

It has long been common practice in HCI to draw on the social sciences and use ethnographic and ethnomethodological techniques to inform design. The turn to arts- and humanities-based domains is more recent, but may well be equally productive. Increasingly, artists, musicians and theatre directors are becoming involved in the design of new technology, perhaps to the chagrin, of methodological purists of one kind or another. New media productions like Riot! cross not only the boundaries of disciplines, but also of faculties. The study of user experience within these nascent art forms then requires an interdisciplinary criticism.

References

Benford, S., Seagar, W., Flintham, M., Anastasi, R., Rowland, D., Humble, J., Stanton, D., Bowers, J., Tandavanitj, N., Adams, M., Row-Farr, J., Oldroyd, A. and Sutton, J., 2004, The Error of Our Ways: The Experience of Self-Reported Positioning in a Location-based game. In *Proceedings of Ubicomp 2004: Ubiquitous Computing, 6th International Conference*, Nottingham, September (Springer-Verlag), pp. 70–87.

Blythe, M. and Hassenzahl, M., 2003, The Semantics of Fun: Differentiating Enjoyable Experiences. In *Funology: From Usability to Enjoyment*, M.A. Blythe, K. Overbeeke, A.F. Monk and P. Wright (Eds), pp. 91–100 (Dordrecht: Kluwer).

Bourdieu, P., 1986, *Distinction: a social critique of the judgement of taste* (London: Routledge and Kegan Paul).

Branigan, E., 1992, *Narrative Comprehension and Film* (London, New York: Routledge).

Braun, N., 2003, Storytelling and Conversation to Improve the Fun Factor in Software Applications. In *Funology: From Usability to Enjoyment*, M.A. Blythe, K. Overbeeke, A.F. Monk and P. Wright (Eds), pp. 233–242 (Dordrecht: Kluwer).

Brook, P., 1984, *The Empty Space* (New York: Atheneum).

Brown, B., McColl, I., Chalmers, M., Galani, A. Randell, C. and Steed, A., 2003, Lessons from the Lighthouse: Collaboration in a Shared Mixed Reality System. In *Proceedings of the CHI 2003*, pp. 577–584.

Brown, B., Chalmers, M., Bell, M. and Hall, M., 2005, Sharing the square: collaborative leisure on the city streets. To appear in *Proceedings of ECSCW 2005*, Paris, France.

Bruner, J., 1991, The Narrative Construction of Reality in **Critical Inquiry, 18,** pp. 1–21 (ACM Press, New York).

Burke, K., 1969, *A Grammar Of Motives* (Berkely, CA: University of California Press).

Clifford, J., Marcus, G.E., 1986, *Writing Culture: The Poetics and Politics of ethnography* (University of California Press).

Cooper, A., 1999, *The Inmates Are Running The Asylum: Why High-Tech Products Drive Us Crazy and How to Restore The Sanity* (Indianapolis: Sams).

Csikszentmihalyi, M., 1975, *Beyond Boredom and Anxiety* (San Francisco: Jossey Bass Publishers).

Davis, M., 2003, Theoretical Foundations for Experiential Systems Design. In *ETP 03*, Berkeley, USA (Berkeley: ACM Press), pp. 45–52.

Dix, A., Finlay, J., Abowd, G. and Beale, R., 1998, *Human Computer Interaction* (2nd Edition) (Harlow: Prentice Hall).

Falk, J. and Dierking, L., 1992, *The Museum Experience* (Washington DC: Whalesback Books).

Flintham, M., Anastasi, R., Benford, S., Hemmings, T., Crabtree, A., Greenhalgh, C.M., Rodden, A., Tandavanitj, N., Adams, M. and Row-Farr, J., 2003, Where on-line meets on-the-streets: experiences with mobile mixed reality games. In *Proceedings of CHI 2003* (Fort Lauderdale, USA: ACM Press), pp. 569–576.

Foot, P., 2004, Shoy Hoys Reform: The Fight for the 1832 Reform Act. In *London Review of Books*, **26,** 6 May.

Forlizzi, J. and Ford, S., 2000, The Building Blocks of Experience: An Early Framework for Interaction Designers. In *Designing Interactive Systems (DIS 2000)* (Brooklyn, New York: ACM Press), pp. 419–423.

Forlizzi, J. and Battarbee, K., 2004, Aesthetics, ephemerality and experience: Understanding Experience in Interactive Systems. In *Designing Interactive Systems (DIS 2000)* (Cambridge MA, USA: ACM Press), pp. 261–268.

Gaver, W., Beaver, J. and Benford, S., 2003, Ambiguity as a Resource for Design. In *Proceedings of CHI 2003* (Fort Lauderdale, Florida: ACM Press), pp. 233–240.

Glaser, B.G. and Strauss, A., 1967, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Chicago, IL: Aldine Publishing Co).

Goffman, E., 1971, *The Presentation Of Self In Everyday Life* (London: Penguin).

Hassenzahl, M., 2003, The Thing and I: Understanding the Relationship Between User and Product. In *Funology: From Usability to Enjoyment*, M.A. Blythe, K. Overbeeke, A.F. Monk and P. Wright (Eds), pp. 31–42 (Dordrecht, Netherlands: Kluwer Academic Publishers).

Hooper-Greenhill, E. and Moussouri, T., 2002, *Researching Learning in Museums and Galleries 1990–1999: A Bibliographic Review* (University of Leicester: Research Centre for Museums and Galleries).

Hull, R. and Reid, J., 2003, Designing Engaging Experiences with Children and Artists. In *Funology: From Usability to Enjoyment*, M.A. Blythe, K. Overbeeke, A.F. Monk, and P. Wright (Eds), pp. 179–188 (Dordrecht, Netherlands: Kluwer Academic Publishers).

Hull, R., Clayton, B. and Melemed, T., 2004, Rapid Authoring of Mediascapes. Lecture notes in Computer Science, **3205**, pp. 125–142, (Springer-Verlag).

Hussey, A., 2001, *The Game of War: The Life and Death of Guy Debord* (London: Jonathan Cape).

Joiner, R., Nethercott, J., Hull, R. and Reid, J., in press, Designing educational experiences using ubiquitous technology. *Computers In Human Behaviour*.

Jordan, P., 2000, *Designing Pleasurable Products: An Introduction to the New Human Factors* (London: Taylor and Francis).

Laurel, B., 1993, *Computers as Theatre* (Reading, Mass: Addison-Wesley Publishing Company).

McCarthy, J. and Wright, P.C., 2004, *Technology As Experience* (Massachusetts: MIT Press).

Mullan. J., 2005, Why Always Dorothea? Review of The One v. the Many: Minor Characters and the Space of the Protagonist in the Novel, by Alex Woloch. *London Review of Books*, **27,** 5 May.

Norman, D.A., 2004, *Emotional Design: Why We Love (or Hate) Everyday Things* (New York: Basic Books).

Preece, J., Rogers, Y. and Sharp, H., 2002, *Interaction design: beyond human-computer interaction* (New York: Wiley).

Schechner, R., 1988, *Performance Theory* (New York and London: Routledge).

Shedroff, N., 2001, *Experience Design* (Indianapolis: New Riders Publishing).

Shklovsky, V., 1917, Art as Technique. Reprinted in *Contemporary Literary Criticism. Modernism Through Poststructuralism*, R.C. Davis (Edited and introductions), pp. 56–63 (New York and London: Longman Press).

Strauss, A. and Corbin, J., 1990, *Basics Of Qualitative Research: Grounded Theory Procedures And Techniques* (London: Sage).

Tolstoy, L., 1898, *What is Art And Essays on Art*. Reprinted in the World Classics, A. Maude (Trans.) (London, NewYork and Toronto: Oxford University Press).

Trondman, M., 1994, Bilden av en klassresa. Sexton arbetarklassbarn på väg till och i högskolan (Stockholm: Carlsons).

Turner, V., 1974, *Dramas, Fields and Metaphors* (Ithaca, Cornell University Press).

Welles, O. and Bogdanovich, P., 1998, *This is Orson Welles* (New York: De Capo Press).

Wright, P. and Finlay, J., 2003, British HCI group international workshop *HCI, the Arts and the Humanities*, King's Manor, York, England, 21 July.

Wright, P.C., McCarthy, J.C. and Meekison, L., 2003, Making sense of experience. In *Funology: From Usability to Enjoyment*, M.A. Blythe, K. Overbeeke, A.F. Monk, and P. Wright (Eds), pp. 43–54 (Dordrecht, Netherlands: Kluwer Academic Publishers).