Representing users in the design of digital games

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ABSTRACT

While economic and sociological studies have generally recognised the important explicit role that users play in shaping a technological artifact - through feedback channels after launch and market trials and studies before launch - there has been less exploration into the more implicit strategies by which designers attempt to pre-figure users prior to launch. Given that design involves making choices, and framing the choices made by users, this paper suggests that Madeline Akrich's approach (1992, 1995) may provide a constructive tool for exploring more implicit and indirect strategies of representing users in the early stages of the design process. It may also prove useful in exploring how users can be excluded or alienated through design.

While acknowledging that users may actively negotiate designers' representations this paper will explore the usefulness of the Akrich approach in relation to understanding the design of digital games. A study in 2001 of production in digital games companies in Ireland found that various macro, meso and micro level factors play a role in limiting the games developed and the user groups developed for. This paper will present findings from ongoing research conducted in 2002 into the reasons which account for how one start-up company decided to design a multiplayer online game for males aged 25-40.

Keywords
Design, games, innovation, gender

1. INTRODUCTION

> ' A game must have a clearly defined goal, and it must be expressed in terms of the effect it will have on the player. It is not enough to declare that a game will be enjoyable, fun, exciting or good: the goal must establish the fantasies that the game will support and the types of emotions it will engender in its audience….If you select a goal to satisfy your audience but not your own taste, you will surely produce an anaemic game.' [11: 60]

In this classic text on game design Crawford says that really powerful games come 'straight from the heart'. In his chapter on the game design sequence players are not mentioned once and he suggests that playtesters should be game designers and not consumers who make 'lousy critics' with 'insane and impractical' suggestions (11: 72). He goes on to doubt that any good film, book or song was created through market research and that such methods would only prove useful to designers of limited talents. A quick scan through the index of the book finds no entries under users, usability, playability or accessibility.

Reflecting the growing maturity of the digital game design industry a more up-to-date computer game design book takes Crawford's advice, eliminates the contentious language and gives some consideration to the target market.

> 'A game must have a clearly defined goal, most often stated as to how it how it will affect the player. The goal must establish the visions, emotions and challenges it will produce in the player…. The designer needs to identify the genre and target audience for a game as well. These questions guide every level of game creation. [21:35]

> Matt Householder, a game designer for Blizzard, adds,
> 'ensure that the people on your design team are game players….They must know games and continually be involved in the creation of games. The team needs to be made up of individuals who have developed their sense of what makes a game fun….Play the hits. See what's popular. It's always changing.' [21:201]

These books suggest that game design is largely an intuitive process and new game concepts are developed by designers with little input from players other then themselves. While the more recent game design books place increasing emphasis on the need for a strong user interface and 'playability' - defined as the balance between ease and difficulty in a game – there is little expectation that end users can be directly involved in the design process. Usually the player only becomes involved in the design process at the

testing stage when their influence is restricted to technical and minor gameplay issues.

Contrast this loosely intuitive, supplier-driven approach to design with the literature on innovation and design within large industrial and consumer product firms and current trends in European programmes like IST 2002 which highlight the importance of user-centred design and design for all [8]. For example the IST programme strategy aims to,

> 'Start creating the ambient intelligence landscape for seamless delivery of services and applications in Europe relying …upon test-beds and open source software, develop user-friendliness.' [7]

In addition key writers within the computer science and web design fields also argue that human factors and usability must be considered by designers [30]. Jacob Nielsen, the guru of web usability believes that,

> 'the main goal of most web projects should be to make it easy for customers to perform useful tasks. I describe a very systematic approach to web design, with a sequence of methods anybody can use to discover user's needs and any difficulties they may be having using the site. Treating a web project as a software development project will make it easier to meet schedules and to ensure the quality of the site' [26].

The overall impression achieved by comparing game design handbooks to web/software and general IT design handbooks is one of a struggle between those who believe design is an art, which relies on the designer's vision, i.e. supplier driven, and those who believe design is a science which relies on market research and user surveys i.e. consumer driven. This paper proposes that the impression presented by these books is too simplistic. It argues that design in companies who produce symbolic goods is not driven simply by upstream technological invention and vision or by downstream consumer demand. The paper presents an analysis of game design in a variety of digital games companies in Ireland and explores the relative mix of historical, political, economic, social, technical and demand factors involved. In addition it argues that the relative importance of these factors vary according to the stage of development of the firm, the target market and the target platform of a particular project.

The paper has a secondary task which is to begin to explore the construction of gender in digital games. The paper explores how the intention to design for a male 25-40 user group is translated into the structure and content of one digital online strategy game.

2. GENERAL THEORIES ABOUT DESIGN AND THE ROLE OF USERS IN DESIGN

The industrial innovation, sociology of science and technology and media history literature are a rich source of information on the range of factors influencing the industrial and consumer innovation process. In this paper design is seen as synonymous with innovation in the broadest sense, i.e. the act of getting a new process or product to the market and the related organisational, knowledge, social and other changes associated with this process. Design is fundamentally a process where change but also continuities are produced and a process which can have both intended and unintended consequences. To investigate design is also to investigate the relationship between structure and agency in society and the degree of freedom which individuals have to act within a wider set of relationships.

The literature demonstrates that the process of design varies from firm to firm - from large firm to small firm, from start-up to mature firm – and from innovation to innovation – some may be quite radical while others may be simply incremental innovations around an existing design. Further, innovations vary in terms of their degree of flexibility in the design and diffusion stages. In nearly all sectors the design process is risky and uncertain and there are numerous external and non-market factors which a firm cannot control including government regulations, standards, public policy, consumer pressure and cultural values [18].

Design is not only about production but is also fundamentally tied to consumption or use. What is particularly striking about the literature on innovation is that while on the one hand there is an overwhelming consensus that an innovation which does not take into account its target market will fail, there are equally as many empirical studies which show that companies often fail to take into account user needs or having conducted market research, usability studies and market trials their innovations still failed because they were unable or unwilling to take account of the results [8, 24, 39, 41]. A recent collection of papers on the role of demand and users in innovation from both sociological and economic perspectives notes;

> ‘ but it will not be successful (and innovations can be successes or failures) if there is no demand for it – if users do not want it. Understanding user needs was identified in early studies of innovation as an important success factor, and it is one of the justifications for market research: but knowing how important demand is, or understanding how important user needs are in innovation does not tell us much about how they are actually detected or constructed by innovators, or how they are incorporated into the innovation. Some entrepreneurs find out what users want, or do not want, only when their

> innovation fails, or when customers complain or send it back. Some innovations are commercialised by entrepreneurs who say they 'just know' what the market wants; or who make assumptions about customers' needs (on the basis, for example, that the market is made up of people like themselves.' [8:2]

A common conclusion emerging from much of this work is that while designers may try to design for certain ideal users and prescribe certain actions this design process is often based upon partial or indeed mis-information about end users. Silverstone and Haddon point out that designers' knowledge of users is often tacit, contradictory and untested and in this uncertain environment organisational cultures and powerful sub-groups can compete to determine design (1996:51). Woolgar (1991) points out that even when explicit attempts are made to gain knowledge about end users, as in usability trials, this information may not be useful or may not be used to inform the design process if other agendas are deemed more important. The Social Learning in Multimedia project (1996-1999) found that the eventual uses of products are often far removed from what the designer's intended and even when explicit experiments are invoked - from pilots, and feasibility studies to trials - the design of new media products remains experimental and racked with uncertainties. [1] Others argue that consumers are only likely to get involved in the later stages of the innovation process, particularly if the innovation is radical. Cawson et al [5] found that in large consumer firms ideas for innovations were more likely to emerge from technical staff rather than from market research or other departments. Oudshoorn (2001) in her study of public and private multimedia design found that the design process was driven by organisational and technological factors more than the needs of end users, and the designers considered themselves as adequate models for end users.

A related point however is that usability and functuality are not in themselves adequate to guarantee success in the marketplace. Drawing upon an established literature in the sociology of consumption and audience studies Silverstone and Haddon emphasise the 'symbolic nature and meaning' of technologies and with media technologies this is further complicated given their dual life as both object and medium. Thus the symbolic design of media technologies operates on two levels, the level of the artifact and the level of the content [5:43] [33]. Silverstone and Haddon (1996:45) argue that in order to understand the design of a media technology we must examine three interrelated dimensions: the creation of the artefact, the construction of the user and the capturing of that user

[1] See http://www.rcss.ed.ac.uk/research/slim.html

through the creation of a product space. They explain the three dimensions thus:

> 'the first and most obvious, is that of creating the artefact. In this sense of design objects are fashioned functionally and aesthetically. They have to appeal and they are made to work…the second dimension is what might be called constructing the user. In this sense of design, images of eventual users are incorporated into the fabric of the object, but at the same time users are designed themselves – as ideal or as necessary to complete both the function and vision embodies in the artefact. The third dimension of design involves catching the consumer. This places design as a central component of the wider economic and social processes of commodification.' (1996:45)

Other work would suggest that designers are not just constructing the user in terms of their identity but also configuring the user in terms of setting limits and boundaries on user actions. For Steve Woolgar a new technology is interpretively flexible, i.e. there are many different possibilities in terms of design. For him therefore the development of a new technology can be usefully analysed through the metaphor of the machine as text (1991:60). Design for him is about the construction of this text (writing) and its use (reading). The text therefore mediates in the relationship between the reader and the writer and this ascription of a role to the technology is important. Of further importance is his assertion that only certain readings are possible and that these readings are made available by certain associations in the text. Design is a process of configuring the user and defining boundaries between the company, the user and the machine: a process which is often based on incomplete, tacit and contradictory information about end users. It is a process of negotiating hardware and software characteristics in relation to an ideal or real user, the designer's intentions, the functional characteristics of the machine/software and differing organisational requirements. In later writings he suggests that while the relations and conceptions embodied in technologies in general are fairly durable, the relations and conceptions embodied in software are often more malleable [9].

> 'the emergence of a new range of microcomputers crucially entails the definition, delineation and emergence of 'The User'. We could say that this process amounts to the (social) construction of the user. However, it is not just the identity of the user which is constructed. For along with negotiation over who the user might be, comes a set of design (and other) activities which attempt to define and delimit the user's possible actions. …the evolving machine effectively attempts to configure the user.' [41:61]

Conceptualising technology as 'text' borrows a key concept from media studies and literary studies and serves to highlight the human/social construction of a technology and its flexibility - the term text comes from the root meaning to weave [27]. Media studies is particularly concerned with how meaning is constructed in a text and draws upon key concepts developed within semiotics, a field of study which developed within linguistics in the early part of the 20th century, to analyse the structures of meaning underlying a text. Roland Barthes is credited with broadening the application of the semiotic method to a range of cultural activities, from wrestling to photography [3, 4]. He noted that the selection of certain codes and signs over others in a text could service to naturalise and reproduce myths in society including masculinity, objectivity etc. Later in his life Barthes acknowledged that despite the best attempts of a designer a text may be open to multiple readings i.e. polysemy. Since the 1980s audience and ethnographic research have expanded our understanding of how meaning is re-constructed by audiences and has shown how reading should be understood as a process of interpretation which is structured by social class, gender, ethnicity, space and generation [17].

Despite, or maybe because of, the findings of qualitative researchers, there has been a re-evaluation of the power of the media in relation to the audience, a questioning of methods which rely on the researcher's subjective interpretation of a text and a move to understand users and contexts of use. Against this academic background Woolgar's conceptualisation of user configuration has been criticised by some researchers from media studies who appear to fear a return to more structuralist approaches to the media which deny the audience/user the agency which audience studies have shown they exhibit. Silverstone and Haddon (1996:51) for example appear to suggest that Woolgar's conceptualisation of design as user **configuration** may be too deterministic and fails to clarify the relations of determinacy between the machine/text and end users. They see design as a process where the user is **imagined rather than configured** [5].

These theoretical battle lines highlight that the basic question for many sociologists of science and technology is how much power to ascribe to the designer and to the user in the design/consumption process and how best to study it. To complicate things further Woolgar's work suggests that it is important to understand not just the role of human actors in the design and consumption process, but also the role of non-human actors. Drawing upon the work of Latour [20] Akrich notes that even the most mundane technical objects are the product of 'diverse forces' and a 'long chain of people, products, tools, machines money' etc (1992). Technical objects she argues should be viewed as hetereogeneous networks comprising of human and non-human elements. In order to understand social change therefore

we must study both the technical and the social. We must investigate how technologies constrain actants, the character of these technologies and the extent to which they are able to reshape the object.

Both Akrich and Latour use a language adapted from semiotics (1,18: 258). For them semiotics is the study of how meaning is built and how one meaning becomes more dominant and privileged over others. An analysis of a particular setting should explore the inscription of a script by the engineer, designer etc. and the prescription by that device of certain actions. Designing therefore means distributing skills, responsibilities and actions between the user, the technical object and other actants. Akrich [1:208] writes that designers anticipate and define the preferences, motives, tastes and competencies of potential users and inscribe these 'scripts' or 'scenarios' into the design of a new product. Thus the technical objects define a 'framework of action' within which actors are supposed to act. Akrich [2] asserts that;

> 'innovators are from the very start constantly interested in their future users. They construct many different representations of these users, and objectify these representations in technical choices…the creation of successful artifacts depends on the ability of innovators to generate user representations and integrate them into their designs, and that alternative strategies are available for aligning the various user positions.' [2:168]

The mostly commonly used strategies identified by Akrich include explicit techniques like market surveys, consumer testing and feedback on experience and implicit techniques such as the I – methodology, experts and other products. Based on her research she concludes that implicit methods are often more powerful and important than explicit ones. For her the main challenge facing designers is how to coordinate and apply the information gathered and the main challenge for public authorities is to create mediators between innovators and end-users to enable new user representations to be considered where before they were excluded.

3. MORE SPECIFIC RESEARCH ON DESIGN AND GENDER

Drawing upon the work of Madeline Akrich (1992; 1995), Bruno Latour and Steve Woolgar, Nelly Oudshoorn (2001) has explored the concepts of technology as text and user configuration in the design of two multimedia online services. She argues that macro/meso/micro dynamics can shape the inscription of certain representations of users in artefacts and amount to technologies containing a script which assigns certain actions to users and the artefact. In one case she found that while the aim was to design for everyone in reality a male, technologically literate, and technologically fascinated, script was articulated. She argued that in addition to exploring

the agendas of the various parties involved the use by the male designer's of their own taste and desires as guidelines in design was inscribing a gender script in the service.

Some research has indicated that masculinity is intimately based upon technological competence and performance and indeed that technology itself, for historical and social reasons, has a male bias [6, 38:137]. However there may be many forms of masculinity. Research into masculinity and computer technology highlights the importance of control and mastery of the technology and how this is a source of power within the male dominated sub-culture of hacking. Sherry Turkle's research argues that for computer hackers an ability to control the latest technology is an intense need [37]. Wacjman argues that this need is not just individual but bestows value more widely in society as well. Nevertheless she argues it is a value which is more available to men than to women and draws heavily upon a wide system of symbols and metaphors.

> 'no matter how masculinity is defined according to this ever adaptable ideology, it always constructs women as ill-suited to technological pursuits.' (pg.146)

Many studies have observed that most computer programmers and digital game designers are men and that this has an important influence on game design. For example, J C Herz notes that most designers are male and can't figure out what girls want and don't want [15:174]. Jenkins and Cassell argue that video games offer a prime site to analyse the social construction of gender [16:18]. In their work they investigate female representation; culturally in terms of characters in games and proportionally in game companies. They argue it is important that women are represented in these two domains and not excluded from gaining access to technology fields and technology use.

> 'historically gender was an unexploited category in video game design, with male designers developing games based on their own tastes and cultural assumptions without considering how these approaches might be anything other than gender neutral..Yet as feminist critics note, as long as masculinity remains the invisible norm, … , unselfconscious efforts are likely to simply perpetuate male dominance. As game designer John Romero ("Revolution" 1997) explained, "Men design games for themselves because they understand what they know is fun. They don't understand what women find fun.'[16:25-26]

Work by McQuail in other media sectors would suggest that increasing the number of female game designers may not be enough if the wider masculine production culture is left unchanged [22]. He argues that simply influencing the proportional representation of women may not have any influence on the production of content if these women have been socialised into a wider male production culture. An organisational culture will often prioritise financial necessity and induce conformity to the traditional ways of producing content. McQuail also notes that external forces, organisational goals, professional standards and personal ambitions usually shape the personal views of, for example, a journalist. Wajcman would appear to agree when she discusses that early feminist studies of science.

> 'rarely has the problem been identified as the way engineering has been conceived and taught. …I share Cockburn's view that this reluctance 'to enter' is to do with the sex-stereotyped definition of technology as an activity appropriate for men. As with science, the very language of technology, its symbolism, is masculine. It is not simply a question of acquiring skills because these skills are embedded in a culture of masculinity that is largely coterminous with the culture of technology. Both in school and in the workplace this culture is incompatible with femininity. Therefore, to enter this world, to learn its language, women have first to forsake their femininity.'[38:19]

Not everyone would agree. Håpnes and Sørensen argue that the empirical findings to support this theory are ambiguous [14:174]. They question the implicit understanding that gender is the dominant force in design, noting that in feminism and constructivism gender is not pre-given. In their study of computer hacker culture in Norway for example they found gender ambiguities and that hackers displayed both masculine and feminine qualities of competition and collaboration, of control and artistic creation, of play and creative design.

Silverstone, Haddon and Ian Miles have written about the important role that symbolism plays in relation to the innovation process. This symbolism may operate at the level of the object, at the level of the content or through the marketing materials associated with individual products or services. The symbolism may have to do with displays of fashion/individuality, novelty/tradition, taste, wealth/prudence and group identity (Ibid:1995:46). The symbolism surrounding and within digital games is therefore important to consider in relation to gender identity. There has been much discussion for example about the portrayal of women, gender bias and stereotyping in digital games and how this might contribute to wider socialisation processes [31] [35]. While the number

of female characters in games has increased the majority of these characters are still largely sexist and racist which acts to exclude female users. This is despite the best efforts of entrepreneurial feminists and others to raise awareness of the issue [13, 16, 31, 32, 35, 42]. Research also points to the market success of androgynous games like Tetris and the Sims. As J. C. Herz points out:

> 'Girls are looking for experiences, and boys are looking for bragging rights. ..the problem is, videogame designers being mostly male, can't seem to figure out what girls want in a videogame..catering to boys is much more fun. Videogame companies are very good at it and it makes them rich. And they don't want to mess with a winning formula.' [15:174]

Another important clue to understanding the gender construction of digital games may be found in the wider social and historical context from which the designers and companies have emerged. The social history of digital games from the large science research labs to pin-ball parlours and home PCs has played a part in gendering the technology, the games and game production as masculine. Indeed it has been argued by some that women use computer technology more as a tool than as a play-thing and only become comfortable with it when an activity renders the technology invisible [12], [34]. PC games and the publicity surrounding them exploit the advanced technological capabilities of both the system and the user. The lack of women in the games development field may stem from their lack of access to computer technology in their early years and the fact that both boys and girls tend to label computer technology as male from early on. Computer console, mobile and handheld technologies and games presuppose much less technological knowledge and have a much more balanced gender usage.

4. MACRO AND MESO LEVEL FACTORS INFLUENCING DIGITAL GAME DESIGN IN IRELAND

As noted above macro historical, social, political and economic factors as well as industry specificities can have an influence on micro processes of innovation [40] [10] [29] [25] [23]. Thus it is important to understand the wider innovation environment in Ireland and trends in the games industry globally before we turn our attention to one particular company.

This section draws upon a survey of digital games companies in Ireland in 2001 and semi-structured interviews with 15 actors in this sector. This data indicated that the power of publishers as funders and gateways into the global distribution chain were significant barriers to entry. With the increasing production values and costs of producing a digital game publishers are very risk averse and unlikely to take a risk on investing in a

start-up company with no track record or in a game concept which did not readily conform to existing game categories and genres. Many Irish start-ups found that they had to create an advanced demo to prove their skills before they could approach publishers for funding. Generally they financed this through producing game shorts for clients or raising venture capital.

If a publisher is providing the development money then their role in concept development is key. Given the difficulties in obtaining development finance from publishers most companies will approach a publisher knowing in advance what types of games they publish and what they are likely to publish in the coming two years. The desire for product innovation is constrained by the need to fit into a product portfolio. The initial design document is usually based on tacit knowledge and informal market research as to which type of games are currently successful in the marketplace, on which platform and for whom. For all the start-up companies examined their knowledge of end users can be described as only partial and their design strategies are based on implicit assumptions modified by external influences, particularly those of funders and publishers.

> 'It wasn't my first choice of game but it is easier to develop. We've had better feedback from investors about this game.' (Interview 10)

> 'We started off in a kind of very grim, gothic kind of environment so it was kind of more like combat racing with chains and baseball bats… And publishers had a problem, …publishers kind of didn't know where they should really position it, cause it wasn't a normal motorbike racing game and it wasn't an all out combat thing. Several publishers expressed interest but...it turned out basically was that most publishers wanted straight racing…publishers said okay we like it but we will take it if it is a normal racing game and we put some MotorCross star in it.' (Interview 6)

For other companies interviewed the role of the publisher was compounded by the role of the hardware manufacturer if one was designing for one of the main consoles. With regard to the console sector of the industry a very limited number of companies essentially control the technological platforms companies must design for, the rates of change of these platforms and the skills necessary to design for them. For smaller start-up companies console transition can pose substantial learning and reskilling problems given that they have less resources to devote to R 'n D. The closure/withdrawal of all the foreign owned games companies which located in Ireland in the 1980s and early 1990s by 2001 coincided with the emergence of a new digital games platform and/or decisions by mother companies to diversify into other areas. For

indigenous companies the transition period between one console and the next has been problematic. In economics literature a company's technological trajectory is determined by the knowledge and skills of a firm and the ability to change trajectory and avoid 'lock-in' varies from company to company.

The case of one company, Funcom, is instructive in explaining the technological lock-in involved in each console platform and the struggle to learn new skills and forget, or adapt, old skills faced by development companies. Funcom Dublin, a branch of a Norwegian company, was established in Ireland in 1995. While in the early stages of the branch's development developers were taken to Norway to train, by 2001 the company consisted of almost an entirely Irish workforce. By 1996 the Irish team had developed *Impact Racing* for Sony PlayStation One (PSone) and Sega Saturn and published by JVC. By 1999 the Irish team had developed and published two further titles for PSone, *Championship MotorCross featuring Ricky Carmichael* published by THQ and *Speed Freaks* published by Sony Computer Entertainment Europe. In 2000 Speed Freaks was released as *Speed Punks* in the US. When the author interviewed a developer from the company in 2001 the company had decided to develop a game for the X-Box rather than the PS2 but they had devoted a considerable amount of time and resources, around six months, to making this decision.

> 'we naturally assumed as we had made PSone games that we would make PS2 games. So we got a development kit...and after a couple of months, a month or two of our lead programmer looking into it, he did a report … which said the PS2 is a very very difficult machine to programme for ... What Sony did with the PS2 was they made a very powerful machine but they made a very low level machine so to get the most of it you really have to get your hands extremely dirty and well really get down to the machine level ….we have all this PSone experience practically none of that hardware experience can be carried over to PS2 … usually in the case of consoles, like Nintendo with the NES and the SNES and 64, those machines bore no relation to each other hardware wise... so basically we didn't want to start everything from scratch because we are no big enough for that, big companies like EA and Square..can afford to have a big R' n D department and coders working away doing the legwork…around that time Microsoft announced their plans for their entry into the market, the X-Box, so we said okay before we make a final decision on PS2 we will check out the X-Box. We got X-Box kit, looked at it, read up on the documentation and decided that this was a lot more developer friendly than PS2 so basically that is where we are now. We started our X-Box game six months ago.' (Interview 6)

Evidence from interviews would suggest that game development companies are challenged by the emergence of each new platform to reassess their technological skills and change technological trajectory. In some cases this involves significant time and resource costs as well as restructuring. It would appear that only companies with the time and financial resources to spend on assessing each new technology can survive. This favours development companies part owned by the console manufacturers or global publishers to the detriment of independent third parties. For independent third parties the rate of technological change combined with the second factor the control and power of the publishers/financiers provide formidable challenges.

These industry specific factors are supplemented in the Irish case by a number of other nationally specific factors including:

1. The lack of appropriate labour available to this industry
2. The lack of capital resources
3. The inadequacy of infrastructures
4. The lack of knowledge resources about the industry
5. The lack of specialised support
6. Presence of related software and media industries
7. Absence of role model
8. Economic confidence inspired by Celtic Tiger
9. Negative perception of games

Given space constraints we can only deal briefly with these issues here[2]. A survey of Irish digital game companies found that by 2001 there were only two companies producing PC games and no console developer. This was supplemented by six companies producing game shorts, two part-time development companies, two specialist service companies and two multinational companies localising games. Purely in development there were approximately 50 people.

Many people in the Irish game development industry enter without formal training in digital game design and often learn on the job. Interviewees spoke of employees 'passion' and 'obsession' with digital games and the key importance of these traits in the face of steep learning curves, rapidly evolving technologies and short deadlines. Socio-technical networks involving upstream technological suppliers, online resources and colleagues in related companies play an important role in assisting these internal learning processes. Key skills that were missing in the Irish labour pool are imported from abroad or if this is not an option the game concept is modified according to the knowledge and skill resources available. In

[2] For further info. see 19. Kerr, A. *Loading... Please Wait. Ireland and the Global Games Industry*. STeM, Dublin City University, Dublin, 2002.

particular the lack of high-end 3D animation skills meant that companies were designing less animation heavy games and compensating with other forms. The local availability of key knowledge resources played an important role in determining form and content.

> ' we are always kind of keeping up to date with mobile trends, wireless trends, digital TV trends, where we see the next mass market entertainment is going to come from.' (Interview 14)

> 'if you start a company you are going to have to be hiring new people with a lot of overheads involved in training them and you have to make your mistakes so that's going to add … about an extra six months just because people make mistakes.' (Interview 13)

> 'the level of animation has increased so much in games now that, it is a very specific skill needed in games, something called low polygon animation. So there are limitations to doing it, so really experience counts for a lot.' (Interview 10)

The design of a digital game takes place within an organisation which has specific goals. It involves negotiation between these goals, the functional possibilities afforded by the underlying technologies, the knowledge resources available and external influences. Design is inextricably tied up with a company's ability to appropriate new knowledge via continuous learning processes (learning by doing, learning by interacting, learning by forgetting). The design process is also moderated by the agendas of different external constituencies: hardware producers, publishers, venture capitalists, development agencies, other financiers and final users.

In all the cases examined the company goal was to get a publishing deal and to survive in the global games industry, not to produce the most innovative new game on the market. Given that all these companies were start-ups their design ambitions were tempered by the necessity to obtain funding, the need to work within this budget and the need to get a second project and publishing deal before the first was finished. From the beginning projects were conceptualised in comparison with existing products on the market, established genres and identifying an additional 'hook' which would make their product different.

> ' our model will be an 18 month development cycle because we have to for the nature of the business now, literally if we go over that we will loose our own money…the money you get to develop it is your profits, if you make any sales at all that is brilliant because the chances of you

doing it are so slim. It is a very simple way of looking at it.'
(Interview 10)

The culture of production in these companies can be best described as creative, informal, intimate, flexible and male-dominated. All interviewees spoke at length about how creative the industry was and how informal work environments enhanced this creativity. This informality extended to dress code - shirts and ties were a rarity. In one case where the company had tried to impose more stringent time keeping it was reported that staff had left and morale was very low. The use of terms like design 'house' and 'studio' give a sense of the intimate culture of production involved. The companies employed teams of workers, often on contract, but all employed less than twenty people, which is common also in successful companies abroad. Given the small size of the companies they tended to buy in services including music composition, musical editing, character animation and marketing. All of the companies interviewed had no marketing expertise in-house relying instead on expertise provided by publishers, social networks in other countries or service companies. One had considered self-publishing but would be backed in this initiative by their mother company abroad. All the companies examined had no organisational hierarchies with CEOs working as programmers, market researchers and producers. The companies worked flexible hours, often starting work late in the morning and working until they were finished, whatever time that might be.

' no-one drives or very few of the guys drive so it has to be city centre. Most of our guys don't come in until 12 and code until midnight. It is not that punctual a house in that sense.' (Interview 3)

'in (this company) if you do your work you are sorted, if you don't do the work then it doesn't matter if you spend every last hour working ..if you are working with creative people…you know you have to have a nice environment, nice and friendly, not too much bullshit.' (Interview 13)

The proportion of women in the digital games companies interviewed in this project was very low and the development teams were almost exclusively composed of white males aged between 23-40 years of age from Ireland, the UK and the US. One company employed one female developer on a total staff of over 50. Two other companies employed one woman each but again there were no female developers, the women worked as business managers.

'it is very young, it is a very male industry, we've only got one female developer..you will see a lot of that at the game shows as well..I mean the gameshows are tits and ass, because of who the industry is, the decision

> makers on buying major pieces of software are 19/20 year old, who probably stopped their college education half way through, because it was boring, they weren't making any cash, but they were naturally gifted. I mean the profile of a lot of our guys is the profile of a lot of game developers themselves.' (Interview 3)

> 'there are not a lot of women who work in the industry but it is getting bigger.' (Interview 11)

The design process in these companies can be described as collaborative, experimental, networked and flexible. Design in these companies is a collaborative team effort although there is usually one producer, who presents the company's ideas to the public and champions each project. They also play a role in keeping all the various design elements together through regular team meetings and design appraisals. In a field where the main technological platforms are designed and owned by external players development companies are aware of the need to constantly appraise the functional and legal possibilities and constraints of the platform they are designing for.

While these companies are clearly innovative and flexible in relation to processes of production the designers of web, PC, console and online games do not stick rigidly to a client's specification brief but rather seem to incrementally innovate around an established product design. Each design team works to a design document which is developed by a core team and modified by external interests.

End user involvement in the early stages of the game design process is indirect via the representations and knowledge resources of the publishers and developers. While publishing companies may employ market research and other direct methods of user involvement none of the development companies examined employed direct user research. Users are therefore more imagined rather than real in this process. Real user involvement begins at the testing stage where either online or locally available experienced players are recruited from a limited group of enthusiastic players to test run the game and their suggestions rated according to urgency and resources. Woolgar (1991:83) defines beta testers as a small group of 'trusted and privileged customers who are happy to try out new products. These customers gain advance notice of the release of the new products in exchange for feeding back information about how the product can be finally improved.'

The role of the publishers in determining content, the predominance of young males as designers and the implicit use of the I-methodology as design strategy in the companies examined are important findings. While gender was not the main theme of this research project it emerged not only in relation to the proportional representation of women in digital games companies (covered earlier in this section) but also in relation to representations of final users which informed the games design process. The three PC/console companies examined were developing sports, racing and strategy games for the 12-30 year old male PC game player. Thus the designers were excluding non-male and non-PC literate users. At this stage of the research and design projects we cannot comment on the cultural representation of women or other groups in the games themselves or how these representations were negotiated by real users. Nevertheless these findings seem to collaborate the work of Jenkins and Cassells (1998: 7) who note that 'video games provide a prime example of the social construction of gender'.

> 'it is aimed at the PC Online player, the PC online player is predominantly average 27, high income earner, unfortunately generally male, the female games market is a market which is really not very well defined, it hasn't been very well serviced, it is only recently in the last two or three years that certain game publishers even attempted to aimed at that market..it is not a Barbie game, it is not you know, but it is just an addictive strategy game but it doesn't have a gore element to it, it is not necessarily violent. Q – do you have any female beta testers? Oh, we did yes, but as you would expect they would be the vast minority in the group.' (Interview 14)

> 'our market is male sports fans probably 12-50 but essentially the core market is 12-30 male sports fans' (Interview 10)

The companies examined pointed out that they were too small to pioneer new types of games or innovative marketing which might attract other user groups – their goal was to get published. The companies were clearly aware that other types of games might appeal to a wider range of players but it seems that the macro and meso culture of the global games industry can be traced in these micro cases and they felt that they would only get published if they designed a strong genre type of game aimed at a young male market. Another element in the mix is clearly that the male developers like to play racing, sports and strategy games and they also like developing them.

> 'PC games… is mainly male dominated. Console games between forty and forty-five percent of people who play are female, so it is roughly 50/50 on console games cause they tend to be aimed at a younger

demographic, the games are simpler, I don't mean, they are very non-gender specific the games. .. on the PC they tend to be more what we call hard core games, a lot of violence, a lot of sport, … what we are getting into now, online games where you take up a character..it is not just about going out and fighting and finding a damsel whatever, and more and more women I think are getting into online games because the games are changing.' (Interview 10)

' the biggest seller was the Barbie Dress Designer..but whenever you actually see games which are properly demographically researched like Abes Oddysee which was pretty much a fifty fifty split, males and female players, it was like a platform game but there was no guts or anything in it..and because there were a lot more women playing the ultimate sales went up..the ultimate game which has sold bucketloads is SIMS..' (Interview 11)

'I think it is really hard to get an overlap, maybe with online games you tend to have, cause you can't have an online world with just guys..it has to have a mix..' (Interview 13)

'it is very hard unless you have very patronising things like Barbie's Pony Breeder or something like that..blatantly obvious things like that are the only things explicitly aimed at the female audience..as to what appeals to a 20 year old female market we don't know and I don't think anyone has figured out yet.'
(Interview 6)

In digital games development the lines of influence are many from hardware developers, to funders, publishers and end users. However in the hierarchy of determinants, and in the pre-release design stage it appears that end users have less direct influence on the design of content than we might expect. Design in the digital games industry is a highly networked activity and although some of this networking involves testing via end users much of it involves negotiating between the goals and indirect user representations of the design team and the goals and indirect user representations of their funders.

5. COMPANY SPECIFIC FACTORS AND USER REPRESENTATION

Akrich suggests that in order to uncover the links between the technical choices, user's representations and actual use of technologies is to follow the negotiations between the 'innovator and potential users and to study the way in which the results of such negotiations are translated into technological form.' She warns that we cannot be satisfied with the designer's point of view alone and have to continually explore the relationship between the projected user and the real user. Bearing this in mind an online game which is constantly updated and contains forums and feedback channels provides an interesting opportunity to study the linkages between production and consumption. However a caveat must be entered here in that this is ongoing research and to date most of the attention has been given to the designer's point of view, although the game as text and user perspective will be addressed in the next stage of the project[3].

Following the 2001 industry survey in Ireland a more detailed analysis in terms of documentation, publicity and interviews with designers has been conducted in one digital game company to explore the construction of the technology product and the role that representations of end users and actual end users play in the game design process. At this stage the company wishes to remain anonymous and henceforth shall be called games.inc[4].

The company under examination is a start-up company established in 2000 by a group of friends who had always been interested in digital and non-digital games.

> 'I can't tell you what my first game was but I basically used to play table stuff, table-top strategy games till I was a teenager. We would be playing them for fifteen hours a day like you know, big armies, big tables. We would play computer games, we would play draughts, we would play chess, we would play monopoly. We never did anything on the betting side, we weren't poker players or anything, we were just strategy gamers, we were obsessed by it really.' (Interview 1b – CEO of company)

[3] This stage will be followed by analysis of the game and gameplay.
[4] This is a fictional name and initial searches on the Internet found no companies with the name.

Going back to the previous section it is worth reiterating that the company under examination;

1. Is the only digital game design company in Ireland developing a game for the online PC market.
2. There are no third level courses producing game designers or game specific programmers in Ireland.
3. Most Irish people who work in this industry have emigrated to the UK and the US development industries.
4. There are no programmes or policies of support for this sector.

Based in Dublin at the time of the first and second interviews the company employed 13 people full-time staff; six programmers, five designers, a producer and a staff writer. There are no female members of staff in the company although they do retain a female business consultant. Staff in the company regretted this but added 'It seems to just interest guys.' (Interview 3b – game designer). At the time of the second interview there were 4-5 people still working full time on the online strategy game. The company was pre-revenue at the time of writing having only sold some small digital games to client companies.

The game designers interviewed had not worked in a game company before but rather in more general information technology (IT) companies. As designers they did not identify with a hacker culture or indeed with hard-core gamers who 'forget to eat'. Nevertheless they did enjoy the challenge posed by computer technology. 'I get a kick out of that..I don't think by the book. I like to find out ways of doing things.' (Interview 3) They were also keen game players in the broadest sense of games. They devoted much thought to what makes a game fun, the kind of experience they want to give the player and the relationship between digital games and non-digital games.

> 'the thing that fascinates me the most about using the games as I suppose an artistic medium is that you can pick a basic emotion, like as a designer, you know, and try to pull that out of people. Like you know to play on somebody's greedy side. You know it would be very easy to make a game that just did that and you could get the quietest person on earth and just watch them turn into this monster.' (Interview 3b)

The focus of this research is an online strategy game launched in December 2001 via a German based Internet service provider's (ISP) portal. While games.inc was responsible for developing the game the German based ISP played an intermediary role between the designers and players and was responsible for marketing it. At the time of writing the game had 1,000 subscribers approximately. The following description of the game is drawn from the game's website.

> ‘an online strategy game set in a fantasy world based on a unique interpretation of Celtic mythology. You control a warband of 12 uniquely skilled characters.
>
> There are three major aspects to the game: a Combat System, encompassing melee, ranged fire and magical incantations; a Resource and Warband Management System whereby players can move their warbands around the map of Erin and also minister to the health and skills of each of its characters; and a Trading and Political System, giving players the opportunity to barter resources or characters and to rise to a position of power and prominence on their race Council.
>
> It also has the support of an ever-expanding Mythos section, wherein the background of Erin is detailed and the exploits of the gaming community are recorded: players will therefore have the opportunity to see their actions shape the world!’

According to the designers on the game the design goal was to design an online strategy game set in ancient Ireland and loosely based around the mythic battles between the invading Fomors and the resident Tuatha de Dannan. The strategy game is supplemented by communication tools including online chat, e-mail and online fora where players can communicate with each other and the designers. These are supplemented by community building tools where the designers post battle reports based on players battles and a continuing narrative based on the outcomes of player battles. Another feature allows both designers and players to observe ongoing battles and strategies.

> ‘The ultimate aim for me is if someone lost a character and was emotionally affected by it.’ (Interview 2b)
>
> ‘There are a couple of genres intertwined, … like the fantasy/historical type, like the theme type genre and the actual gameplay genre,’ (Interview 3b)
>
> ‘it is not so much a direct game as it is a social environment – you just happen to express it in a game format that has a certain set of rules and a certain set of conditionality attached to it.’ (Interview 1b)

The designers were keen to avoid the clichés and stereotypes associated with Celticism and therefore they drew inspiration from pre-Celtic Irish myths, legends and folklore for the background story and to develop an ‘authentic feeling’ for the game. They also wanted to design an emotionally involving game where the players developed a relationship with the characters in their race. Each character has a unique set of skills and fame

points are awarded for their achievements in battle. A random allocation of powers and artefacts prior to each battle adds an element of chance to the game which users cannot control. The game logic is controlled at the server end in an effort to avoid cheating. While we may not go so far as to conceive of this as technological agency there is clearly a valency and role for the technology which directs and shapes the user's actions. This brings to mind Akrich's work on how designers draw boundaries around technologies and distribute skills, responsibilities and actions between users, the technical object and other actants. In this case the technological power and ability to fix bugs, to make changes to the game and to record the game's history are responsibilities retained by the designers while the player is allowed some customisation – of a character's name, their user profile – and feedback channels. Marketing and promotion are the responsibility of third parties/intermediaries like ISPs.

The company's founders developed the game concept over a period of 4-5 years. This took place before the company was established. Once the company was founded they developed a table-top version of the game to test out different game strategies and ideas. Unlike many of the existing online strategy games this game was match based. Visually, the game is highly stylised and cartoon like rather than photo-realistic. The aim was to develop characters which were quite bright so that players could identify their warriors easily, a weakness the designers had identified in other games. Music was another important element where the company thought they could exploit locally available talent and address something other online games lacked. Both these areas were clear examples of an implicit form of user representation whereby product features are defined in opposition to existing products on the market [2:174].

> 'There are a couple of things that we kind of take very seriously in what we do and music is one of them because it is one of the main criticisms of a lot of games.' (Interview 1b)

It is clear from the interviews that during the initial concept design and production stage of the game designers formed implicit representations as to what they believed players would like. There representations were very much based on what they liked themselves as game players, rather than any other formal and explicit user research. This conforms with Akrich's notion of an I-methodology whereby designers rely on personal experience.

> 'I suppose you could say it is aimed at people like ourselves, like you know it tends to be getting picked up by the sort of people who are interested in fantasy/strategy games…. The thing is that online games are picked up by reasonably hard core players anyway.' (Interview 2b)

The fact that the game was designed with game players similar to the designers in mind implied that end users would have a certain level of technological literacy, gameplay experience, income and gender. Oudshoorn et al [28] has suggested that this 'designing for yourself' is largely an unconscious process but can lead to the exclusion of other user groups and representations and a gender bias.

> 'that is probably the technology as well.' (Interview 3b)
>
> 'it is aimed at the PC online player. The PC online player is predominantly average age 27, high income earner, unfortunately generally male.' (Interview1)
>
> 'the main players are 27-35 year olds with high disposable incomes and not your spotty 15 year olds. They update their hardware every two years; they buy two games a month and they spend 25 % of their leisure time playing games.' [36]

The use of an I-methodology is informed by personal experience, wider discourses within the game design community about what appeals to whom and what is successful in the market and wider discourses amongst the game playing community, to which the designers belong. These discourses and beliefs tend to perpetuate existing trends in the industry, similar to a technological frame perhaps, and close down innovative game concepts for new player groups. When asked if they thought the game would appeal to female players the designers were uncertain as to what female players would like. They were also uncertain following the launch of the game if they had any female players.

> 'well that depends what the female player likes to do. It is not a Barbie game, .. but it is just an addictive strategy game but it doesn't have a gore element to it. It is not necessarily violent.' (Interview 1b)
>
> 'Q – do you have any female players?
>
> A – I have no idea, they could be all female' (Interview 2b)

However they did think that the domination of male game designers might not help the game to attract a female target market. 'A lot of games are developed by men they are putting in things that they like and a lot of things women may not like', adding that when it came to female players 'to be honest it wasn't something we considered enough.' (Interview 2b). When pressed as to why, they pointed to the legacy and obduracy of certain types of games - which evolved to take advantage of less powerful computers - but acted to restrict contemporary game design. Further, they believed that publishers and funders were less likely to get involved if the company decided to target an unusual demographic or develop a new genre.

> 'the stark reality of games is that violent games sell and people will fund those type of games, science fiction, fantasy, any of the famous genres

have a precedent. If you want to do some 17th century court life game, it might make a really good game but you will have a really hard time funding it.' (Interview 2)

In terms of explicit user involvement the designers themselves initially tested the game for technical and gameplay problems. They noted how some of the people in the company became completely absorbed in the game. However the more implicit representations of users came into contact with real players outside the company when it came to beta testing. At this point the projected male, 27 year old, technologically literate player met with real users around the world. Many of these testers would pop in once or twice a week to check out how the game was progressing. Their feedback ranged from technical to gameplay suggestions and there were a 'few' female testers. Again it could be argued that this form of testing is targeting expert users who are already online game players and play this type of game. Nevertheless the design team found the experience exhilarating.

'well we started off with 1600 people and we just couldn't administer that so we had to narrow that down to 200..you wouldn't have too many people at any one time … so there is no real kind of pattern.' (Interview 1b)

'There were a lot of good suggestions. Some we took on board and some we couldn't. Things we wouldn't have thought of.' (Interview 2b)

Beat testers were rewarded with a B-movie-like short horror game entitled 'The Night of the Brain Eating Zombies from Beyond Mars' and invited to send feedback by e-mail. They also received a flash game trailer for download drawn by a well-known artist who had worked on the comic 2000AD and a 40 second MP3 of the game's soundtrack. Clearly this interaction with beta testers was about building a network of socio-technical relationships. The company was enrolling players, trying to reward their efforts and create loyalty, positioning the company and the game in the marketplace by trading on the cultural capital of established icons and generating hype around the game. In addition to their direct relationship building with players the company has been projecting themselves outwards to a wider potential group of players and investors through interviews in the national press, in international magazines like Wired and on specialist game review sites like Gamespy.com.

Since the game was launched interaction between the company and players is mainly though e-mail and the online game forum which when last checked was mainly used to report bugs in the system and to schedule

matches. The game designers watch games using a ghost system to see how the players are handling the game and challenge players to games. The short-term plan is to introduce upgrades, new features and campaigns to the game once they have enough subscribers. To this end there are inducements on the company's site to get people to refer the game to other users and the person with the most referrals wins an X-Box. The designers are still learning from players through direct communications and through observing games. The more direct communications inform plans for future developments conforming to one of Akrich's more explicit form of representation but in this case it is only filtered once [2:172].

> 'there is one player in particular who kind of has a strategy all of his own, he is probably the most avid player out there. .. I would love to know who the guy is and what he does for a living….he has been good for getting a completely arbitrary view of things cause we've been working so closely with it for so long. He is quite into it.' (Interview 2b)

6. Conclusions

Ongoing research..need to get access to user information and contact users directly..need to play the game more.

Implicit representations about literacy of user, gender..

How is this articulated?..authenticity, celtic environment, combat and fame, importance of strategy,

Haddon and Silverstone…about constructing the user and capturing the consumer, symbolism…commodification..

Akrich…and others..the importance of implicit strategies…personal experience, game playing experts, relexivity, intuition,

as Cawson et al [5:267] concluded in their study 'knowledge about consumption will probably be derived from a more restricted range of sources, such as an even heavier emphasis on personal experience nad preferences, where there is less scope for market research inputs.'

Are these innovations brought about by the close relationship between the suppliers and consumers..e.g. as hobbysists with earlier microcomputers – the vision of consumption//pg 269..

Cawson…these cases producers search for a vision through a technical lens…

However impressions can be desceiving. Firstly, for a game to succeed in the console and PC market sectors of the digital games industry a number of intermediaries, from specialist publishers to retailers, play an important role in shaping and translating the game design and marketing to suit current market tastes. Secondly, despite the pervasive rhetoric about customer-orientation and inclusive design many empirical studies have shown that the concept is rather difficult to implement and often customer needs are compromised by organisational, financial and other factors. Thirdly, it would also be naïve to presume that just because users were not directly involved in the design process, in a physical sense, that users were somehow not being represented in any meaningful way.

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