

Digital Technologies, Learning and Game Formats: Computer Games, Motivation and Gender in Educational Contexts.

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Final Report

March 2007

Contents:

Section A. Research activities

Section B. List of outcomes including events, publications and conference papers

Section C. Sample abstracts

Section D. Events convened

Section E. Wider dissemination and impact

Project outline

The idea that playing computer games involves learning, or that such games might have a place in classrooms, is gaining general if cautious acceptance. The motivating power of computer games, in particular, has been noted. The aim of this project was to look more closely at this motivation, using theory and perspectives drawn from computer game studies. Examining motivation over the course of the project involved analysing particular games, looking at notions of compelling play, and tracing the relationships between 'playability' and meaning. Motivation in terms of taste and preference was investigated, with a particular focus on gender, access and the social/cultural construction of the gaming audience. Games were analysed 'as texts', and game-play was observed and documented in various contexts, including in the home, in classrooms, and online¹.

Please note: For a more detailed presentation of the work undertaken, the arguments made, and the conclusions reached, please refer to the project's publications. These are available from the author. The numbers in this document refer to project outcomes. These outcomes are listed in Section B.

Section A: Research Activities

The objectives of this research were

1. To theorise the relationship between structure and content, motivation and learning in computer games and in educational software.
2. To conceptualise, document and analyse play 'as practice' in order to further investigate motivation, and to situate this motivation in different contexts.
3. To develop recommendations for academics, educators and industry as to how the pedagogic potentials of game formats may be more fully actualised.

Objective 1

This objective was achieved through the close analysis of a selection of computer games. The relationship between structure and play, and between play and interpretation was examined.

I considered issues of meaning in games, and the tensions between play and structure in relation to accounts of game interpretation, through an analysis *Sid Meier's Civilization*. This engrossing history-themed strategy game has attracted a great deal of attention from theorists interested in games and learning, and it is used in formal learning contexts. Much of the critique that surrounds the game series is concerned with learning, and the perpetration of values or ideology. This critique offered a 'data set' through which notions of meaning could be explored in relation to play, and the variability of play. This analysis was published as a book chapter, 'The Trouble with *Civilization*' in *Videogame/Text/Player/Play* T. Krzywinska and B. Atkins (editors), published by Manchester University Press (in press).

To examine motivation and play, I analysed *Enter the Matrix*, a game that actually fails to be compelling. Using structural narrative theory, computer game theory, and aspects of social philosophy, I argued that the game's commitment to narrative had a negative impact on its capacity to engage or hold the attention or motivate the player. This work was published as 'The Rules of the Game, The Burden of Narrative: *Enter the Matrix*', a book chapter in *The Matrix Trilogy; Cyberpunk Reloaded*, S Gillis (editor), published by Wallflower Press/Columbia University Press (2005). This chapter has subsequently been republished in Italian, in *Videogames and Cinema. Digital play, Screen Pleasures*, M. Bittanti (editor), published by Edizioni Unicopli (in press).

This work on the 'game as text' raised questions about the limitations and applicability of textual analysis in games research (outcomes 23, 25). Issues of methodology were reflected on throughout the study, and made central to the project's final dissemination event, 'Computer Games: Learning, Meaning and Method'. More information on this event and its rationale appears later in this document.

Additionally, I observed 'game like' educational software in formal learning contexts, attended industry events and exhibitions such as BETT, met with individual game producers, and worked closely with the 'Making Games' team at the Knowledge Lab (a project that involved the production of software with an industry partner).

The research and analysis undertaken in pursuit of this objective informed all inquiry into games and play over the course of this study. An understanding of game structure was found to augment and productively inform the observation of gaming and play in different contexts. In fact, it is possible that understanding the various offers of particular games is a prerequisite for understanding the choices made by players, and the learning that may take place in relation to these choices. While the 'study of games' is sometimes positioned and considered as distinct from 'the study of players', in this project these approaches proved to be inter-connected, and mutually informing.

Objective 2

I investigated game use and play-as-practice in various contexts in order to meet this objective.

I explored activity theory and multi-modal analysis, and its applicability to the analysis of games and learning, by working in collaboration with Dr C. Jewitt. During this research, three children were observed and video-documented co-playing a console game – a game in which the two protagonists must work together to progress through various spatial puzzles. We presented this work at CAL 2005 and we continue to meet and develop the piece. An outline of this paper, 'Multimodal analysis and the playable text', can be found in the 'abstracts' section of this document.

In other research I attended a computer games group at a state girls school in South London, (Tuesday lunchtimes, for a term) to record and observe the girls. During this time I had the opportunity to chart the girls' shifting gaming preferences, and to record and analyse the various contributing factors to, and constituents of, these preferences. This work resulted in a conference paper on girls and gaming preference that was presented at the Digital Games Research Associations' 2005 International Conference, included in the conference's published proceedings, and subsequently republished in two edited books. This research was written up as a full journal article for the long established and prestigious journal, *Simulation and Gaming*.

In other activities associated with this objective, I observed and video-documented the use of game-like software in a physics class at the South Camden Learning Centre that was taught by colleagues at the London Knowledge Lab. While this was interesting, I did not use this data in my research, largely because it invited questions of simulation design and pedagogy that did not fall within the scope of this study.

I also looked at players' self-described gaming expertise. I designed and distributed questionnaires to families with the intention of contextualising a player's perception of their own expertise, against the perceptions of other family members. Children filled in version 1 of the questionnaire, while their carer/parent filled in version 2 of the questionnaire. I received nine pairs of completed questionnaires. This proved an interesting 'pilot exercise', and there were indications of interesting discrepancies in the reporting and describing of expertise. It became clear, though, that developing this line of inquiry in the necessary depth would consume more time and resources than were warranted in the context of this project.

Issues of cultural and social context were investigated in relation to the 'cultural baggage' that computer games might bring with them into educational contexts. Educators have expressed concern about the potential alienation of female students, and the issue of in-game representation. Such concerns are justified, yet there is also a need to examine the manner in which games by their nature complicate the issue of representation. These matters were outlined in a colloquium article for the *British Journal of Educational Technology*, and discussed at greater length in 'Computer Games in Educational Contexts: Theory, Representation and Gender', a chapter now being prepared for potential inclusion in a forthcoming handbook on games and education.

The tendency to imply that particular game genres will 'naturally' appeal to particular genders has been challenged. However, further research is needed into gamers-as-learners, subjectivity and interpretation, gender, class, ethnicity, technological competence and access.

Objective 3

It became apparent during the research itself that the most productive and cost-effective way to meet this objective would be to:

1. Describe the diversity and range of activities now accommodated within the 'games and education' sector to industry and education audiences. Games and learning research is more various than is sometimes assumed (see outcomes 6,10,14,15,19)
2. Introduce and describe relevant work from within the field of 'game studies' to potentially interested but as yet unconnected audiences. For example, in an article for the *British Journal of Educational Technology* I discussed how developments within game studies pertaining to gaming cultures, audience construction and representation might inform debates on issues of concern to educators contemplating the introduction of computer games into formal learning contexts.

The ongoing work of the London game research group has also supported this aspect of the project. The game group is an inter-disciplinary collective. Its broad goal is to support researchers whose work involves games and gaming. In the year and a half since its founding, we have had presentations on 'serious game' design and production, training simulations, and game studies. I have played the role of co-convenor for the group since July 2005. A list of abstracts is available at: <http://playhouse.wordpress.com/london-game-research-group/>

Theorists working within the relatively new and distinctly inter-disciplinary field of computer game studies are addressing issues that are relevant to scholars within the games and learning community (including topics such as representation, immersion, engagement, interpretation, methodology, design, and player cultures). While there is definitely some exchange between these groups, and theorists working between and across these fields, ongoing efforts to disseminate new computer game scholarship are needed. The computer games and learning sector might also profit from closer ties to the long established games, simulation and training networks (see outcome 24). In each case, of course, the exchange could be mutual, and mutually beneficial.

Learning in Online Games

This project involved examining games-as-texts, and game-play in various contexts: at home, in classrooms, and online.

Online games vary significantly in terms of genre, platform, scale and user population. Contenders for close study included *Second Life*, *EverQuest*, *City of Heroes* and *World of Warcraft*. *World of Warcraft* was eventually selected due to its size and overwhelming popularity, and for technical reasons (it is, for example, accessible to both Mac and PC users).

Playing this game is a communal and social undertaking rather than an individualistic pursuit. The modes of participation invited by the game are various. For these reasons I decided that a collaborative and experimental route to analysis would be appropriate. I sent an open invitation to learning theorists and educationalists at the London Knowledge Lab to join me in the game, and arranged subscriptions and gaming sessions for the responding six volunteers. This approach generated multiple and parallel lines of inquiry, and resulted in a series of papers that were presented at the project's dissemination event, including Andrew Burn's 'MMORPG's: Drama, Play and Pedagogy', Martin Oliver's 'Me, Myself and I: Learning to negotiate identity on a *World of Warcraft* role-playing server' and Kevin Walker's 'Structures for Learning in *World of Warcraft*', as well as a report from my perspective as facilitator/researcher.

A secondary and yet significant outcome was the experience of taking part in an inter-disciplinary investigation itself. Several of the learning theorists who took part have developed an interest in online games and learning. This is likely to lead to further work on this topic by these theorists, which is a positive outcome for the field.

It became clear that there are multiple ways to access and actualise the game. There is not 'one curriculum'. During more advanced play, where particular strategies have to be adopted, the range of variability certainly narrows, but there is no reason to assume that such 'expert play' is definitive or representative. Through post-play interviews I found that the learner-players in the group responded to different critical or authoritative 'voices' within the game. These 'addressers' were ignored or prioritised in different ways by users, and these perceived voices became mingled with elements of disguise, misrecognition and 'role play', in ways that are interesting to consider in relation to power, pedagogy and group dynamics. The game was both easier (in terms of game-play) and much more complicated than the volunteers had expected. The difficulties involved multi-tasking and social factors. I concluded from our work in *World of Warcraft* that when researching learning in online games – as elsewhere - there is a need to devise 'context sensitive' methodologies. First hand experience of playing, self-reflective learning by researchers exploring the game, and encounters with fellow users, are perhaps a prerequisite for the devising of such procedures.

Section B. List of outcomes including publications and conference papers

Convened Events

Please see Section D for more information on the events convened during this research.

Publications

Note: All publications acknowledged the support of the Eduserv Foundation

1. Carr, D. (under review) 'Computer Games in Educational Contexts: Theory, Representation and Gender' A chapter for the *Handbook of Research on Effective Electronic Gaming in Education* R.E. Ferdig, ed. publishers Information/Science Reference, The Ideas Group Inc.
2. Carr, D (in press) 'The Trouble with *Civilization*' invited chapter for *Videogame/Text/Player/Play* T. Krzywinska and B. Atkins (eds) Manchester: Manchester University Press
3. Carr, D (in press) 'Computer Games in Classrooms and the Question of Cultural Baggage' colloquium article for the *British Journal of Educational Technology* special issue on Game Based Learning Vol 38 No 3 2007 pp 526-528
4. Carr, D (in press) 'Travel and Experience in *World of Warcraft*' invited contribution to *Space, Time, Play: Architecture, Urbanism and Computer Games*, von Borries, Walz, Brinkmann and Bottger, (eds.) Basel, Berlin: Birkhauser Publishing
5. Carr, D (2006) 'Games and Gender' a chapter for *Computer Games: Text, Narrative and Play*, Carr, D., Buckingham, D., Burn, A., Schott G. (2006) *Computer Games: Text, Narrative and Play*, Cambridge: Polity Press
6. Carr, D (2006) 'Researching Computer Games, Learning and Education' invited article for *Operational Research Society Newsletter*, Rajan Anketell, ed, October issue, 2006.
7. Carr, D (2005) 'The Rules of the Game, The Burden of Narrative: *Enter the Matrix*', a chapter for *The Matrix Trilogy; Cyberpunk Reloaded*, S Gillis, ed. London: Wallflower Press/Columbia University Press
8. Carr, D (2005) Contexts, Gaming Pleasures and Gendered Preferences, *Simulation and Gaming* Vol 36 No 4 December 2005
9. Carr, D. (2005) Contexts, Pleasures and Gendered Preferences: Girls and computer games in *Changing Views: Worlds in Play - Selected papers of the 2005 Digital Games Research Association's Second International Conference*
10. Carr, D (2005) 'Research into Computer Games and Learning: A brief overview' *Interact*, issue 31 October 2005

Republications

11. 'The Rules of the Game, The Burden of Narrative: *Enter the Matrix*' will be republished in *Videogames and Cinema. Digital play, Screen Pleasures* M. Bittanti (Ed.) Milano: Edizioni Unicopli (in press 2006/7)
12. 'Contexts, Pleasures and Gendered Preferences: Girls and computer games' will be republished in *Worlds in Play* (in press) S. de Castell and J. Jenson (eds) New York: Peter Lang Publishing
13. 'Contexts, Pleasures and Gendered Preferences: Girls and computer games' will also be republished in *Digital Girls: Growing- Up Online*, S. Weber and S. Dixon (eds) Palgrave/Macmillan.

Conferences and seminars

By invitation

14. Forthcoming, 2007 date t.b.c. Presenting on 'games and learning' at CALRG (Computers and Learning Research Group) at the Institute of Educational Technology, Open University
15. (2006, July). 'Computer Games, Learning and Education' British Computer Society, London.
16. (2005, November). 'Representations in Figurative Computer Games' for 'Games Are Not Trivial Pursuits; Ethnicity and Identity' Seminar Series, Institute of Social and Cultural Anthropology, Oxford University
17. (2005, May). 'Computer Games and Gender' at Playful Subjects: Technology, agency and computer games, Bristol, UK.

18. (2004, June). 'Games and Narrative?' New Narratives Event, London College of Music and Media.
19. (2004, April). 'Games, Learning, Motivation and Gender' Informatics Seminar Series, Sussex, UK.

Conferences papers, seminar presentations

20. Burn, Andrew (2007, January) 'MMORPG's: Drama, Play and Pedagogy', seminar paper presented at *Computer Games: Learning, meaning and method*, London Knowledge Lab, Institute Of Education, University of London January 26th.
21. Oliver, Martin (2007, January) 'Me, Myself and I: Learning to negotiate identity on a *World of Warcraft* role-playing server' seminar paper presented at *Computer Games: Learning, meaning and method*, London Knowledge Lab, Institute Of Education, University of London January 26th.
22. Walker, Kevin (2007) 'Structures for Learning in *World of Warcraft*' seminar paper presented at *Computer Games: Learning, meaning and method*, London Knowledge Lab, Institute Of Education, University of London January 26th.
23. Carr, D (2007, January) Project Reports 'Learning, meaning and methodology' and 'Learning, methodology and online gaming' presented at *Computer Games: Learning, meaning and method*, London Knowledge Lab, Institute Of Education, University of London January 26th
24. Carr, D. (2006, July). *Between Games, Learning and Digital Game Studies*. Paper presented at SAGSET 2006: Society for the Advancement of Games and Simulations in Education and Training, London.
25. Carr, D. (2006, April). *Computer Games: Bodies, Meaning and Representation*. Paper presented at Technology, Performance and Identity: Mediation, Remediation and the Politics of Self, A Multidisciplinary Conference, Buckinghamshire UK
26. Carr, D., & Pelletier, C. (2005, November). *Boys Toys?* Seminar on games and gender for undergraduate Cultural Studies students, Oxford Brookes University, Oxford, UK.
27. Carr, D. (2005, October). *Computer Games, Learning and Preferences* presented at the Media Education, Computer Games and 'Games Literacy' Evening Seminar, IOE, London, UK.
28. Carr, D. (2005, October). 'Meaning, Motivation and Computer Games' Discussant, Games and Play, London Knowledge Lab
29. Carr, D. (2005, June). *Contexts, Pleasures and Preferences: Girls playing computer games*. Paper presented at the DiGRA 2005 Changing Views: Worlds in Play International Conference, Vancouver, CA.
30. Carr, D. (2005, April). *Contexts, Pleasures and Preferences: Girls playing computer games*. Paper presented at CAL 05 - Virtual Learning? Bristol, UK.
31. Carr, D., & Jewitt, C. (2005, April). *Multimodal Analysis and the Playable Text*. Paper presented at CAL 05 - Virtual Learning?, Bristol, UK Carr, D., & Jewitt,
32. Carr, D. (2004, September). *Computer Games: Gender, learning, preference*. Paper presented at the Researching User Engagements with Technology Seminar Day, Middlesex University, London UK.
33. Carr, D. & Jewitt, C. (2004, July). *Computer games: meaning, gesture and movement in Ico*. Paper presented at Digital Generations: Children, young people and new media, IOE, London, UK
34. Carr, D., & Pelletier, C. (2004, July). *Making games, playing games*. Paper presented at the Women in Games Conference, Portsmouth UK.

Section C. Sample abstracts

'Multimodal analysis and the playable text' Carr, D., & Jewitt, C. (2005, April) Paper presented at CAL 05 - Virtual Learning? Bristol, UK

In this paper we explore the potential of combining multimodality with activity theory in order to analyse computer

games in ways that may be useful for thinking about play and learning. Computer games 'as texts' pose a particular challenge to theorists in that we need to move beyond the onscreen events or representational factors in order to better understand the relationship between the programmed potentials of the game and how the player's 'ability' and 'interests' shape and produce the game.

We focus on the computer game *Ico* as an illustrative example in order to explore the game design as it is actualised through play. Through this example we show how the analytical tools of multimodality enable a research focus beyond language to the full ensemble of communicational modes in games including image, sound, animated movement and so on. Further we show how the theorisation of meaning making as a 'chain of semiosis' is applicable to understanding how meaning is realised in the dynamic relationship between the design of a game and the way it is played. *Ico* and Yorda's gesture and movement can be understood as an outcome of the complex relationship between programming, interface design, and player input. The avatar's traits as they are realised through gesture and movement (leaping, sprinting, swinging, clambering or carrying) are linked with the landscape, as well as the players knowledge of what these landscape's 'require'. From this perspective, meaning is made when people engage with and use the designed elements of a game; through their socially situated use of game elements (selection, adaptation, etc.) they re-present them in relation to their own 'interest'. We turn to activity theory to theorise representation and communication and 'interest' as socially situated concepts.

Contexts, Gaming Pleasures and Gendered Preferences, for *Simulation and Gaming* Vol 36 No 4 December 2005 (Carr, D 2005)

In this paper girls and their computer gaming preferences are explored through observations of a games club at an all-girl state school in the UK. It is argued that gaming tastes are alterable and site specific. Gaming preferences certainly relate to the attributes of particular games, but they will also depend on the player's recognition and knowledge of these attributes. Players accumulate these competencies according to the patterns of access and peer culture they encounter. The constituents of preference, such as access, are shaped by gender and, as a result, gaming preferences may manifest along gendered lines. It is not difficult to generate data indicating that gendered tastes exist, but it is short sighted to divorce such outcomes from the various practices that contribute to their formation.

Computer Games in Classrooms and the Question of 'Cultural Baggage' Colloquium article for *British Journal of Educational Technology*, Vol 38, no 3 2007 pp 526-529 (Carr, D. in press)

There is growing interest in the use of commercial computer games in classrooms, but there is also understandable concern about the popular associations - or 'cultural baggage' - that such games would bring with them into formal learning contexts. One such concern involves the potential alienation of female students. A second, related, concern involves representation in games. In this short article I would like to contribute two observations to these discussions. Firstly, when considering the relationship between games and girls, it is necessary to remember that contemporary player demographics reflect the construction of the game audience. Secondly, while it is important to scrutinise representations within games, analysts of the *meaning* of games, must factor play into their accounts.

'The Rules of the Game, The Burden of Narrative: *Enter the Matrix*' A chapter for *The Matrix Trilogy; Cyberpunk Reloaded*, S Gillis, ed. London: Wallflower Press/Columbia University Press Carr, D (2005)

Much of the commercial success that the action adventure game *Enter the Matrix* has enjoyed is the result of its relationship with the *Matrix* film trilogy, rather than the quality of play it offers. *The Matrix* feature films overshadow *Enter the Matrix*. Using narrative theory it is possible to demonstrate that the proximity of the master narrative limits the sense that the player's actions have demonstrable or alternative outcomes. This in turn limits any sense that the player is exercising their prerogative and making meaningful choices - prerequisites of compelling, motivating play experiences. It could be argued that by stretching the *Matrix* over a range of texts and media, the producers have allowed for a variable and fertile array of spaces, which the consumer/audience can dip into, rework and explore. Yet there are indications that the relationship between *Enter the Matrix* and the feature films is subject to hierarchies of temporality, events and plot. If these hierarchies are not acknowledged or accounted for, the analysis of the franchise's enlistment of different media for narrative or communicative ends will remain incomplete. It is one thing to recognise that the texts in the *Matrix* franchise share ground, and another to assume that this sharing is unproblematic - or that the territory in question is uncontested. In this case, these factors impact negatively on the game's ability to generate compelling play, and thus its capacity to motivate its users is limited.

Section D. Events Convened

For full programmes and further information go to www.playhouse.wordpress.com

DigiPlay4: Teaching with/Learning from Computer Games was a one-day event at The London Knowledge Lab, January 28th 2005.

Academics, practitioners and industry professionals presented on the day, covering topics such as game literacy, playful learning, games in educational contexts, pedagogy, politics and gender.

The event was well attended with 56 participants from universities, from colleges and community arts centres, from BECTA, (British Educational Communications and Technology Agency) BBC, and the QCA (Qualifications and Curriculum Authority) NESTA Futurelabs, TIGA (The Independent Games Developers Association), and from industry (Imaginary Productions, DESQ and Immersive Education).

The event was covered in *Edge* issue 147 March 2005 and at Guardian Online.

Computer Games: Learning, Meaning and Methodology was this project's final dissemination event, and it took place at the London Knowledge Lab on January 27th 2007.

The focus of this event shifted to computer games, meaning and methodology. Speakers on the day addressed research and the games' industry, or the problems inherent to researching games and play as a situated, physical activity. Other speakers presented on the topic of online fandom, and online social worlds, methodology and ethics. The afternoon was dedicated to online games and learning. A full programme is online at www.playhouse.wordpress.com

The day was lively and well attended ('booked out') with approximately 55 students, academics and practitioners in attendance.

London Game Research Group

Monthly, from July 2005

The group is inter-disciplinary, with a strong 'games and learning' or 'serious games' contingent. For a list of abstracts and presentations please go to <http://playhouse.wordpress.com/london-game-research-group>

Section E. Wider dissemination and impact (not included in this edit of this document)

(Footnotes)

¹ This report uses a research council final report template as a guide. Please contact the author if further information on the contents of this report is desired.