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The digital Illusio: gender, work and culture in digital game production

Robin Scott Johnson
University of Iowa

THE DIGITAL *ILLUSIO*: GENDER, WORK AND CULTURE IN DIGITAL GAME PRODUCTION

by

Robin Scott Johnson

An Abstract

Of a thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Mass Communications
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Thesis Supervisor: Associate Professor Meenakshi Gigi Durham

ABSTRACT

This dissertation analyzes gender in the commercial production of digital games. The purpose is to develop a detailed understanding of gender as it plays out among individuals who develop creative content and in the ideological constitution of the workplace, and to examine the ways in which these individuals participate in and make sense of the production of digital cultural products. The broad line of questioning attempts to provide detail and depth to how gender is organized, symbolized, and identified during the production a commercial game.

The digital game industry and culture have constructed a strong fortress of androcentric ideas, practices, and experiences, and excluding women from digital media production by making entry into the social space unattractive preserves men's dominance of the field. To research the practices at play in the design of digital games, I conducted a case study using participant observation of the production of a digital game at a U.S. game development studio combined with primary document collection and in-depth interviews of workers who produce the game play, technical and artistic elements used in the creation of games in a team-based organization of labor.

My analysis of the game studio worksite and culture revealed entrenched rituals, practices, and discourses of masculinity that produce and are reproduced by digital game workers. The organization of work in terms of space, organizational function and teamwork form decentralized layers of a network that are tightly controlled by the commercial production cycle. Each layer creates boundaries of inclusion and exclusion along multiple lines, including gender. Additionally, I examined how family socialization, the sexual division of labor in computer work and education, and passion for games idealize masculinity in the habitus of game workers. The habitus also structures working practices that are infused with masculinity based on technical proficiency. These working practices reproduce the gender dynamic of the social and

symbolic space of the field. The studio's culture also constitutes a masculine symbolic space through inter-related discourses of masculine aesthetics, hegemonic masculinity, and science and technology. Implications for making the field of digital games more diverse and open are discussed.

Abstract Approved: _____
Thesis Supervisor

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Title and Department

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Date

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Iowa City, Iowa

CERTIFICATE OF APPROVAL

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PH.D. THESIS

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This is to certify that the Ph.D. thesis of

Robin Scott Johnson

has been approved by the Examining Committee
for the thesis requirement for the Doctor of Philosophy
degree in Mass Communications at the May 2010 graduation.

Thesis Committee: _____
Meenakshi Durham, Thesis Supervisor

_____
Daniel A. Berkowitz

_____
Frank Durham

_____
Sujatha Sosale

_____
Mark Andrejevic

To my family and all dedicated to gender equality and social justice

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CHAPTER 1 – INTRODUCTION

Defining the issue of gender and digital game development

In the run-up to the November 2007 release of *Assassin's Creed*, a digital game from Ubisoft's Montreal-based development studio, avid game players and journalists covering the industry obsessed over a differential element to the traditional marketing of game products – a young, attractive female *producer* who acted as the media contact person. Perhaps this was a turning point in a male-dominated industry where women would be seen as active rather than passive and in positions of authority and prominence. In terms familiar to digital game culture, this would be the transition from the "booth babe" to the woman *manning* the booth at industry trade shows.

The producer, Jade Raymond, had paid her dues by working her way up in the industry to a more prominent position in game development. And she was media savvy. She hosted a television program about gaming, so in her interviews about Ubisoft's new game she was articulate, charismatic, and substantive compared with many of her asocial male counterparts (Israel, 2008). She knew what she was talking about, and she looked good talking about it, thus meeting two core requirements of the youthful male consumer demographic for Ubisoft's new game.

In an industry that is dominated by franchises and serials (Kline et al, 2003; Deuze, 2007), that is, in an industry that constantly manages risk by producing games with pre-existing brand or market awareness, *Assassin's Creed* was a precarious venture. The game is not a franchise or part of a serial, although it was clear that Ubisoft thought it had this potential. *Assassin's Creed* is a so-called next generation game developed for

the most avid players primarily in the North American and European markets. The game has an interesting story line, a novel time period and setting (ancient Middle Eastern cities during the Crusades), and a deadly and secretive white male character roaming an open digital world designed to allow the player to freely chose where to go and how to get there. In short, Ubisoft's game has all the basic requirements that avid gamers now expect: lush, realistic graphics, complex character moves that are difficult to master (Donahoe, 2007), freedom to explore, hegemonic masculinity, and an engaging narrative. Ubisoft's promotion campaign and utilization of Raymond tied the substance of the game to the post-feminist immanence of a competent woman with feminine beauty.

What happened when Raymond became the topic of discussion was tragic – the kind of story that reveals the still prevalent gendered symbolic violence in what is celebrated by Henry Jenkins (2006) and others as participatory culture. The cultural intermediaries covering the industry spun familiar tropes. Typical news articles opened with the sentence, "Let's put this up front; Jade Raymond is hot," followed by an interview or discussion of some aspect of the game (Tilley, 2007; Wilson, 2007). There were also the slightly less savory comparisons of Raymond to well-known female digital game characters. Others complained that she was stealing the spotlight from the more deserving male executive producer. If these news articles and their associated blog items allowed user comments, the male readers commented on Raymond's looks and expressed fantasies of sleeping with her.

The symbolic violence settled in and found its crudest expression when a fanboy (a game-culture euphemism describing avid male gamers who demonstrate high levels of product or brand obsession or general immaturity) photo-shopped Raymond's image into

a “pornographic comic” (McWhertor, 2007). In response, Ubisoft threatened to sue. The situation reached its fever pitch as commentators weighed in on the controversy. Some said that she had it coming because she was an attractive spokeswoman who was fair game. Others questioned why Raymond couldn’t take a joke. While some commentators blamed Ubisoft for throwing her to the wolves, others lamented the continuing sexism and immaturity of the gaming community (LeBlanc, 2008; Greene, 2007). Eventually, the scandal dissolved out of public view like any other news story. But the elements of the story reveal the central problems of the social organization of gender, symbolism and identity in the digital games industry and its associated culture.

Although a woman occupied the central space around the actions and discourses that unfolded, we have to recognize that this is less a “women’s problem” than it is a problem with men and masculinity. The digital game industry and its associated culture continue to build a strong fortress that provides shelter for androcentric ideas, practices, and experiences. And fending off women from media production and fan culture by making entry into the social space repellent preserves this male dominance. It does this by creating a social and cultural environment dominated by men, media products that appeal mostly to men and policing production ideas so that they only come from an experienced, male point of view (Kline et al, 2003; Dyer-Witheford & Sharman, 2005).

This trouble with gender in digital game production and culture, although already present in the innovations of the earliest game creators, has increased as a problematic as games have taken on a commodity form and have grown in cultural importance. Stone’s (1995) ethnographies of interactive game development at two corporations, Atari in the early 1980s and Wellspring in the early 1990s, demonstrate this process. Atari, which had

grown and profited enormously in its early years, created a research lab comprised of recent MIT graduates, both women and men, not to churn out products but to theorize and innovate on the basis of human-machine interactivity and play. The scientists working at the lab were given freedom and as much resources as they needed to work on the ludic aspects of new computer technologies.

When Atari was bought by a large corporation, the new management acted quickly and decisively to eliminate the lab to concentrate on churning out commercial products for a young male demographic. In the corporate and masculine climate of Wellspring in the early 1990s, this market-driven logic drove the development of games. This company, typical of the time, employed no women to create or program digital games, and the few women who worked for the company who tried to pitch ideas about games that would appeal to men and women were ignored. The men who produced games at Wellspring saw no problem with their games, refused to believe that there was sexism in their work and lives, and "intensely" resisted "acquiring insight" (Stone, 1995, p. 163).

Questions about whether there has been continuity or change in regard to this problem with men becomes increasingly important as the digital gaming industry and culture grows and takes on more importance in the lives of individuals. This dissertation provides a much-needed extension on our understanding of gender as it relates to the contemporary production of digital games. The purpose is to develop a detailed understanding of gender as it plays out among individuals who develop creative content in the digital games industry as well as in the ideological constitution of the workplace, and to examine the ways in which these individuals participate in and make sense of the

production of digital cultural products, from a gender-theory perspective. The broad line of questioning attempts to provide detail and depth to how gender is organized, symbolized, and identified during the production a commercial digital game.

My approach encompasses the dialectic of structure and agency in the social and symbolic world of new media production. It is based on the theoretical, sociological, and anthropological work of Pierre Bourdieu, particularly the concepts of field and habitus. This approach acknowledges the existence of objectively identifiable structures in social fields that operate independently of the will and consciousness of individuals. These structures are capable of shaping and constraining our practices or representations, but they are also produced through our practical and symbolic activity. Bourdieu (1989) refers to this dialectic as a twofold social genesis, "on the one hand of the schemes of perception, thought, and action which are constitutive of … habitus, and on the other hand of social structures, and particularly of … fields and of groups" (p. 14).

Feminist theorists have mapped gender onto social or symbolic structures as well as subjective activity. Eschewing the dual system distinction between gender-neutral structures and gendered agency, contemporary socialist feminists call for "systematic efforts to understand the relations between gender as a principle of social organization and as an aspect of social identity" (Wharton, 1991, p. 386). And with the increase in English translations of Bourdieu's work, including his book on gender, *Masculine Domination*, feminists have incorporated, appropriated, and critiqued the concepts of field, habitus, and capital as they relate to issues of gender and power (Krais, 2006; Skeggs & Adkins, 2005; Shi, 2001; McNay, 1999; McCall, 1992; and Moi, 1991). Both

feminist theory and Bourdieu's theories of structure and agency guide my analysis of gender in the field of digital game production.

A review of the literature on gender and digital games

Although this dissertation examines the culture and production of digital games, it is still necessary to review the previous scholarship on gender as it relates to the texts and audiences who play. Much of the literature on gender and digital games has focused on either representations in texts or the differences between male and female game players. Before situating my study within the literature on digital game culture and production, I review the literature about texts and audiences. This review is important for two primary reasons. First, summarizing findings about gender in texts and as subject positions of players provides links to the other points in the overall circuit of culture (Johnson, 1986). Second, it assists in the development of a coherent proscriptive position that can account for the different elements that make up the entire field of digital games.

Gender and digital game texts and players

The literature on gender representation in digital game texts and associated marketing images now spans close to two decades. While there has been consistency in the overall problematic of gender representations – particularly the idealization of what Connell (1987) has termed hegemonic masculinity and emphasized femininity – there has also been a shift in representations of women in games from subordinate/passive roles to an uneasy postfeminist settlement of hyper-sexualized female characters who are just as adept at violence as their male counterparts (Herz, 1997).

When digital games rose to cultural prominence in the late 1980s with Nintendo's successful entry into the U.S. home console market, researchers examined how women and girls were represented in games made for domestic consumption. In his chapter on the subject in the book *Video Kids*, Provenzo (1991) argued that in the top selling games for the Nintendo Entertainment System, female characters were acted upon rather than

the primary avatars or characters. Female characters also were often victims needing to be rescued. Gaily (1993) noted that pre-adolescent boys were the target market for home console systems such as Nintendo. The digital game texts were consonant with masculine fantasies and the absence or symbolic annihilation of women. When female characters were represented, violence was directed at them, and they were designed to perform the damsel in distress role. In these early assessments of representation, the content of digital games was seen as a factor that discouraged girls from associating with computer technology.

Content analyses of games (Dietz, 1998), digital game advertisements (Scharrer, 2004), and reviews by game journalists (Ivory, 2006) have all noted the dearth of female characters compared to male characters, overwhelming themes of violence and weapons use/display, the sexual objectification of women, and hyper-masculinity in male characters with images that emphasize muscularity. Although in Ivory's (2006) content analysis of digital game reviews of male and female characters, the reviewers tended not to comment on female attractiveness with any frequency, the images of females used in the reviews were sexually suggestive. In a counter point to the dominant masculine encoded themes of violence and sex, Schut (2006) argues that there are competing and contradictory ideals of masculinity in fantasy role playing games. The games within the fantasy RPG genre provide a space for the technological exploration of respectable manliness through self-control, rugged masculinity through tropes of domination and power, individualism, and eternal boyhood through playfulness and carefree attitudes.

One counter argument to the evidence of problematic representation of gender in game texts suggests that the content in digital games does not matter as much as the deeper structure of playing on the lives and career choices of gamers (Beck & Wade, 2006). Women are joining the ranks of game players in increasing numbers despite the poor record of gender representation by the industry, the result of which is seen as positive because of the benefits of playing digital games. However, this line of argument

doesn't scratch the surface of game design, which is rife with patriarchal ideology (Soukup, 2007) and approached by game designers with naïve gender blindness (McAllister, 2004).

To counter the themes of violence and negative and problematic representation of women in digital games, scholars and industry activists argue for the design of more games with a female audience in mind. Cassell and Jenkins' edited book *From Barbie to Mortal Kombat* (1999) is indicative of this "girl games" movement. The book articulates a liberal entrepreneurial agenda to rectify the problem of gender and digital games, advocating for more women in the development of games. Additionally, marketing research needs to be conducted to create games that women and girls would like to play. One critique of this proscription, however, is that it tends to collapse women's tastes into a single category or set of preferences and themes for play (Dovey & Kennedy, 2006).

The maturation of the industry has led to the increase in female characters from its exclusive beginnings, but these characters are represented as simultaneously sexualized and strong. The *Tomb Raider* series of digital games with its lead character Lara Croft is the most well known foray of post-feminist sensibilities into the production of digital games, although the initial market research strongly discouraged the series creator from the idea of a female protagonist (Mikula, 2003). The popularity of Lara follows the post-feminist logic: her body is attractive and eroticized, which appeals to the consumer base of heterosexual men (confirmed, no doubt, by market research), while she is also independent, has fighting acumen, and demonstrates the characteristics of power (in terms of wealth, class, education, strength, etc.). However, Mikula argues that Lara is an unauthored character, which means that consumers have for the large part taken up the work of defining her attributes and characteristics. To the extent that post-feminist sensibilities show up (much less radical, differential texts deconstructing dominant gender relations) in the field of digital games, it is ultimately up to the consumers to "modify."

The design of digital games produces masculinity around ideals of competition and playing to win. Players engage in performances of heroism, killing, winning through competition, and action through technological skill and rationality. Girls who play these games negotiate these masculine performances with those ascribed to their feminine subject positions (Walkerdine, 2006). Research on women instead of girls has categorized three different levels of play and genre preferences for women that shape how women negotiate gaming texts. The three levels of game consumption are power gamers, moderate gamers, and non-gamers. Women at these three levels decode digital games and gaming cultures through integration, negotiation, or rejection strategies (Royse et al., 2007).

Female power gamers have integrated into gaming cultures. They enjoy multiple genres to satisfy multiple desires, and they enjoy the competition and aggression of masculine encoded first person shooters such as *Counter Strike*, which challenges gender norms. To successfully integrate into the culture, some female power gamers accentuate their embodied femininity while performing masculinity by playing masculine encoded games. "For power gamers, digital games are not a problematic technology. Even as they themselves admit to the hypersexualization of some female images in games and the sexism of some male players, they have defined games successfully for themselves as being about pleasure, mastery, and control" (Royse et al., 2007, p. 564). Moderate gamers negotiate gaming cultures. They prefer having control over digital environments and play games as a way to cope with the demands of their daily lives. They reject violent games and genres such as first person shooters and assign these genres for men only (Royse et al., 2007; Hartmann & Klimmt, 2006). Non-gamers reject gaming culture. They are critical of gaming, calling it a waste of time, and they think gamers are asocial people (Royse et al., 2007).

Gender differences among game players have been found in the types of games played. While females have increasingly joined the ranks of computer game players,

more males than females prefer to play the more challenging, complex games involving 3D rotation and navigation (Bertozzi & Lee, 2007; Ogletree & Drake, 2007; Gaily, 1993). Women prefer non-mental rotation games not because of inherent sex differences in processing 3D rotation and navigation, but because of gender based practices (Lucas & Sherry, 2004). Women enjoy the multifaceted social interaction afforded by online game worlds such as MMOs, identity exploration, and the ability to play multiple identities different from the real world. Women reported enjoying customizing avatars, and playing games such as *Everquest* has made them more assertive and confident in real life. Further, women report that online role playing games provide a safe environment for exploration and the chance to demonstrate mastery through character development (Taylor, 2006).

There is a link between playing complex digital games and efficacy towards computer technology (Bertozzi & Lee, 2007). Both males and females share similar attitudes about play, finding it useful and fun, but the benefits of social interaction around digital game playing are more gratifying for men than women (Lucas & Sherry, 2004). Flynn (2003) traces the domestication of digital gaming in the form of home consoles. First the focus was on family fun, then young boys, then as a fantastical, futuristic entertainment hub (Trojan horse) that flies against the domestic space of suburban living rooms. In ads representing this, domestic and feminine aspects of the living room are attacked and destroyed under the impact of men's gameplay experience.

The hegemonic masculinity of game texts and gaming experiences translate to other aspects of digital gaming as well. The next section examines the linkages among the encoding and decoding of games within a broader culture of gaming. In addition to studies on players or texts, cultural approaches to gender and digital games attempt to think more holistically about the multiple aspects of production, consumption, and texts.

Holistic approaches to gender and the culture of gaming

Holistic approaches by cultural studies scholars, feminists, and political economists have theorized gender as it applies to multiple aspects of production, consumption, and texts. Soukup (2007) examined hardcore gamers' and game creators' discourse on gaming publications and web sites. These masculine discourses express the meaning of gaming as predominantly concerned with technical and mathematical mastery. Gamer discourses promote competition, conquest, hierarchical thinking, and aggressive domination that encourage a patriarchal form of mathematical mastery. Because of this, alternative forms of social relations and ethics based upon equality, empathy, compassion, or collective activity are suppressed.

Yates and Littleton (1999) combined psychological and sociological analysis to study gaming, which they argue is a cultural niche with component parts consisting of games, gamers, and gaming cultures. Gender is a categorical measure by which the authors explore the definitions and engagements with computer games by game players. In an experimental setting, girls' and boys' perception of the context of computer software as a game rather than a task affected girls' performance as did the content of games. Preferred readings of games are oriented to men's subject positions and cultural competencies, but counter to Soukup's (2007) analysis, Yates and Littleton argue that it is the content rather than the underlying design of games that engages women. Women have to negotiate the preferred masculine reading of content, whereas men accepted the preferred reading. Women who consider themselves gamers have to navigate through other subject positions to articulate their gamer position. One critique of this study is that it conflates girls and women, which can be problematic for gender research on preferences and decoding strategies (Royse et al., 2007).

Kline et al (2003) define the overall culture of digital games as "militarized masculinity." Game design practices are focused on strongly gender coded scenarios of war, conquest, and combat, which are combined with the historical link between military

research and digital games that continues to this day. In terms of violent themes and content, the increase has come from competitive marketing by publishers seeking to win the core demographic of hardcore male gamers. Finally, there is a reproduction of game employees from ranks of these hardcore male game players, who reproduce the kinds of games they grew up playing. Militarized masculinity spans genres and is not only confined to the first person shooter, and the profit-based structure of digital games makes it more risky to develop gender inclusive games. Dovey and Kennedy (2006) write that "gender in particular has continued to exert a powerful structuring force upon the distinctiveness of computer game culture" (p. 36).

This research project is situated alongside the historical and cultural understanding of gender and digital game culture, but its focus is on gender and the production of commercial games. As the above literature review suggests, gender has been a focus for research into game texts and players, while comparatively little research has been directed at gender and how games are produced and by whom. Critical research into the production of digital games does exist (Herz, 1997; Kline et al., 2003; Dovey & Kennedy, 2006; Deuze 2007). But while issues of gender are included, they are not the focus of these contributions. Notable exceptions include the recent work of Mia Consalvo (2008), who examines women and digital game work. Additionally, veteran game designer Sheri Graner Ray (2004) has written about the need to recruit more women into the industry to create games that are gender inclusive in order to expand the market beyond the young male demographic.

Ethnographic-based work is also rare in the study of the digital game industry. One notable exception is Stone's 1995 book, *The War of Desire and Technology at the Close of the Mechanical Age.* She conducted field observations at different sites in the 1980s and 1990s and addressed the gender dynamics at both digital game corporations, but the industry has grown exponentially. Since the 1990s, the exclusion of women, not to mention the exclusion of feminism in the development of games, has perpetuated and

now reaches a global scale (Kline et al., 2003). My dissertation also has been designed to address this gap in case-study research at the sites of production. As I detail in Chapter 2, I spent two months observing work practices and decision making as well as conducting in depth interviews at Dynevolve,[1] a mid-size game development studio in the Eastern United States.

The role of digital games in the Information Age

Before proceeding to a guide of the chapters to follow, one question that needs to be addressed is why it is necessary to study the medium of digital games. Aside from the problems above in regards to gender, why are digital games important? What role do they play in the broader areas of society and culture? In this section, I argue that the influence of new communication media and information technologies, which includes digital games, is vital to understanding the relationship between the working and leisure activities of individuals as well as to institutions in the post-industrial era. Referring to this era as post-Fordism, which is the regime of capital accumulation dominant since the 1970s, Kline, Dyer-Witheford, and de Peuter call digital games "ideal" commodities for their time:

> It is a child of the computer technologies that lie at the heart of the post-Fordist reorganization of work. In production, game development, with its youthful workforce of digital artisans and netslaves, typifies the new forms of post-Fordist enterprise and labour. In consumption, the video game brilliantly exemplifies post-Fordism's tendency to fill domestic space and time with fluidified, experiential, and electronic commodities. Video and computer games, moreover, are perhaps the most compelling manifestation of the simulatory hyperreal postmodern ambience

[1] Dynevolve is a pseudonym created for anonymity. Both the researcher and the board of directors of the studio mutually agreed that the final written report would not contain the company name.

> that … theorists see as the cultural correlative to the post-Fordist economy. (2003, p. 75)

The adoption of computer mediated communication (CMC), digitalization and information and communication technology (ICT) has been systematically if unevenly developed over the economic and political structures of society, including the mass media industries. The influence of this adoption and diffusion also has affected the lives of individuals in terms of labor and consumption practices. The process of development, diffusion and adoption of new media, which has been called the "Information Revolution," is the articulation of what was once a heterodox set of ideas that gained an orthodox following in the political and economic spheres that, when linked up to the lives of all social groups, has produced what Bourdieu (1977) calls doxa, which is the naturalization or *taken-for-grantedness* of this entire, continuing process.

Computer Mediated Communication is defined as the integration of modes of communication, which include written texts, images, and sound into an interactive network (Castells, 2000). There are a few other crucial dimensions as well. First, the modes of communication are integrated through a process of digitalization. Second, and perhaps most crucially, computer networks, which are based upon a decentralized system of electronic connection that transfers packets of digital bits, tend to collapse communication and information into a single category. This is an important distinction because the collapse speaks to the use of the technology not for interaction between people (as through communication) but for transaction (as through information exchange) (Barney, 2000). Although I will discuss the medium of digital games in much more detail

below, suffice to say now that it fits into this generic definition of CMC, although there are moments when games can be played off the network.[2]

The innovation and deployment of CMC and ICTs are parts of a broader framework. This includes the theorization, construction, development, and use of computers, information and network systems first in the service of the Cold War through the U.S. Department of Defense (Edwards, 1996). In the political economic sense, the adoption and diffusion of ICTs were in part a response to the crises of industrialism, particularly the period in the 1970s that produced "stagflation," or the odd upward movement of prices without the usual growth of the industrial economy overall (Dyer-Witheford, 1999; Robins & Webster, 1999). Additionally, the widespread acceptance of a mathematical theory of communication, particularly in the fields of engineering and computer science, radically expanded the scope of what could or would be considered information as well as its applicability to wider social processes (Terranova, 2004; Schiller, 2006).

Economic and political elites articulated an ideological position that the computer, communication networks and information technologies would be the saviors of (a more progressive) capitalism. This position developed into an orthodox discourse, and the efforts to structure business and markets around this reorganization of capitalism on a global scale ensued (Barney, 2000; Robins & Webster, 1999). The political and economic

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[2] Networked play has becoming increasingly important for the home console and computer game markets. The three home consoles, the Microsoft XBOX 360, the Sony PlayStaion 3, and the Nintendo Wii all offer networked play. Additionally, Valve's Steam network has increasingly become the important to the network for computer game players.

spheres comprise the objective structures that apply economic and physical force over the entire social field.

Information as a commodity has become a driving force over the political-economic field, where successful corporate organizations transitioned their very reason for being from a concern with industrial production to information processing (Liu, 2004). In spite of the claims of early network enthusiasts and hackers that "information wants to be free," information as a resource with potential (like any other resource) increasingly became the privileged commodity form of post-industrial capitalism (Schiller, 2006). Although we can trace the development of information commodities from service and mass media sectors, what is now evident is that informationalized capitalism is systemic throughout all sectors and not merely confined to the tertiary (Schiller, 2006; Barney, 2000). Further, information technologies have increased the scale and scope of capitalism to a globalized form with the help of free market and neoliberal regulation policies. Undergirding all this is multifaceted use of network computers as means of production, control, labor, exchange, and consumption.

Curran (2002) writes that during certain historical moments, new media and their associated technologies have assisted in the successful challenge to dominant power structures which sometimes lead to profound social change. The oft-cited story to back up this claim is the role of the printing press in disrupting the Catholic Church's power in Europe. However, at other historical moments, new media technologies are incorporated into the field of power rather than a force against it. The latter seems to be the case when we consider the role of computer mediated communication and information technologies at present. For some, the very logic of decentralized network communication seems to

call forth the potential to disrupt the hierarchical nature of dominant power structures that would lead to truer forms of democracy (Castells, 2000). What this view does not take into account is the paradox of the complexity of computer and network technology, which means that only a few very skilled members of society, hired as well-paid labor under capital conditions, control the direction of its use (Barney, 2000).

The mass media industries have not only adopted the economic and political logic of the information society (Schiller, 1999), but also have marshaled the mythology behind the "technological progress" associated with the information age (Mosco, 2004; Robins & Webster, 1999). At the economic level, the mass media industries and entertainment conglomerates implemented practices of convergence over a range of media. Convergence can be described as a process of technical innovation combined with distribution control over a range of networks. And if some films such as *The Matrix* captured the dark side of an increasingly computer-controlled world, the film industry certainly displayed signs of incorporation, with its increasing focus on establishing "brands" that make for profitable movies, television programs, books, digital games, toys, and licensing agreements to limit the risks of one-time media production (Jenkins, 2006). Of course the transition to digitalization has its own crisis with the practices of piracy, which speaks to the inherently limitless (rather than ephemeral) nature of digital media, but the increase in copyright laws and enforcement has been developed to limit the damages (Kline et al, 2003).

Perhaps the most effective use of media during the transition into an information and new media society was the articulation of the myths associated with the supposed social benefits to increased information, which was driven by a long-standing Western

ethos in the progressiveness of technological innovation. Simply put, the myth states that new communication and information technologies are changing the world for the better, providing individuals with more connectivity, more choices, and more "control" over their lives (Dyer-Witheford, 1999; Robins & Webster, 1999; Barney, 2000). The information society would be an era of abundance rather than scarcity, cooperation rather than antagonism, and it would eventually, according to the prophets, make the objective structure of the economic field more just and equitable (Dyer-Witheford, 1999).

The symbolic power of mass media conferred legitimacy to the force of economic and political changes that were re-organizing capitalism in perhaps the opposite direction of the myths of progress and abundance. Symbolic power, according to Bourdieu (1991), is the ability to speak the given, to align the subjective and objective structures through the use of language as the means of communication (much like the means of production, but from a dialectical position). Symbolic power is generated from the structure of consensus combined with the structure of domination from a dominant social group.

Individual lives were shaped and are being reshaped by the marks of economic and political structures and the force of symbolic power. The development of objective structures reorganizing capitalism toward information commodification has had a profound impact on work practices and leisure activities of individuals. It may no longer be appropriate to consider these two categories of everyday life as distinct or differential (Terranova, 2004; Liu, 2004). According to Barney (2000) the increasing use of flexible time and telecommunication devices increasingly blur the time spent at work and not at work. The overall process of this has been described as the social factory (Terranova,

2004), where more and more practical activities bear the forms of work and look like forms of labor in its commodity form.

In corporations, the philosophy of decentralized (from a geographical sense), network, computer-oriented organizational working structures can be found in the bestselling books on management. Whereas the industrial period gathered labor in collectivities rooted in place and community, the new philosophy of cultural and knowledge production is based upon teamwork. Teamwork, according to Liu (2004), has been defined by corporations and managers as the negation of collectivities and individual identities tied to race, gender, and even nationality. An additional logic of what Bourdieu (1977) calls the "habitus" of social groups under post-industrialism is the concept of free labor, which is labor that is freely given and often freely exploited by capital (Terranova, 2004). Free labor is performed during an individual's leisure time, but it is expressive of the overall incorporation of modes of consumption into the loop of the modes of production.

Following Latour (1999), we may be witnessing the incorporation of new media and information technologies into what it means to be human in a post-industrial society. That is, individuals have increasingly adopted the logic of network organization and information processing or control into their very dispositions. To describe this is to describe a transfer of mentality and vision between humans and nonhumans. This is not entirely dissimilar to the processes of automation and machination developed during industrialization wherein workers' skills were transferred into capital's machines (Marx, 1978; Dyer-Witheford, 1999). What seems to be at stake is the development of an increasingly air of doxa, or a situation wherein there is a naturalized correspondence

between the mental structures of subjectivities and objective structures of the field (Bourdieu, 1977). This correspondence is problematic because of the material inequalities that generate and perpetuate the field of capitalism is taken for granted or appears as natural.

The articulations and developments of new media technologies from large objective structures in the field of power have been inculcated into the subjective structures that predispose how individuals work and live. This process is historical and contingent. What was once a rather heterodox view that established itself as an orthodox position of the dominant class has structured the dispositions of those who must live, work and play in the present. The digital game is a new medium and "ideal commodity" not due to any radical departure from previous media forms but because it expresses the narrative of these social changes over the last 30 years.

Two overriding points of entry into claiming that digital games are expressive of post-industrialism is the logic of the industry and the blurring between work and play. According to Kline et al (2003), the digital game industry, global in its reach but generative of capital accumulation and profits in three primary regions (North America, Europe, and Asia) is a fusion of constant technical innovation, cultural creativity and intensive marketing. Following the logic of technology and progress, which is to say that the only surety in techno-cultural life is change, the industry is dictated by relatively short innovation cycles in hardware and software. It is not uncommon for hardware technology to become "outdated" every two or three years.

Additionally, the "work = play" logic of the medium's culture and products is expressive of the general post-industrial labor mentality. Simply put, the industry has

mythologized the creative aspect of game production into a "play" mentality where going to work is cool instead of a drag in terms of creative autonomy (always relative to another occupation rather than some ability to control work) and collaborative teamwork (Dyer-Witheford & de Peuter, 2006). The flip side to this is that playing digital games is often hard work itself that involves skills, patience, practice, and routine (Rugill et al, 2004). On a final note, the digital game industry relies upon its consumer base as a sort of training ground for the recruitment of labor, further reducing any friction between work and leisure activities (Kline et al., 2003).

Digital games can be seen as the ludic dimension that counter-balanced the utilitarian applications that drove the logic of computer and communication development during the Cold War (Stone, 1995). From the engineering and computer research labs of academic institutions such as MIT and Stanford during the 1960s and 70s arose a type of technical-knowledge mentality of mostly young, white, male programmers who were so comfortable with the technology that it became natural to think against the military purposes from which it was developed (Ibid.). Despite the transition of digital games from innovation at research labs to the commodification at present, military-simulation applications and war-related themes are still one of the primary cultural and social expressions of the medium. This has led critical cultural analysis to the idea that contemporary wars such as the current Iraq War should not be seen as spectacles but rather interaction and immersion (Stahl, 2006), characteristics that are associated with playing digital games.

In 1985 Donna Haraway published her techno-feminist "cyborg manifesto," which, in part, sketched out the importance of the rearrangement of social relations tied to

science and technology that she termed the informatics of domination. Digital games are one of the new technologies that profoundly impact the private lives of individuals and eradicate public life in the modernist sense. "Technologies like video games … seem crucial to production of modern forms of 'private life.' The culture of video games is heavily orientated to individual competition and extraterrestrial warfare. High-tech, gendered imaginations are produced here, imaginations that can contemplate destruction of the planet and a sci-fi escape from its consequences" (Haraway, 1991, p. 169).

As the field of digital games has grown over the last 25 years in which Haraway provided her analysis, the industry has become an even more entrenched, entertainment-based part of the privileged occupational areas in the production of science and technology. Given this privilege, the industry has excluded women from fully participating in its important endeavors. And because the design and development of commercial digital games are so strongly coded processes of militarized masculinity, digital games might always be tightly locked to dominant social groups and ideology. But this doesn't have to be the case. There is potential in digital games, which is to say that there is nothing natural about the way they are designed and created, marketed, and consumed. Digital games are a result of social conditions and processes, and changing these conditions and processes to allow for more diversity profoundly impacts the role digital games will have for society and culture. This dissertation is at once an analysis of the constellation of activities, practices, rituals, and discourses of masculinity that contribute to the exclusion of women as well as a call for the industry to realize that a more diverse workforce in the content creation occupational categories will contribute to

the disassociation of the medium from "high-tech repressive apparatuses" (Haraway, 1991, p. 169).

The following broad questions have guided this dissertation project from its conceptualization, design and implementation: How are digital games produced in a collaborative environment that has a distinct gender dynamic that is comprised of mostly men? What kinds of gendered practices and rituals are involved in the work that is done in this environment? And finally, what kinds of gendered cultural, technological and social influences affect the individuals involved in the production process?

In Chapter 2, I outline the theories utilized to construct an interpretive framework for the analysis of the structures, practices, and discourses of gender at the Dynevolve development studio. Pierre Bourdieu's (1977; 1990) theory of practice accounts for the structures of the field of digital gaming and the habitus of the producers, designers, artists, and programmers. The relationship between the field and habitus constitutes the basis of the investment and belief of a masculine culture of work. Feminist theories of gender in terms of power, culture, technology and social organization supplement the overarching interpretive framework. In Chapter 3, I provide the justification and explanation for the use of qualitative methods including ethnographic fieldwork with primary document analysis and observation documented in field notes, and in-depth interviews.

Chapters 4, 5, and 6 constitute the analysis of the structures, practices and discourses of gender. Chapter 4 examines the organization of the digital work through an interrogation of the physical space, organizational structure, and the nature of teamwork as it is used to create and manage the cycle of game production. Chapter 5 looks at the

acquisition of gendered dispositions around the family and educational socialization, the sexual division of labor in relation to computer technology and science, and the development of a passion for games that constitute the game workers' habitus. These dispositions are reproduced via ritual activities and daily working practices in the development of a commercial game. Finally, Chapter 6 traces the discourses of masculinity that inform the culture of a development studio.

CHAPTER 2 - THEORY

Introduction: The investment and production of belief in the field of digital game production

Our practical sense derives from the relationship between the involvement of our bodies and the world. All the while, we are unaware of this relationship between the body and the social world. We are also unaware that practical action is generated from this relationship (Bourdieu, 1990). Perhaps if we were always aware, we might never get anything done. However, given the inequalities of gender, race, sexuality, and class that structure the social and symbolic world, this inability to interrogate practical sense reproduces domination, generating oppressive practical sense and action.

The body engages with social space and discourse to construct our sense of reality – what an individual attuned to a social order practically believes. Judith Butler's concept of performativity captures this relationship quite well in regards to gender. Gender is repeatedly performed through both sides of the interaction between an individual and the objective (gendered) world and "is at once a reenactment and reexperiencing of a set of meanings already established; and it is the mundane and ritualized form of their legitimation" (1999, p. 178). Performative enactments and gestures produce the effect of an internal, subjective core or the "real me," (McRobbie, 2006).[3] That this internal, psychological core is illusory masks the discourses and corporeal signs that regulate and constitute it. "If the 'cause' of desire, gesture, and act can be localized within the 'self' of

[3] McRobbie's concept describes the difference between searching for the self and inventing the self. By inventing the self, she means subjects must learn to live with fragmentation, while searching for the self means to strive for unification. "How do we construct what I would define as a sufficiently focused 'social self' in order to be effective in politics? And whom can such a politics now claim to represent? Who, therefore, is the discursive 'I' which speaks or writes, to whom and with what purpose? … But, for the moment, I would want to signal postmodernity as marking a convergence of a number of discourses each of which opens up new possibilities for positioning the self" (2006, p. 522)

the actor, then the political regulations and disciplinary practices … are displaced from view" (Butler, 1999, p. 173-4). Thus the naturalization of gender hides its own performative genesis within the practical actions of the body.

Belief is a state of the body (Bourdieu, 1990). When we look at an artificially constructed world such as a digital game or the field of a professional sport, we get a glimpse of how practical sense results from the seamless match between a player's bodily disposition and world's rules and objective structure. This is because the space or the field in which the game is played is an apparent and intentional construction. The rules that guide appropriate and inappropriate action and reaction are made explicit and are accepted by all players with a feel for the game. The feel for the game that a professional digital game player demonstrates when he moves through a simulated combat space in anticipation of where his opponent is hiding before taking an accurate shot reveals that his body is highly attuned to the objective structure, limitations, and potential of the game. This practical sense of what can or cannot be done and what should be done to win that comes out in the form of anticipation and response – the feel for the game – is produced by experience gained over time. This is generated by practice and the *embodiment* of the rules, which are transformed into practical knowledge of the game. Subjectivity is wrapped up as well in all this bodily practice, commitment to the game and the player's *illusio,* which is the "sense of investment in the game and the outcome, interest in the game," and "commitment of the presuppositions – *doxa* – of the game" (Bourdieu, 1990, p. 66).

How is a subject position – a gamer – generated by playing digital games? Just as gender is performative, identity is constructed by what we do for pleasure or labor. The socially constructed link between biological sex and gender makes it seem more deterministic than a career choice or a lifestyle, but the process is similarly based upon practical action. Identity does not have an origin in the sense that it used to in modernity. Identity formation is positional (Hall, 1996). And it is contextual in the sense that

"context is not something out there, within which practices occur or which influence the development of practices. Rather, identities, practices, and effects generally, constitute the very context within which they are practices, identities or effects (Slack, 1996, p. 125).

There are essential differences between the space of a digital game and the many social fields in the world. One is that individuals are born into social fields or they learn how to think and act properly or practically through long periods of vocation, co-option, initiation and training within them (Bourdieu, 1990; see also Althusser, 1971, who uses the concept of Ideological State Apparatuses to sketch out how ideology operates in these social fields to recruit and transform subjects through interpellation). Another is the relation of the *illusio,* which is more total and unconditional in social fields because the investment is unaware that it is an investment as such. Tied to this unrecognized investment is the practical belief or faith that is an inherent part of belonging to a social field because every field tacitly imposes it as a condition of entry. This faith relies on the inculcation of all that goes without saying, which is particular to the social field's doxa – "the relationship of immediate adherence that is established in practice between a habitus and the field of which it is attuned, the preverbal taking-for-granted of the world that flows from practical sense" (Bourdieu, 1990, p. 68).

Adopting a cultural studies approach to media production research allows for the sustained critique of how meanings and systems of representation manifest themselves in the production, circulation, and consumption of media in society. However, there are some theoretical or conceptual blind spots to this approach, and cultural studies needs to be synthesized with an adequate sociology of culture and a recognition that larger social structures sometimes inform culture in important ways that cannot be excluded from cultural analysis. Cultural studies emphasizes the conveyance of shared meanings through time, which is a ritualistic view of communication (Carey, 1989). The development of cultural studies as a radical critique of the role of media in capitalist

societies was in part a response to the transmission view of communication and the two-step flow of message reception developed by mainstream researchers in the United States (Curran, 2002; Gitlin, 1978; Hall, 1982). When we take this view a few steps further, we can posit the study of culture as the way in which specific meanings, which are informed by power relations and the means of production, are produced, circulated and consumed throughout society. Any theory of media culture should be able to account for how media relate to social structures and institutions and how meanings are mediated by producers and consumers in patterned or regulated ways (McQuail, 2005; Kellner, 1995).

A single definition of cultural studies will not suffice in capturing the diversity of the processes of culture, society and change. Cultural studies should instead be defined by the objects of its analysis, which have to do with the history of consciousness and subjectivity. Culture is the subjective relationship between people and society, and the circuit of culture consists of the production of culture, the circulation and "reading" or consumption of texts that take specific forms, and the lived social relations that inform both production and consumption (Johnson, 1986). Further, the moments of production and consumption are also informed by material and cultural relations, such as the restraints imposed on creativity of cultural producers by capital and market requirements or the abstracted social relations of gender as they inform a specific groups' reading of cultural texts.

Cultural Studies as an approach to media analysis is not without its conceptual blind spots. Garnham (1983) critiques cultural studies for relying on an idealistic concept of ideology over material considerations, thereby following a similar path as those who use the transmission model that focuses on messages. He calls for a cultural materialist approach that emphasizes the material relations of cultural production, including the study of how capitalist relations determine cultural production and circulation. This emphasis does not discount the study of culture or ideological critique. We can place Garnham's cultural materialism within the circuit of culture, where more sustained

emphasis is placed on how capitalism determines the forms of cultural production and even determines the ways in which consumers will come to understand media.

Raymond Williams' (1980) discussion of the term "determines" is useful in integrating cultural studies and cultural materialism. Marxist cultural analyses tend to see the base of economic formation and activity as determining at a causal level the ideas and representations developed and circulated in the superstructure, which includes the media and other non-economic institutions. Williams argues for the engagement of another definition of determination as that of exerting pressures and setting limits. The base exerts pressures on what counts as legitimate cultural forms, representations and meanings; it sets certain limitations on what is allowed to be expressed within culture as a commodity form. Hall (1986) further insists that this notion of determination as causal can be found at the level of theory. When theory is used as a set of laws or "guarantees," then one can only ever claim under a historical materialist analysis that the base determines the superstructure in the last instance. A Marxist theory without guarantees is useful instead, where determination is more properly seen as setting limits or exerting pressure. This allows us to acknowledge the role of capitalist relations in *first instances*, which is akin to Garnham's call for a cultural materialism. However, Hall (1985), following Althusser (1971), writes that certain meaning is generated outside the material means of production and reproduction, in institutions such as the family, the State, religions, dominated groups or even through media. These are other first instances that need to be part of cultural studies analyses as well.

The development of cultural studies has tended to elide questions about the role of social structures or how media relate to other social institutions (McQuail, 2005; Garnham, 1983). However, the circuit of culture, which consists of (1) production, (2) texts, (3) consumption, and (4) lived cultures or social relations, clearly marks out spaces for the investigation of social structures and lived cultures as they influence production (Johnson, 1989). To put this more specifically, what I develop in my theoretical account

that follows is a framework for understanding how the commercial production of digital games is a field in which individuals whose lived cultures and social relations take specific gendered forms and practices that rely on specific types of gender symbolism. This framework is informed by cultural studies, feminist theory, cultural materialism, and Bourdieu's (1993) theoretical contribution to the field of cultural production. It is an attempt to systematically engage questions of culture, power, gender, and the relationship between economic and cultural forces in media production.

The theoretical framework below elucidates the field of digital game production. This field contains as its core the practice of building artificial game spaces and worlds. Within this field, the gendered habitus of its members, and the systems of practices and symbolism is generative of a specifically masculine *illusio*, or investment in reproducing the "game space" of digital game production that exists "in itself" rather than "for itself" (Bourdieu, 1990). The reproduction of the field as a space for men also produces a practical sense and belief in game workers' habitus that it always has and always will be such an overdetermined masculine social space. Finally, given the production of media content and associated cultural meanings contained in the digital games that are created by men in the industry, the implications are great for the regeneration of particularly oppressive forms of masculinity and femininity in the wider culture.

The androcentric field of digital game production

The concept of field accounts for the context-specific objective conditions of the digital game industry and the development of commodity forms of mass media entertainment. These objective conditions form the structure of possible positions available in a specific social setting. A field is a structuring structure and a social space of "forces within which the agents occupy positions that statistically determine the positions they take with respect to the field, these position-takings being aimed either at conserving

or transforming the structure of relations of forces that is constituted as a field" (Bourdieu, 2005, p. 30).

Fields are spaces and sites of a struggle for control of various forms of capital. Additionally, dominant and subordinate positions available to social actors dictate the structure of fields that are based upon the unequal distribution of the amounts and types of capital (Swartz, 1997). These hierarchies of positions are relationally situated, and distinctions arise and are generated from their relationships within the field. Fields generate an acceptance of specific forms of struggle, or rules of the game, in which social actors tacitly agree on the forms of struggle that are legitimate and illegitimate. Finally, the structural properties of fields can be determined by their own internal mechanisms as well as their relationship to other fields, such as the economic field, the political field, or specialized fields of media and cultural production (Swartz, 1997). Additionally, media cultural production is a unique type of field that relies on its ability to generate symbolic power in the absence of any legal or political power.

Fields are organized by the distribution of types of capital, such as cultural or economic capital (Bourdieu, 1993), and symbolic power acts as a force that allows individuals or organizations with greater amounts of capital forms to create legitimate meanings about the field, and in the case of mass media, about the wider culture and society. There is a constant relationship of inequality within fields among various social actors who struggle for transformation or preservation of the field, and "all … in this universe bring to the competition all the (relative) power at their disposal" (Bourdieu, 1998, p. 40).

Field theory not only provides an analytic snapshot of the positions of social actors in a social structure, but it also addresses changes within the field over time. Change results from the shifting or maintenance of power relations within the available positions, which can come as a result of newcomers making their presence known by asserting their difference. Existing social actors must then account for these new

differentiations, which may force those in dominant positions into an outmoded or subordinated status or to re-affirm their position of dominance (Bourdieu, 1993; see also Champagne & Marchetti, 2005). Change occurs as a result of all possible positions in the field struggling for distinction and legitimacy, strategically or not, with real interests in their positions in the field. Thus change in a field can generate flux or stasis when it is conceptualized as a process of negations of negations that define the distinctions between dominant and subordinate groups. As Bourdieu (1998) writes, there is a constant relationship of inequality within fields among various social actors who struggle for transformation or preservation of the field.

In order to situate the unique characteristics of the field of capital-infused game production, I develop a theoretical framework that accounts for the political economy of the industry, the structure of the production and distribution of cultural goods, the gendered organization and types of labor (McCall, 1992), and gendered dispositions in relation to technology as a form of cultural capital. The unique characteristics of the field include the high proportion of men to women working on game creation; forms of immaterial labor tied to occupational roles such as designers, producers, artists, and programmers; project-based teamwork; technological adaptation; and commodity production.

I begin with a political economic discussion of the digital game industry not because it determines in the final instance all practices that occur within the field but rather to acknowledge the central importance it has for the focus and logic of activities that occur during digital game production. Because my analysis engages both the capital conditions of game production and the specific identity positions that emerge within institutional sites, I am following Riordan (2002) here, who argues for a feminist political economy in mass media studies. A feminist political economy calls for both political economy and feminism to make more inclusive moves toward the strengths of the other. First, it means that political economic analyses should not only focus on the macro level.

Instead, a broader view of economic analysis includes micro-level studies of individual experiences. Second, feminism should not foreclose the affect of class and capitalism on gendered lives. Underpinning this is the acknowledgement that society is organized in ways that are capitalist and patriarchal. "There appears to be no necessary connection between changes in the one aspect of production and changes in the other," writes Hartmann (1997, p. 103). "Common sense, history, and our experience tells us, however, that these two aspects of production are so closely intertwined, that change in one ordinarily creates movement, tension, or contradiction in the other."

The production of digital games, with global revenues estimated at around $30 billion (Deuze et al, 2007), has joined the economic scale of other global media sectors such as television, film, and music (Dyer-Witheford & Sharman, 2005). Within the global media system, two transnational multimedia corporations, Sony and Microsoft, and one digital game focused corporation, Japan-based Nintendo, economically dominate and drive the industry due to their development of both game playing hardware and software. These multinationals are called the technologists to distinguish them from publishers and game studios (Dovey & Kennedy, 2006). Next in economic strength stand the multinational publishers such as Electronic Arts and Square Enix operating primarily in the United States, France, Canada, Australia, Japan, South Korea, and Britain. Finally, smaller nationally based game development studios are clustered in major metropolitan cities. From this bed of production flows digital game content that is distributed by the publishers and played on the technologists' hardware, primarily in three regions – North America, Europe, and Asia.

The technologists compete with each other through the sale of proprietary hardware systems that only run software specifically made for each competing hardware system (Williams, 2002). This exerts significant pressure on studios and publishers. A publisher wanting to distribute one AAA game, for example, may need to fund a studio so that it can tailor the software to each system, often employing different teams to work

on the Xbox version and the PlayStation version. This isn't the only option, however. The publisher can select the console that has the best potential to deliver a targeted market. For example, fans of first person shooting games are more likely to own an Xbox than a Wii. In addition to the sale of digital game consoles, technologists charge outside publishers and studios per-game licensing fees of $5-8 as well as $20,000 development kits (Williams, 2002; Kline et al, 2003; Dovey & Kennedy, 2006). Another pressure point from technologists to developers and publishers arises from the perpetual upgrade of technology. "The constant improvement in the capacity of the machines themselves also has had the effect of increasing production costs as more becomes possible at the level of design, AI, and programming" (Dovey & Kennedy, 2006, p. 51).

Perhaps the most important institutional characteristic of the digital game industry is the relationship between software publishers and developers (Kline et al, 2003; Dyer-Witheford & Sharman, 2005; Dyer-Witheford & de Peuter, 2006; Deuze et al, 2007; Deuze, 2007). In terms of capital and finance, a few multinational publishers dominate the industry, some of which also dominate the hardware market. In addition to running their own development studios, these corporations contract with tens of thousands of small development studios, which provide the creative and technical work that go into producing games (Deuze, 2007). Additionally, the organizational form of the industry is based on a publishing logic where the majority of games are produced and sold by a publisher to be individually owned (Hesmondhalgh, 2007).

The digital game industry has two major market segments defined by the hardware used by players – computer games and home console games – although an additional handheld or mobile segment is gaining in importance (Williams, 2002; Dyer-Witheford & Sharman, 2005; Kerr, 2006). Because the computer game segment doesn't have similar financial constraints in the form of licensing and development kit fees it has been referred to as the creative segment in relation to the more mainstream console segment (Williams, 2002; Kline et al, 2003). Further, games themselves, often referred to

as software, can be divided into four market segments: console games, which is divided into console or video games and handheld games; standard computer games; massively multiplayer online games; and mini-games, which includes internet games, mobile games, and digital television games (Kerr, 2006). Although these market segments have different levels of ownership concentration and revenue models, it is important to note that some corporations, such as Microsoft, have a presence in all markets (Ibid.).

From a political economic standpoint, the field of digital game production has a three-tiered triangle shape. Three technologists sit atop the field, but they also publish in house and run development studios. In the middle tier are the publishers. Gamasutra.com, a web site that focuses on the digital game industry, currently lists 352 publishers worldwide, however about 20-25 multinational publishers dominate this aspect of the field as noted by the annual top 20 publisher list by *Game Developer* magazine.[4] Among the factors that determine the top 20 are annual revenue, reviewer scores, and number of game titles released. Many publishers also have in-house development studios, and the multinational publishers acquire independent studios as well. At the bottom tier are the thousands of development studios that create the software, which is "the life blood of the industry" (Kline et al., 2003, p. 176). Economic capital has largely determined this triangular shape.

From a cultural standpoint, the field of digital game production takes on additional structures and meanings, but there is still a relationship between economic capital and the division and struggle over cultural capital. The field of digital games is engaged in large-scale production of media artifacts and is one part of the larger field of cultural production that is situated in the field of power. At the level of development studios there is the engagement of a struggle for distinction and legitimation by utilizing

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[4] *Game Developer* magazine is owned by the same company, United Business Media, as Gamasutra.com.

symbolic power in creating texts. Symbolic power is related to the fields of cultural production by degrees of autonomy or heteronomy. The higher the degree of autonomy from the dominant form of economic capital in the field of power, the more symbolic power a field can generate through its cultural legitimacy. The field of digital game production may be considered weakly autonomous since it is aligned with the economic pole in the field of cultural production. Therefore, there is a heteronomous tendency to recreate or at least heavily euphemize the dominant meanings of other producers of symbolic power and the dominant forms of power. For example, each year a glut of games is produced that recreates the ideology of war and associated themes of (white) masculine heroism, most often World War II, or the more contemporary update of games engaged with fighting terrorism. Digital game culture has a fundamental division between dominant themes of violence in the form of "militarized masculinity" and subordinate themes of more diversity in terms of content and representation (Kline et al, 2003).

Dynevolve, the development studio chosen for this particular research project, was founded in the mid-1990s as an independent developer contracting with different publishers on a game-by-game basis. It was acquired a decade later by a multinational publisher, and it now publishes its games exclusively under one of the publisher's subsidiary labels. The studio traditionally has been associated with the standard computer game market, although recently some of its more popular games have been developed for the console game market. The last two games produced by the studio demonstrate its current position as an expanding studio. One game was the studio's first attempt to develop a game exclusively for the console market. It was made for the Xbox 360 and the PlayStation 3 consoles. A trimmed down version was also made for Nintendo's handheld system, the DS. A few months after, the studio released a PC game that was a "standalone expansion" of the studio's franchise PC title. On the cultural divide, the studio's strategy-based games differ in degree in relation to the dominant militarized masculinity that is focused mostly around violence such as the first person shooter genre.

That is, the games the studio produces are less about micro violent encounters than the macro management of military and social affairs.

Gender organization of labor

Under the general structure and organization of the industry, a major focus of this project is the role of the gender organization of labor and the culture and practices associated with it. Of the growing body of research into the production of digital games, many have underscored the basic disproportionate number of women to men working on the development and creation of digital games (Pitt, 1993; Stone, 1995; Kline et al, 2003; Dyer-Witheford & Sharman, 2005; Dyer-Witheford & de Peuter, 2006; Deuze et al, 2007; Deuze, 2007; Pratt et al, 2007).

According to Dyer-Witheford and Sharman's (2005) political economic overview of the Canadian digital game industry, the industry benefits from a highly skilled and educated workforce that is roughly 85-90 percent men in their late teens to early 30s. Working in the industry is also very desirable, and employees reported that they generally enjoyed their work, and "workplaces often allow considerable freedom for self-expression. These, of course, are enabling factors of creative game production" (Ibid., p. 202). Corporate executives create laid-back corporate atmospheres in trendy office settings that reward creative input and individual expression. However, for the other 10 to 15 percent of the labor force, the women who mostly occupy traditionally "feminine" jobs in reception, human resources, and marketing, the digital games industry is not so welcoming and offers little chance for their creative expression or input. In the UK, the percentage of women in the workforce of the digital games industry in 2004 stood at 8 percent, and in a global survey, the figure is around 11.5 percent although more than half of the respondents were from the United States. Women work mostly in human resources, writing, and marketing and public relations, while men dominate jobs in content creation (Deuze et al., 2007).

Women who were interviewed in North America reportedly called the unequal working conditions “horrible” and the industry as a whole an “old boys club” (Dyer-Witheford & Sharman, 2005). While some men who were interviewed lamented these facts, many of their explanations centered on the idea that the gender imbalance is due to the relatively large number of boys who grow up playing games and then seeking jobs in the industry. However, “other men offered a clearer window into the sexism of the digital play industry, explaining, for example, that ‘girls’ often don’t have ‘the right ideas’ when it comes to games but that it ‘looks good’ for a developer to employ ‘some girls’” (Ibid., p. 203).

The production, texts, and consumption of digital games legitimate social differences primarily, though not exclusively, at the level of gender relations. In the production of digital games, the types of knowledge work through the mastery of computer skills in terms of programming and aesthetics that are cherished in the post-industrial West have been gendered occupational categories (Rakow, 1988). Even in critical theories that develop a critique of contemporary capitalism, gender has been bracketed out of the analyses of technological work (Wajcman, 2004), which includes the cultural production of digital games. In the field of digital games, the circuits of production, marketing, and technology have all contributed to defining digital games as a medium designed by and for men (Kline et al, 2003). This is not to say that women do not play digital games nor work on aspects of production (Consalvo, 2008; Royse et al, 2007), but when we are discussing the overall field, the men who form the dominant roles of producers, programmers, artists and designers as well as avid players form a highly problematic set of gender symbolism, practices, and identities.

Organization of digital game content creation

Under post-industrialism, immaterial labor is the privileged form of labor that has the capacity to manage the cooperation required for various functions of production.

Productivity and wealth are measured by immaterial labor's ability to generate cooperative interactivity in teams through language and communication skills and affective networks (Hardt & Negri, 2000). Instead of previous forms of labor management that issued commands to be followed and routinized by workers, immaterial labor compels individuals to become active subjects in the different phases of production. However, this is seen as a more totalizing control over workers than the previous regime between mental and manual labor, or the ideas and the execution of those ideas. Capitalism now requires that an individual's personality also be marshaled for the production of surplus value of commodities (Lazzarato, 1997).

Immaterial labor has been further broken up into four component parts that are central to its function under capitalism generally and the digital game industry specifically: knowledge, information, affect and communication (Hardt & Negri, 2000). These parts are actually a fusion of two different aspects of labor. The first two, knowledge and information, provide the informational content of commodities that involve the services of cybernetics and computer control. The second two components, affect and communication, provide the cultural content of commodities in terms of tastes, feelings, and artistic or cultural standards (Lazzarato, 1997).

Although "there are numerous divisions within the realm of immaterial labor – international divisions of immaterial labor, gender divisions, racial divisions, and so forth" (Hardt, 1999, p. 97), the informational content and the cultural content can also be expressed in terms of gender relations more generally. It's not that the informational content of immaterial labor is masculine while the cultural content is feminine, but masculine domination can be read in the privileging of knowledge and information-based work that has been given the highest value in the global economy (Hardt & Negri, 2000). Under this informational component, creative and intelligent manipulation based on the model of the computer is the province of a masculinized and technoscientific culture that is leveraged and buttressed by the feminized culture of routine symbolic tasks.

Affective labor is seen as producing human contact and interaction. Even though affective labor is corporeal or in the bodily mode, it produces commodities that are not associated with materialism such as ease, satisfaction, and passion. It also produces social networks or collective subjectivities and communities (Hardt & Negri, 2000). It is not that there has never been affective labor, but now it takes on a role that is "not only directly productive of capital but at the very pinnacle of the hierarchy of laboring forms" (Hardt, 1999, p. 90). There seems to be a bit of confusion as to which component of immaterial labor is the most valued form or in a hierarchical position in relation to others in the creation of wealth. From the standpoint of capital, affective labor is mostly non-skilled and cost effective relative to high skilled technological work. But culturally, the informational component can be seen as valued due to its masculine associations relative to the feminine associations of affective content. The ideological system of patriarchy complicates the easy fusion between the two aspects of immaterial labor, and because the main jobs in digital game development utilize different variances of knowledge, information, communication and affect, this study seeks to provide much needed empirical analysis on the gendered and privileged forms of immaterial labor found in digital media development.

In the strongly gendered labor environment of digital game production, the work=play structure and culture is expressive of a particular type of labor in post-industrial societies. Over the past three decades, a myth of the creative aspect of game production into a "play" mentality has developed. Going to work at a game development company is commonly described as "cool" because of creative autonomy and collaboration in project teams (Dyer-Witheford & de Peuter, 2005). The industry also relies on its avid player consumer base as a sort of training ground for the recruitment of labor, further reducing what would be considered work, leisure, or professional education (Kline et al, 2003; Kerr, 2006). This passion for games culminating in the gamer lifestyle

provides the conditions necessary to obtain the relevant cultural capital needed to gain entry into the field (Bourdieu, 1990).

Two final points need to be made about working in the digital game industry: overwork and the link between production and consumption. “Creative workers frequently work tremendously long hours under difficult conditions. They trade in financial reward and security for creative autonomy. … There is rarely an authority figure present to tell symbol creators to work so hard for so little reward” (Hesmondhalgh, 2007, p. 207). Using Dyer-Witheford and de Peuter’s (2006) examination of the labor practices in the digital games industry, we can see the characteristics of immaterial labor working together in powerful yet contradictory ways. The specialized knowledge and information work that goes into designing, programming and creating digital game content has been glamorized by the industry, and employees generally talk about the pleasure they derive from performing this type of labor. However, the pleasure and passion of the employees also provide a linchpin for the game industry’s exploitation of labor that takes the form of overwork and unpaid overtime during so-called “crunch times” designed to complete games according to a publishers “just in time” schedules. For many corporations and smaller studios that develop game content under forced time frames by game publishers that control economic resources, it seems that crunch time is a structural and typical part of the production process. Extreme overwork (between 60-80 hours a week in many cases) creates an environment largely suitable for young men who do not have additional labor requirements, such as managing a household or primary child-rearing responsibilities (Dyer-Witheford & de Peuter, 2006; Deuze et al. 2007).

What increasingly distinguishes the mode of production of digital games as post-Fordist is the productive and reproductive role of the players or consumers, which have traditionally played only a negligible role in media production in the institutional sense (Turow, 1997). The digital game industry is increasingly reliant on the free labor of game players, mostly young men and boys interested in technology. Free labor, which is labor

that is freely offered to and used by capital to create use value in contemporary society (Terranova, 2004), takes two primary forms in the game industry: marketing research and the recruitment of labor. The recruitment of labor through free labor practices of players involves the practice of "modding" or modifying game content through the technological use of manipulating digital code (Morris, 2004; Kline et al, 2003). Modding is mostly the province of young men who are avid game players and is also a desirable work skill that demonstrates the affective "passion for games" that game employers look for when they hire (Deuze et al, 2007).

Looking at the range of skills needed for the major job roles in game development shows a mixture of all four immaterial labor components. According to Kerr (2006), the four major roles in development are programmers, artists, game designers and producers. It is also important to note that all jobs require the main affective skill of "passion for games" (Kerr, 2006). Game artists' skills are conceptual drawing, modeling and building characters and environments, while basic programming, design and presentation display a combination of skills possessed by designers and programmers, while producers act as creative managers over all aspects of development work. While programmers do not require many of the affective and communication skills, they do rely extensively on knowledge and information skills, including advanced math and physics programming, knowledge of software packages and experience with hardware platforms. Artists' knowledge and information skills include 3D and 2D graphics packages, but their prized skills are affective and communicative (art and design, visualization, communication skills, and artistic talent).

According to *Game Developer* magazine's annual salary survey for 2008, the salary for game creators ranges from an average of $43,500 for artists with three years or less experience to $60,296 for programmers of the same seniority. Similarly positioned game designers average $46,184 while producers earn $52,763 on average. The average salaries across all levels of experience in the United States breaks down as follows:

programmers, $83,383; artists, $66,594; designers, $63,649; and producers, $79,970. At the lower end of digital game work, quality assurance salaries are $28,586 for three years or less and $39,309 across all levels of experience. There are also significant gaps between male and female average salaries in all job occupations. Male programmers earn about $7,000 more per year on average across all levels of experience than their female counterparts, and male artists earn about $6,000 more than female artists. Male designers earn around $9,000 more than female designers, and male producers earn around $7,000 more than females working in production. Quality assurance is no different, with males earning around $5,000 more per year than females.

Digital game development is a collaborative process of creative and technical production through teamwork rather than, for example, the craft of individual creativity in some fine art forms such as poetry, painting or sculpture. In terms of the overall organization and structure of the digital games industry, there has not been a significant shift from older media structures (Hesmondhalgh, 2007). Considering media's relation to the dominant mode of production however, the digital games industry arose during a historically specific era. The post-Fordist economy has given rise to distinct forms of media such as digital games that best express the social, political, economic, and cultural relations associated with the contemporary era. Within the development of the game industry, certain labor practices have arisen that typify the transition to the post-Fordist mode of production that utilizes flexible work and inventory and "just-in-time" production and distribution techniques.

Whereas the industrial era gathered labor in mass collectivities rooted in particular geographic places and communities, the new philosophy of cultural and knowledge production is based upon teamwork. The logic of teamwork coincides with the displacement of material goods and large factories as the centers of production or that which must pass through the hands of different workers within a single space on the way to its ultimate destination – the consumer. The center of production is now the

information network that includes the communication of everyone and everything. A team is "the unit of ephemeral identity that most flexibly fuses technologies and techniques into skill sets" adapted to the "changefulness" (Liu, 2004, p. 47) of the constant innovative cycles of the digital game industry (Dovey & Kennedy, 2006). Corporations have utilized teamwork to the negation of collectivities and individual identities tied to race, gender, and nationality (Liu, 2004). As digital games have grown more complex, work has become more specialized and the number of individuals working on a team-based project can range from only a dozen at a single corporate location to hundreds working at various locations around the world (Deuze, 2007).

Teamwork and the immaterial labor of differing skills that generates it, the play = work logic, crunch time, and the role of consumption in the production process are all structural dynamics that impact and reproduce the gendered habitus of digital game creators. The structures of the sexual division of labor found in the digital game industry are objectified in the practical principles of the career choice made by male gamers. The strongest practical principle is the one that "gives men the monopoly of the handling of technical objects and machines" (Bourdieu, 2001, p. 94). The other is the extension of the authority of men to have play *work* for them. This ability to infuse play into work on the most advanced computer technologies is captured by Steven Levy's book, *Hackers: Heroes of the Computer Revolution* (1984). However, as critics point out, only a particular subject position, namely highly educated, white men, were allowed access to these work spaces (Coyle, 1994, cited in Dovey & Kennedy, 2006). The next section links the structural dynamics above to gender.

Gender as the primary principle of division in the field of digital game production

In the relationship between social structure and individual practice, gender relations in social organization have persisted in a binary form, but daily practices shape

a variety and multiplicity of gender identities. The entire social space is divided into primary oppositions of gender, and these oppositions filter down into the specificities of power relations in occupational and work-related fields (McCall, 1992). Gender relations in specific fields are certainly informed by the overall divisions of social space, but the concept of field doesn't posit determinate relationships (Liu, 2004). However, because the field of digital games is structured by occupations, the social structure of this field is primarily defined by occupational status, the types of capital, and the ability to deploy symbolic power associated with capital.

In using the concept of field, the primacy afforded to occupational status or class must also be given to gender, which has traditionally been seen as a secondary principle of division in occupational settings (McCall, 1992). In broader language, the fundamental opposition that structures many fields of work is based on class and not gender, which is usually seen as a biological force that obtains specificity in relation to class positions (Moi, 1991; McCall, 1992). Analyzing gender in terms of its existence in the structure of occupational positions has been useful as a first step in addressing the gender relationships in the digital games industry, but gender also takes on primary rather than secondary characteristics when it is considered as an unofficial principle of selection that is hidden behind official constructions of gender-neutral categories based on occupation.

I am using a practice-based theory of gender that accounts for the interconnections of social structure and individual agency (Connell, 1987). Since popular conceptions see gender as naturally emerging from sex, particular concern must be given to the relationship between the body and social practice in order to provide a social rather than a biological theory of gender. Discourses of natural difference mistakenly take the biological body as the basis or foundation of the social relation of gender (Ibid.). Although there is a strong relationship between the body and gender, it is not biologically determined. To the extent that there may be some innate differences in abilities or temperament between the male and female sex, they pale in comparison to the biological

similarities such as capacity of intellect and language that drive complex social behavior and institutions. Rather, the social is unnatural, but it is still connected with nature through practices that deals with the natural qualities of objects, including the body. "The connection between social and natural structures is one of *practical relevance,* not of causation" (Ibid., p. 78). In this sense, social practices negate natural patterns by practically transforming them, which provides the basis of historical gender dynamics. But the body is never a static generator of practices that are classified as masculine or feminine. Instead, the body has meaning conferred onto it through social practice.

The habitus is the organizing principle of an individual's actions that informs thought and action and thoughts about action (Bourdieu, 1977). Because individuals of the same social group share similar habitus, interaction between them calls forth strategic action for an anticipated outcome, but habitus unconsciously produces practices that reproduce the structured structures and turns history into nature. It is a "universalizing mediation" that causes an individual's practices to appear sensible and reasonable although unintentional (Bourdieu, 1977).

In terms of gendered practices as it influences the habitus, embodiment is a key concept. Gender is deeply embedded in both individual bodies and social structures that are perceived "to be natural, a kind of biologicalization of the social" (Nye, 2005, p. 1948). The division of labor between women and men is internalized and embodied in the gender-specific habitus. Gender is personalized through the habitus and molds each of us throughout our lives (Krais, 2006). The habitus breathes life into practices that classify and categorize gender. "The habitus is the practical operator, the principle that generates the 'regular improvisation' that Bourdieu terms social practice. All practice operates with the help of symbolic orders and mobilizes schemata that structure and organize both *things* and *activities*" (Ibid, p. 121).

Butler (1999) argues that, rather than theorizing gender as a stable identity from which agency emerges, gender is an identity that is instituted through performativity. The

continual repetition of mundane practices is naturalized in the social and personal body. Gender is not an object that exists prior to the ways in which it is constituted, but the way in which it is constituted compels us to create an illusion of this belief, thus hiding its historical genesis. Gender identity is something that we perform due to social sanction and taboo. We are all unknowing architects of gender identity because we induce our bodies to become the cultural signs of men and women, which are historical objects rather than biological ones. Recognizing that gender is performative rather than natural is a step in the right direction, but changing the ways in which we enact gender is in no way an easy task. It is here that individual acts meet with the structuring of hegemonic social relations that punish, regulate and reward gender performativity.

The division between the sexes appears to be natural in part because evidence of it is constructed in things, in the whole social world (often built up as an entire cosmology of social and natural oppositions such as public/private or hard/soft), and in the habitus of individuals that is ordered into schemes of perception, thought, and action:

> The divisions constitutive of the social order and, more precisely, the social relations of domination and exploitation that are instituted between the sexes thus progressively embed themselves into two different classes of habitus, in the form of opposed and complementary bodily hexis and principles of vision and division which lead to the classifying of all the things of the world and all practices according to distinctions that are reducible to the male/female opposition (Bourdieu, 2001, p. 30).

The body is constructed by the social world through sexually defining principles of vision and division. This is applied to the body itself and all things of the world. This produces the appearance of a natural justification for differences between men and women and the social division of labor (Bourdieu, 2001).

Haraway (1991) writes that the constructed categories based from a biological belief in stable gender identities should not provide a "basis for belief in 'essential' unity" (p. 197). The coupling of technology, nature, and organisms into blurred and indistinct relationships provide the possibility of transformation instead of reproduction of

traditional notions and descriptions or representations of the body. “Communication technologies and biotechnologies are the crucial tools re-crafting our bodies. ... The boundary is permeable between tool and myth, instrument and concept, historical systems of social relations and historical anatomies of possible bodies” (Ibid., p.164).

In the current field of digital game production, the technological has developed through an embodied cultural capital that exists in the dispositions of the mind and body of men, as part of their habitus, and masculinity is one of the primary distinctions of these technological dispositions. The particular androcentrism structuring the field of digital game production produces a naturalized correspondence between the field and the habitus of men, and the mastering of computer technology is a fundamental aspect of this production. This simultaneous internalization of the external and externalization of the internal produces doxa, which is the self evident “universe of the undiscussed” existing as the negative constitution of a field of opinion, which holds within it arguments of heterodoxy and orthodoxy (Bourdieu, 1977).

Technology

Technology is deeply implicated in the habitus of those who work in digital game production because it is intrinsically tied to digital work. Game production shares a relationship with technology in which creativity and development must adapt to technological innovation (Deuze, 2007). New eras give rise to new forms of being human and new ways of relating to the technologies that ascend to express and manifest such eras. Post-industrialism has been theorized as a distinctive new era because the reproduction of culture and society are seen not on the model of the traditional techniques found in the industrial machinery but by the cybernetic networks of information technologies (Hardt & Negri, 2000). However, class is still the primary point of entry into post-industrial theories even though there have been better attempts to understand post-industrial labor in terms and from categories derived from feminist analyses of work. And

while the technologies of cybernetic networks and computer-information processors form a primary point of entry into social and cultural structures, "new theorists of technology also fail to consider whether this technological revolution might have a differential impact on women and men. While the common theme is that everything in the digital future will be different, it is not clear if the social relations of gender will also be different because the question is seldom raised" (Wajcman, 2004, pp. 11-12).

In order to examine the gendered habitus of those who create digital games using computer and computer-aided technologies and technological skills, the project adopts a feminist theory of social studies of technology, which Wajcman (2004) calls technofeminism. This theory expresses the centrality of gender relations in the social innovation and use of technology and is based upon extending the social studies of science and technology (STS) within a feminist framework. Technofeminism is used because "the association between technology, masculinity, and the very notion of what constitutes skilled work is still fundamental to the way in which the gender division of labor is being reproduced today" (Ibid., p. 27).

Men have traditionally held both a monopoly on technology and the definitions of what constitutes skilled, technological work (Cockburn, 1985). While granting that immaterial labor is the primary form of labor in the post-industrial economy, the privileged type of immaterial labor – that which produces knowledge and informational content – is associated with forms of masculinity and reproduces the division of labor. Cybernetics and computer aptitude at the developmental and functional level are "basic measures of masculine status and self-esteem" while "the least technical jobs" involving routing symbol manipulation and end-user computer work is seen as more "suitable for women" (Wajcman, 2004, p. 27). This differentiation between the impact, access, and design of technology calls for feminist analyses of technology as both the production of gendered knowledge and the production of knowledge about gender.

The hacker is the primary identity or lifestyle of digital game culture and the culture of production. The hacker is the technologically positioned fusion between work, play, and rebellion. Prior to and including the 1960s, having a playful mentality at work was not ideal. Play or what was known as leisure time was opposed to work time. Work was kept separate from hobbies. You could mention your golf score at work, but you couldn't spend a few hours playing *Tiger Woods PGA Tour 09* at the office. But it was a different time and context. The 1950s and 60s was dominated by a Fordist economic structure. The primary logic was geared toward the mass production of durable goods such as cars and washing machines at centralized factories by blue collar workers. Once "information" or white collar work became dominate in the late 1970s and beyond, new contexts changed ideas of work and play. These ideas emerged from the youth countercultures of the 1960s, which presented an "unmanageable" lifestyle to dissuade being managed (Liu, 2004). When these youth entered business, including those original computer hackers such as Steve Russell, the founder of Atari, and others, one of their main weapons of change was to introduce the cool countercultural elements into the hot jobs of the information economy. They had an answer to the question, why should work be different than play? Why should we try to wear two hats instead of one?

Whether one group of people are be more likely than others to chose the hacker lifestyle and possibly seek an occupation in the digital game industry is, following Bourdieu's (1984) work on the construction of class distinction in taste, a combination of their conditions of existence, which informs their gendered habitus, and shapes their dispositions, tastes, and practices.[5] The specific conditions of existence include a mostly middle class, white, male with a father who is an engineer or physical sciences or

[5] Dovey and Kennedy (2006) similarly use Pierre Bourdieu's work on lifestyle to develop an understanding of digital game workers in the UK, although they conflate taste and practice. Given the importance I have placed in a practice-based theory of gender, I try to keep these separate in my development of the concept of the hacker lifestyle.

computer programming with early access to computers. Some durable dispositions of the hacker lifestyle include a passion for games (of primary importance to the industry), interest in math, engineering or modeling, anti-sociality and an aversion to authority. Specific practices include programming, finding out how things work or solving puzzles, gaming, role playing, working with computer technology, and early adoption of new technological gadgets. The hackers' tastes include fantasy and science fiction, violent or heroic militaristic themes, as well as hegemonic masculinity and emphasized femininity (Dovey & Kennedy, 2006). A taste for these strongly defined but limited gender codes exist despite the lived actuality of the technological masculinity of hackers. The lifestyle thus generated from the practices and tastes of the hacker can be said to be his "technological edge" (ibid.). With a clear lifestyle, the ideal of the hacker has entered into the arena of the struggle for symbolic legitimacy with other lifestyles and others such as women or non-white hackers who are marginalized from view. Increasingly, it is digital games with their cultural themes that sell the lifestyle to younger boys who make up the primary demographic for the industry.

Gender and the culture of digital game production

A final inclusion to the relationship between the field of digital game production and the habitus of workers is the role of symbolic power, which questions the production and distribution of ideas and practices within a field. Symbolic power is "a power of constituting the given through utterances, of making people see and believe, of confirming or transforming the vision of the world and thus the world itself" (Bourdieu, 1991, p. 170). The role of symbolic power is gauged through the identification of discourses and practices that install and defend social positions to the benefit of men and the detriment of women as well as to an idealized type of masculinity over other types of masculinity and femininity. By fixing boundaries that privilege dominant and subordinate

(or insider and outsider) relationships between the sexes and types of masculinity and femininity, power is deployed in the actions and practices of social agents.

Gender symbolism, or what Connell (1987) refers to as sexual ideology, is the structuring of practices around sexuality that, through one of its main processes, collapses the structure of gender relations by making gendered practices appear natural. The division of the sexes is present both in material objects and in the embodied state or the habitus of agents, "functioning as systems of schemes of perception, thought and action" (Bourdieu, 2001, p. 8). One of the difficulties in analyzing the masculine symbolic order is that since it is naturalized there is no need to for cultural justifications for it. It operates as a neutral force that doesn't make itself apparent in discourses that legitimate it. "The social order functions as an immense symbolic machine tending to ratify the masculine domination on which it is founded" through divisions of labor, place, space, time, and technology (Ibid., p. 11).

The above theoretical framework leads to the following set of research questions:

- RQ1: How does the field of game production, which includes male domination, immaterial labor and teamwork requirements, commodity production aspects and environment of technological innovation, condition the gendered habitus of workers?
- RQ2: Does the work environment hinder a gender-equitable field? If so, how do such hindrances take concrete form?
- RQ3: How is the habitus of workers, which includes routine work practices, rituals and uses of technology, generative of an investment in an androcentric workplace?
- RQ4: How is symbolic power and gender symbolism expressed in the culture of the workplace, and what bearing does this have on the field of digital game production?

The next chapter deals with the qualitative methodology used to address these questions. It includes the use of participant observation and in-depth, open ended interviews at Dynevolve, a mid-sized digital game development studio.

CHAPTER 3 - METHODOLOGY

Introduction

This dissertation is an analysis of gender as it relates to the contemporary production of digital games. The purpose is to develop a detailed understanding of gender as it relates to individuals who develop creative content in the digital games industry and to examine the ways in which these individuals participate in and make sense of the production of cultural products. In the previous chapter, I laid out the central research questions that guide the project. This chapter explains the methodology used to address how the characteristics of the field of digital game production condition the gendered practices of employees. It will also address the way the work environment and culture at a digital game studio hinders a more gender-diverse space and how work practices, rituals, and uses of computer technology contribute to a predominantly male and masculine workplace. Finally, it will address the gender symbolism and gender specific symbolic power that is manifested in the culture of the workplace. Field observation and in-depth interviewing provide the qualitative data collection methods to examine the detail and depth to how gender is organized, symbolized, and identified during the production process of a digital game.

Any method employed is an attempt at a systematic way of knowing, given the questions that are being posed. Unique complications arise of course when the object of inquiry is subjective practices within an objective structure that is symbolically represented (and often misrepresented) (Bourdieu, 1990). Nevertheless, a basic definition of qualitative research locates the activities such as material practices and interpretations of the observer in natural settings in an attempt to understand and represent phenomena

based on the meanings people bring to the world (Denzin & Lincoln, 2005). Given the many different definitions and debates about just what constitutes qualitative methodology, it is perhaps best to offer one definition that best matches what it is the researcher plans to do. I prefer a direct definition: qualitative methodology emphasizes and utilizes inductive logic and interpretation that apply to the everyday, socially constructed world (Anderson, cited in Potter, 1996).

The project adopts a qualitative, micro-level approach to the study of the gender dynamics of a digital game development studio. This approach takes as its interest the roles, careers, functions, activities and social and cultural attributes of individuals within a commercial media organization (DiMaggio & Hirsch, 1976; Ettema, 1982). Field work observation and interviews were structured around work, culture, and technology. This chapter will present the importance of embodied vision to an interactive ethnographic project, which underpins the methodologies used to collect data, analyze it, and explain the reproduction of a masculine gender dynamic at a media production company.

There are several unique benefits of going to a worksite of digital game creation to address questions about the impact of social and symbolic structures and the everyday labor practices and production routines that inform mass media content as well as the habitus of the individuals. Participant-observation research of production can describe events, situations, practices, and actions that remain hidden from the final product of commercial media (Jankowski & Webster, 1991) and form part of the struggle among various social actors to define how gender should be represented in media culture (D'Acci, 1994). The cultural meanings associated with media products derive (although not in isolation or entirely) from the practices and meanings that producers encode

through their use of specific technological materials (Hall, 2006). "The term *practice* emphasizes cultural processes rather than products. To study practice is to recognize that groups or societies habitually organize and institutionalize the meaning-making process" (Pauly, 1991, p. 4, original emphasis).

To research the practices at play in the design of digital games, I conducted a case study using participant observation of the production of a digital game at a U.S. game development studio combined with primary document collection and in-depth, semi-structured interviews of workers who produce the game play, technical and artistic elements used in the creation of games in a team-based organization of labor. Case study research seeks to understand the dynamics that underlie events at a single setting (Eisenhardt, 1989).

The project was conducted as a case study of the gendered practices and culture that influence gender symbolism in digital game content and masculinity as a fundamental part of a what Dovey and Kennedy (2006) call the game creator's hacker lifestyle. Case studies, though ill equipped to provide an all-encompassing concluding statement about social phenomena, are able to provide details on decision making, processes, and exercises of power (Newcomb, 1991) that have gendered dimensions and implications for understanding how media content is produced. Additionally, the case study illustrates how broad cultural, social, or economic issues that shape a media industry are experienced at the level of lived relations (Lotz, 2004).

Fieldwork consisted of observation of the organization, culture and practices of producing a game along with in-depth, semi-structured interviews. This latter method was designed to investigate the meanings that individuals bring to the creation of content

through their understanding of computer technology and skills, the cultural elements of working at a game studio, and their work routines and practices. The multiple methods also provided a way of triangulating and validating my findings.

The digital game studio

I carried out fieldwork at Dynevolve, a medium sized digital game development studio in the United States. The studio is well established in the industry, having made commercially and critically successful "AAA" titles over its 12-year history. Although it was originally independently owned, a few years ago a large digital game publisher bought the studio, making it a subsidiary of a larger, multinational corporation. This follows a trend of multinational publishers snapping up smaller, profitable development studios (Dovey & Kennedy, 2006). The studio employs about 75 people, of which more than 95 percent are men, who were working on four game projects when I observed the work site in the summer of 2008.

The studio is located in a metropolitan area of the United States with four other mid-size development studios located in the same vicinity. With an active chapter of the International Game Developer Association and studio competition for scarce local human resources, a small community has arisen wherein it is not out of the ordinary for an employee to work at more than one of the studios over the course of his or her career. Indeed, while I was conducting field research one of the senior animators at the studio left the company for a game studio in the same group of buildings that made up the corporate plaza. His friends joked that they would still be able to see each other through binoculars.

Despite the employees knowing others in the community, there are several topics that each person knows should not be discussed outside of the office due to non-disclosure agreements that all studios utilize.[6] The topic that is most taboo is the name of any game project that the studio management hasn't announced to the public. I had a rather embarrassing moment when I was having lunch at a Japanese steakhouse with Foster, a senior artist in his early 30s who grew up on the east coast and went to college at a New York art school, and Chris, the very young but self assured lead designer from Colorado, early on during fieldwork.[7] When Chris asked me why I was chose to observe his game and not the other in a similar phase of production, I inadvertently used the name of one of the games in my answer. Although no one overheard, Chris was quick to correct my behavior because employees from other studios frequent the same restaurants in the area.

I visited a total of three studios during my initial attempt to gain access in the fall of 2007. I was fortunate to meet my informant at an academic conference, who was sitting beside me in attendance at a panel on the educational possibilities of digital games. Having worked in the industry for a number of years, his extensive knowledge of the area and connections to the studios there provided me a crucial entry point. He arranged a day of meetings with gatekeepers from three studios and generously gave his time to take me to each location and make personal introductions. At each studio, I made a pitch about my research goals and purpose. Two of the three studios were receptive and accommodating, while one studio was against the idea of having a researcher interrupt its

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[6] I signed the studio's non-disclosure agreement as a condition of access.

[7] Pseudonyms are used for all participants.

day to day activities prior to hearing my pitch. Still, an executive from that studio was accommodating enough to give me a tour and listen to my pitch.

The gatekeepers who heard my initial pitch at Dynevolve was Jan, the director of marketing, and Elaine, the human resource representative. They presented my request to the executive team and department directors, who agreed to provide access to their studio for two months in the summer of 2008. At the end of my fieldwork, we agreed to two follow up visits during the production and post-production phase of the game project I selected to observe. Given the three-year time frame of the entire production of the game, this dissertation will not include data collected from these follow up visits. These visits will be useful to the development of follow-up research, though.

Gaining access through executives and management was necessary, but obviously it is not the best way to establish initial trust and rapport with employees. On my first day at the fieldwork site, Jan introduced me to the employees during a studio-provided lunch. For many employees, it was the first they had heard that a researcher would be at their worksite.[8] This generated initial pockets of distrust as a few assumed, bemusedly, that I was more likely a corporate spy sent by the publisher that owned the studio to make sure the employees were hard at work. The researcher perceived as a spy in an organizational setting is common from employees (Warren, 2001). However, everyone who directly participated in the research project was given an informed consent document (see Appendix A) with contact information for the university's human subjects office as well as the project supervisor.

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[8] I would later learn that Elaine sent an email to all employees notifying them that a researcher would be coming, but such communication broadcasts are frequently ignored at any workplace.

The employees I interacted with and observed gave their verbal informed consent. This involved giving them a copy of the consent document that explained the parameters of my research in layman, giving them time to read it on their own, and giving them time prior to consent to ask questions. Although no one refused outright to take part in the study, Vincent, an Italian American artist who grew up in New Jersey and in his late 30s, told me that it would be too uncomfortable having me sitting behind his back for a few days. But since Vincent still wanted to contribute to my research, he agreed to an interview and shared some of his current work. I quickly learned that the corporate spy conspiracy had less to do with me and more about a distrust of game publishers in general, which are, after all, less concerned with the welfare of studio employees than with turning a profit and making sure games are done on time.

More of a concern for me was the frequent attempts by some to treat me as a member of the team. This occurred despite the observer-as-participant role that I primarily performed. This role, where participation arises chiefly as a matter of observation but with the freedom to interact casually with participants, is often the best available in a corporate environment where complete participant or participant-observer roles would mean taking on an occupational position within a company (Bryman, 1988).

For those such as me who have largely come to question the significance or credibility of role theory as it pertains to gender, mostly because of the normative assumptions it makes and its inability to legitimately explain gendered structures and practices (in particular see Connell, 1987), it seemed a bit disingenuous for me to adopt a role as a researcher in the field. Emerson (2001) documents the shift in ethnographer's thinking on this subject from the initial discussion of the continuum of participant roles

ranging from more or less detached to the field or a dichotomy between covert and overt presence. Although there are obvious conceptual benefits from adopting a single kind of relationship while conducting research, this comes at a cost to how situations and settings change and require the research to adapt, perhaps adopting a different role or abandoning the sense of playing a role altogether.

For example, being treated as a member of the team was ideal in a sense that the primary role I performed shouldn't have necessarily led to this status while I was able to develop a good rapport with the participants. However, I recognize that this status was afforded to me through cultural conditions based partly on my ethnicity and gender. For the most part, I had to negotiate some employees' slipping me into an insider category. Sometimes, particularly during parties and other socializing events, I was treated as one of the guys or "part of the team." For example, during the studio's release party for a recent game, which was held at a nearby bar and restaurant, there were a few times when I wanted to situate myself away from the employees for a moment to gather in the entirety of the party. This was an employee-only affair rather than with family and friends, so I thought it would be a good moment to get a sense of how the employees interacted with one another at a large social event. So in addition to listening to executive speeches, observing the festive atmosphere and the kinds of food and drink, I was interested in seeing who was hanging out together. Did younger employees mingle with the older, artists with programmers, members of the same team, or executives with employees?

On the three separate occasions that early evening when I broke away to try to address these questions, some of the employees I had gotten to know approached me as a

friend or co-worker might, assuming that my sitting or standing alone was a sign that I could use the company of another. It's quite a normal reaction to the norm that no one wants to be alone at a party. I was polite to their requests to sit down or hang out with me. But these moments were also guided by gender. I observed that this offer was not extended to Rebecca, an interface engineer in her mid 20s and the only woman at the studio who works directly on digital games, who spent the first hour practically sitting and eating alone before she left. Later in the evening, the employees gathered together for a group photo, and an artist asked me to join. In these moments, it was hard for me and them not to consider myself part of the team.

It was not only in moments of socialization that my gender privileged the kinds of observations and conversations I heard from men who openly communicated and worked with other men in ways that will sometimes be different if a woman had been present. Masculine banter, which is akin to feminine gossip in its gender dimensions, was one of the primary forms of communication at the game studio that made it a sociable, relaxed, and fun atmosphere for men. However, I would often find it difficult to de-naturalize this form of communication because in social contexts of interaction between members of the team, at lunch, during cigarette breaks, or casual talk in someone's office, I found myself comfortably slipping into "banter mode." This is not to say that women are not able to banter, just as men are quite able to gossip (and do gossip), but it often through banter that men are able to intimately connect with other men without the danger of homosexual bonds that heterosexual men work so very hard to maintain as an opposition to their masculinity (Easthope, 1992).

Observation: envisioning an embodied empiricism

Vision is a fundamental aspect of the objectification and explanation of the social world. But the dominant practice of empirical research has legitimated one form of vision over many others. The view from nowhere has been qualified through post-positivism, but it is still the one social science privileges. This is the detached and disembodied view, which is intimately tied up with other dominant positions in terms of race, religion, class and gender (Haraway, 1991).

Mystery Science Theater 3000, an American television program that humorously deconstructs bad movies, frequently calls out those moments where film creators forget the conventions one learns to humanize the camera's vision. In one episode, an over the shoulder shot of a man looking out of an apartment window is followed by a shot looking out the window, which positions the spectator in an embodiment of the character looking out the window or at least seeing through his eyes. When this "human vision" suddenly zooms in on a character on the street below, the deconstruction is apparent and biting: "Oh, I guess his eyes have a zoom feature." The comment simultaneously dehumanizes the camera's vision, disembodies the spectator from what it meant to be an immersive experience, and robs the creator of his ability to present his vision as a natural extension of the character's vision.

Principles of vision are also fundamental to the production of digital games. This is quite apparent when considering that some genres are named according to their primary graphical vision, the first person shooter, for example, or the "God games" that are produced by studios such as Dynevolve. The latter shares the disembodied view of the dominant social and physical sciences. Much of the work I observed went into

considering what the game should be able to display for the god-like player, and this was instrumental in shaping the way in which the methods of observation were deployed.

The principles of vision that inform the observation of practices during fieldwork are based on the feminist objectivity of situated knowledges (Haraway, 1991). Vision in this sense is particular and embodied in the organic and machinic sense (cameras and graphics programs embody multiple types of vision, after all). There is always a particularity of vision. The god-like vision is particular to surveillance, dominance and control. But it is not the only one articulated by digital game designers, programmers and artists.

The researcher's vision, too, is particular to a habitus and a position in a particular field (Guba & Lincoln, 2005; Denzin & Lincoln, 2005; Haraway, 1991; Smith, 1990; Harding, 1986). Rather than a path to a disembodied view of the social scene from nowhere, particular and embodied vision is a component of a cybernetic system of knowledge. A particular claim to knowledge based on particular vision doesn't speak for all knowledge about digital games and gender but it does add a crucial component to understanding the reproduction of gender in the production of digital games. Moreover, particular and embodied vision shares an affinity with micro level approaches to the study of media production. Thus methodological observation is carried out with multiple vision in play; it is a recognition that all are valid ways of presenting the world but with their own contingencies. The god-like vision may be structurally dominant, but that doesn't determine its legitimacy.

The commitment to acknowledging and utilizing multiple, corporeal, contextual and contingent views is a particular technique of ethnographic representation used for

media studies that Murphy (2008) calls interactive. The interactive approach situates both the researcher and social actors as active and open interpreters and speakers in a media ethnographic project:

> At the center of the interactive mode … is researcher-subject interactions and exchanges which are presented through a dialogical mixture that attempts to make the ethnographic encounter as salient and transparent as possible and suggest how the inscription of the other is performed in dialogue with the inscription of self. (Ibid., p. 280)

Collecting data in field notes using participant observation is done by subjecting the researcher's body, personality and subject position to a group of individuals in a setting so that the researcher is able to be close to them when they respond to situations and events (Goffman, 2001). The collection of data through fieldnotes came primarily through observations of the types of practices or actions that produce symbolically meaningful contexts (Emerson, 2001; Goodall, 2000; Pauly, 1991; Geertz, 1973). Three types of practices that comprised the observation strategy are individual and teamwork routines; rituals, which were primarily instituted by the game studio but also by employee groups; and rites of passage. Routines are what people do every day that orders the progression of a day. This provides the basis for what happens consistently as well as how individuals deal with any interruptions to their routine. Rituals, whether they are daily, individual, group, organizational, or religious, are the practices that are meaningful to the individuals or social groups who engage in them. And rites are significantly meaningful practices that signify the passage from one state of consciousness or stage to another (Goodall, 2000).

In observing and interpreting practices, it is also important to point out that they are not only the result of conscious decisions that lead to action. Bourdieu's (1977)

concept of habitus suggests that durable, organizing principles structure an individual's thoughts and actions and thoughts about actions, all of which may not (and typically do not) find easy expression in language. This may be particularly accurate when observing practices or performances of gender (Butler, 1999; Bourdieu, 2001). This point acknowledges that language or types of classifications of practices cannot address all forms of practical activity because there is a tendency by phenomenological methodology as well as research participants to miss how activities are structured by larger social contexts that are naturalized by the very activities that people engage in (Bourdieu, 1977). Men enact masculinity through practices, speech and gestures in the workplace (Nye, 2005) without it being explicitly understood or articulated as gendered practices. Part of the fieldwork strategy was to capture the different expressions of masculinity that informed the practices and symbolically meaningful communication of the male employees.

The structure of observing work practices and processes

Primary observation of individuals' work practices and team work were set up through a game project that was in the pre-production phase. I will refer to the project throughout the dissertation by using the generic phrase, "future franchise game." In all, I conducted 480 hours of participant observation research. The team assigned to the future franchise game was mostly comprised of artists and programmers. Others were slowly

being integrated as they phased off another project that was finishing its testing phase.[9] Only one producer and designer was initially attached to the team. Since the initial stage of pre-production is driven by the design document, I started by sitting with Chris, the lead designer. He was working with an external testing community that he interacted with through an online discussion forum, and I made arrangements to have access to the forums.

I spent five weeks with artists working on the project. I started with Ron, the lead prototype artist, who at the time was occupying the same office space as Chris and Foster. Ron, an ambitious and motivated 3-D artist in his mid 20s, presents something of a paradox. When I met him, his high and tight hairstyle mimicked what one would see at a marine base although recent pictures of him showed him sporting long, straight locks. Although he was into military themes and history that matched his new cut, there was also a quiet soulfulness about him in the friends he made at the art school, whom he still hung out with at a Bohemian art house coffee shop, and his taste for hip, independent music.

Ron easily stands over six feet, and his height seems to fit his enthusiastic assertiveness at work much more so than his personable, easy-going nature when you talk to him one-on-one. “I was a really shy kid growing up,” Ron explained, “and my mom thought it would be a good idea to get into theater. My older sister was also into theater, and she encouraged me to do it. In involves speech, dance and being social too. A lot of kids are introvert-extroverts. They can act like an extrovert when taking on a role or

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[9] The commercial production of digital games is typically broken into three to four phases: concept, pre-production, production, and testing (sometimes referred to as post-production).

personality. They can do these really crazy things. But naturally, they are introverted people. I consider myself as one of those people. I think a lot of artists are like that. They can act really crazy, but when you get to know them on a personal level they are actually really shy on the inside. I think I was one of those people growing up.

"I auditioned for the school play in the seventh grade, and I was so nervous I was shaking and my voice was cracking. But I was so embarrassed then that everything (now) seems vanilla – plain and easy. I found my confidence. It was the moment that broke my shyness. So I did theater for about four to five years. … Being a big guy on stage helps because they always need a big guy to fill a role as a villain. I sealed my fate. I grew my hair out really long, and I played the role of Judd Fry in *Oklahoma!* in the eighth grade. I was the biggest kid in the class at the time, and that sealed my fate as the big dramatic guy. These were the moments that, being a shy kid growing up, on stage I was the key focus to an audience full of people. It gave me a lot of self confidence."

Since Foster sat right behind Ron at the development studio, I turned my chair around to observe him next and to get a sense of how the lead artist managed and interacted with his team. This large office with Ron and Chris on one side and Foster and an empty desk on the other was a good place to get acquainted with the rest of the team as they came in to bounce around design ideas and artistic demonstrations or critiques. Several employees would also gather here after they played one another at a real-time war strategy game called *Company of Heroes* through an online network. Chris or Ron would replay the simulated battle while others would talk about what they did right or wrong or basic strategy and tactics. I made my way out of this initial work space to observe several 3D artists working on terrain and characters and finally with the

animators. All of the members of the art team are white, save Mitchell, a Korean animator from Seoul with a Western first name.

The programming team had a similar dynamic, with six white men and Gerald, an American Indian and Midwesterner with long, straight black hair. They all dressed the same, though, with similar assortments of black t-shirts with digital game- or computer industry-related corporate logos offered at professional conferences such as the annual tech-heavy SIGGRAPH, devoted to computer graphics and interactive techniques. I had to ask if they dressed the same as part of some team mentality. This is not the case, though, as Derrick, the AI programmer and industry veteran pointed out that all game programmers dressed like that. The final three weeks was spent sitting with Martin, the lead programmer, two young graphics programmers, Kyle and Derrick. Martin is approaching middle age although he looks young, is soft-spoken with a muscular build and keeps his straight hair long. He sometimes wears it in a ponytail, and he has an assortment of Godzilla figurines perched above the shelf on his desk. Kyle, the first of the two graphics programmers I observed, grew up in Alabama and was snatched up by Microsoft immediately after he received his computer science degree from Boston University. He made his way to the studio after growing tired of Microsoft's corporate, risk-free mentality. The other graphics programmer, Ed, is a local lad and in his early 20s working toward a Master's in computer science.

I also spent a few days sitting with the members of the sound department and quality assurance, which was focused on the two games that were nearer completion. I attended all team meetings associated with the future franchise game. At the time, the art and programming teams had weekly meetings, and the producer held a weekly meeting

with the lead designer, programmer and artist. The entire team held periodic milestone meetings, led by Todd, an intensely focused and energetic producer who rose to his position through years of working as a game and technology tester.

The game studio has departments for designers, producers, programmers, artists, marketing, and operations. Of the six, designers, programmers, and artists were directly involved in creating what is considered here as game content, and my observation was primarily structured around team members working on the game from these departments. Producers manage the production time line, making sure that the game is done on time and within budget. And although I didn't dedicate time to directly observe Todd, he was a constant presence at meetings and during his "rounds" at team members' offices. He did agree to be interviewed as well.

I also sat in on meetings about a game that was in the testing phase as well as meetings that were non-project based. This included a weekly design department meeting. I also attended all the social events held by Dynevolve during my time there, which included the game release party, company picnic, and several weekly rituals that were held at the studio such as "beer Friday," which was held every other week and whose name is a dead giveaway of the fulcrum of activity.

Triangulating participant observation

Although field notes comprised the primary data collection method during the time spent at the game studio, this data was triangulated with interviews with producers, designers, programmers, 3D artists and animators, and sound engineers. Additionally, I collected and analyzed primary documents, including meeting notes, the future franchise game's design document, art asset examples, and graphics programming examples.

Crafting multiple data collection methods strengthens the grounding of theory by triangulating evidence (Eisenhardt, 1989).

In-depth and semi-structured interviewing reconstructs events, actions, and settings in which observation could not have occurred or did not occur. I used a responsive interviewing method, which stresses collaboration between the interviewer and the participant (Rubin & Rubin, 1995). The open-ended nature of responsive interviewing was designed to actively listen for concepts or cultural ideals that came up during the interview process that illuminate the broad direction of the issues discussed. Different types of questions such as probes and follow-ups were used to provide depth and further understanding or clarification.

The interviews were semi-structured around three broad topics: technology, work, and culture (see Appendix B). Under the technology topic, the questions were designed to address concerns and critiques about the hardware and software used at work, whether changes to technology affects how work is performed, how they learn new software programs, and the current state of gaming technology, such as memory and processing speed. The work category addressed issues such as daily work practices during different stages of production, team work and communication with other employees, working hours, the ability to be creative and contributory to how the game looks, runs, or plays. Cultural questions addressed educational and other background questions, prior work experience and how they got into the industry. I was also interested in what mass media they consumed and what digital games they played.

In all, 25 interviews were conducted over the two month period (see Appendix C). Although I mostly interviewed members of the team that I observed, other employees

either asked or arranged to be interviewed after I announced that all were welcome to participate in this way. The average duration of these interviews was around one hour, with the longest lasting one hour and 22 minutes. The shortest was 40 minutes. All but three of these interviews were digitally recorded. All but a few interviews were conducted at the game studio, either in private offices or empty conference rooms during employees' breaks or lunch. A few employees requested going out to lunch in order to do the interview. Given the studio's easy-going management style with work schedules, interview times were usually very easily negotiated.

I collected primary documents to track the various stages of the production process, analyze the designer's vision of the future franchise game, and to visually document a series of translations of game content as it was worked on by concept artists, 3D modelers, animators, and graphics programmers. To track the production process beyond the time in the field, I arranged for Todd to include me on the email distribution list for the game's progress reports and team meeting notes. Chris gave me the 173-page design document, which includes the vision of the future franchise game, lists of required art assets, general game design elements such as the interface and the look and feel of the game, and other gameplay mechanics. Although an analysis of games that the studio had created in the past would have been another good triangulation strategy, this would have been unlikely to make it into a final report without giving away the name of the studio. Although I am familiar with the games the studio has created and they inform the work and culture I observed, this can hardly be considered a methodological way to validate research claims.

Description, analysis, and interpretation

Field notes were written the evening or morning after spending eight to ten hours at the site. This resulted in 200 single-spaced pages of descriptive notes. My time at the site was, for the most part, determined by the working schedule of the employee I was observing at the time. So, when a 3D modeler came in at 11 a.m. and left at 7 p.m., I would take up those working hours for observation as well. The theoretical section above guided my initial and ongoing system of observation, but I also performed daily review of field notes in the morning for emerging themes and concepts. Data collection is overlapped by data analysis both by asking and readdressing the research questions during the process of field note writing and by maintaining flexible data collection techniques when new themes emerge (Eisenhardt, 1989). These were incorporated into my observation strategy as a way to open up meaning to what occurred in everyday contexts.

Analyzing field notes and interview data is a process that Geertz (1973) describes as thick description. Thick description is the hierarchical levels of structural meanings that produce, perceive and interpret actions, events, practices, settings and discourses. The role of analysis of qualitative data is to produce a meaningful statement about practices and meanings that have emerged from the data using the language or concepts that develop out of patterns that are evident in the researcher's fieldnotes and interviews (Goodall, 2000).

During and after the typing of detailed field notes, transcribing interviews, and gathering supporting on-site documentation, I analyzed the data through both open-coding and in vivo coding methods to generate grounded categories combined with a

comparison with theoretical categories elucidated in Chapter 2. Open coding generated concepts, themes and explanations based upon the theoretical and contextual framework, while in vivo coding captured the concepts, themes and explanations provided by the interviewees and derived from field observations of work practices, rituals and the culture of the organization (Strauss, 1987). Grounding theory derives meaning, concepts, and theoretical insights arising from the context and contingency of the data obtained at the field or during in depth interviewing. These are often highly relevant to local actors or expressed by local agents themselves as a primary way they understand their social world. But descriptions of these theories are always an interpretation by the researcher (Emerson, 2001).

The interpretation of the categories follows the principles of thick description, which is an interpretation of the meanings of those significations people give to their activities in the context of culture. Thick description is an account of the stratified hierarchy of meaningful structures in terms of which practices and communication are produced, perceived and interpreted (Geertz, 1973). Although thick description is conceptually tied to the interpretation of data, sorting and presenting data have two other distinct yet not mutually exclusive emphases: description and analysis (Wolcott, 1994). Descriptive sorting of data stays close to the original source of the information, presenting interviews, field notes, and primary documentation as they were obtained, written, or recorded. Analysis and interpretation are strategies of sorting and presenting data that build upon descriptive accounts. Wolcott (1994) writes that analysis is the most "scientific" strategy of sorting and presenting data, where key factors and relationships

are systematically confirmed. I employ a mix of description, analysis and interpretation (or thick description) to the presentation and ordering of the data that was collected.

Because gender is a central focus of this dissertation, particularly feminist analytic and interpretive strategies have been essential to the ordering and presentation of data. In particular, Dorothy Smith's (1990) exploration of the break between lived actuality or "the experienced" and the ideological production of texts is helpful in interpreting gender and the production on digital game content. Her actuality-data-theory circuit reveals the machinations involved in the ideological production of texts and discourse. Ideological accounts of gender borrow from lived and embodied experiences and transform them through professional practices and procedures into privileged discourses. The use and adherence of these privileged discourses of gender feed back into the practices of media professionals and also lock out lived actuality. Lived actuality subsequently becomes defined and lived through the terms of the ideological construction.

Examining digital games and gender: reflexive interests

Reflexivity provides a space in which to interrogate the reasons why certain methodological choices have been made over others and why particular objects of interest slake a researcher's thirst for knowing certain aspects of the social world more than others. At several points in the research project, I found it beneficial to reflect on questions such as, why am I interested in gender and the production of digital games and why conduct research using methodology informed by feminist theory?

Feminist theory offers a contextual, reflexive and embodied phenomenological approach to the collection and analysis of data from diverse social settings. The feminist axiomatic that stresses dignity, truth telling and the sacredness of human life should be a

defining principle of all contemporary interpretive ethnographic research (Denzin, 1999). When feminist theory informs methodology, the researcher makes a political commitment, insisting that the praxis of research derives from the problematic of individuals being studied so that action can be taken to end inequality or oppressive practices (Smith, 2005). In this section, I draw on those moments and aspects of my own subjectivity that led me to a game studio to study a group that was almost entirely men but that didn't intentionally set out to be organized in this way.

In my first year of graduate school, I took a temporary summer job that required very little skill or attention but really reinforced the division between the low waged work of digital processing and the highly skilled work of computer programmers and engineers. The job was arranged through a temporary work agency and was at the sprawling IBM complex near Boulder, Colorado. That the job wasn't deemed worthy enough to be managed by IBM at its own site was only one of the belittling aspects. Others, such as being confined to only that area of the complex and having to pass through two sets of security guards and security doors, were the more daily frustrations, particularly when the security card wouldn't work (which was more often than not).

The job consisted of monitoring numeric digital display panels on rows of data storage machines and entering magnetic or digital tapes into their appropriate places. So, for example, when a display flashed a six-digit number and letter combination, I would retrieve the corresponding disk from the library room, slot it into the machine, and put it back after the machine read, wrote, or backed up what I assumed was data valuable enough to require those extensive security provisions. The only skills required were monitoring, matching numbers and maintaining several of these machinic requests at

once. To me it felt a bit dehumanizing to be such an unthinking component within a cybernetic system. Essentially I had rows of digital bosses telling me what I should do. And they had two modes of complaint if I didn't follow instructions: flash the number if I was taking too long or alert someone along the circuit whose job it was to call IBM to find out what the trouble was. Still, with the right cynical attitude, one could leave the job at one of the many security doors, never carrying it home.

This aspect appealed to me because I had made it a point that summer to read as many foundational works on feminist theory, gender and media studies, cultural studies, and Marxism that time would allow. This is a kind of promise I heard being made by many of my fellow first-year graduate students. After that first year, I felt as if an ontological rug had been taken out from under me. Down wasn't quite up, but I quickly learned that my assumptions about the social world were based on little more than common sense. It was a good feeling and a bit exhilarating.

I was working the third shift alongside several young men in their late teens and early 20s. During down times, breaks, and lunch, their time was mostly spent discussing all manner of digital game culture. Their discussions sort of mirrored the gaming magazines they brought in to pass idle time, with game reviews, previews, and next generation hardware upgrades. They talked about the latest, most popular games, often arguing over strategies, narratives, characters, difficulty, cheats, and comparisons to other games in the same genre. Probing questions from me, someone who had grown up playing digital games but had only a present casual connection, revealed gaming as an entire lifestyle.

My outside status frequently provided the group with a common enemy as I pointed out problems with some hyperfeminine or hypermasculine image or another in their magazines. These young men were front line gender warriors policing the boundaries for the budding and increasingly significant digital game culture. Working the vampire shift at IBM offered me no allies, but I reasoned that these young male gamers had to be getting their marching orders about gender ideals from a larger cultural apparatus. This was my entry point into the world of digital gaming and gender, and as I learned more about the reproduction of game creators through the passion of early passion for games among men, I decided that a key part of the cultural circuit was the organization and culture of digital game production.

But what is it about my identity, a white male from a working class neighborhood in Houston, that drew me to alliances with feminist positions that were unrepresented in the temporary workforce of third shift employees at IBM? I could probably start with a conscious awareness of gender politics during my final year as an undergraduate. Professor Anne-Marie Pois, a feminist historian at the University of Colorado, encouraged me to explore my interest in Women's Studies and feminist theory by providing an inclusive and reflexive atmosphere in her classroom. But being raised by a single mother of three informed my decision to take Prof. Pois' course to begin with. It wasn't out of the ordinary for my mother to work a full time and part time job to avoid the stigma of being labeled that particularly insidious label during the conservative political climate of the 1980s – the welfare mom. Although my mother went to college, she was never given the opportunity to translate a degree in political science into what would be considered good employment opportunities in Houston's patriarchal corporate

world. This presented a bit of a contradiction to me, who had come to learn from my mother what it meant to be a strong-willed, astute, and politically progressive person in the 1980s. The unequal and divisive social regimes of gender profoundly impacted my family during this time, and for me understanding the role media play in perpetuating this structure of dominance has always been part of my identity.

And no other mass media quite compares to the unequal gender dynamic that structures the industry and culture of digital games (Kline et al., 2003). It needs explicitly feminist interventions to unlock its potential as a tool for a progressive cyborg cognitive map. Digital games are expanding their range of influence in society and culture, and by focusing on gender in terms of work practices, cultural ideals, and organizational structure, I hope this dissertation will intervene in the trajectory of their gendered development. Just mentioning the problems of gender in passing will end the same way as my arguments with the young men who worked at IBM – an email returned to the inbox of the sender with the subject line: undeliverable.

But there are people working in the industry, most of the men I observed and interviewed, who are not proponents of the gender war. The hackers who work in the industry may have a taste for the stable, hierarchical gender imagery supplied by hegemonic masculinity, but this does not mean they embody it. If anything, their technically competent masculinity is subjugated by the image of violent, tough men of action. This is a prime moment for intervention then that must account for both tastes and linking masculinity in whatever form with digital game production.

CHAPTER 4 – THE ORGANIZATION OF DIGITAL GAME WORK

Introduction

This chapter examines how work is organized in terms of the physical layout of the office space, the departmental organization, and teamwork. These three factors contribute to an environment that reproduces the investment and belief of game employees in the kind of exciting, cool, and exclusionary workplace that is utilized by the industry to create its products. Additionally, I discuss how gender is deployed and engaged within these organizational dynamics. Through its design, the office space is encoded as a place of work and play, but the space also encourages a paradoxical relationship between publicity and secrecy. Dynevolve simultaneously wants its products to be openly known and to be able to control, contain, and release information about its digital games to the public. This creates an insider/outsider boundary through the discipline and maintenance of secured access. The studio has a relatively flat organizational structure with a top layer of executives and directors managing the art, technology, marketing, operations, design, and production departments. This is indicative of contemporary knowledge work where, absent middle management, both executives and workers need to be highly informed of the production process (Liu, 2004).

In providing an analysis of each department that forms the organizational structure of the studio, I include the number of employees, the job categories, its male to female ratio, and situate the primary roles and responsibilities in relation to digital game development. The two largest departments are the art department, which is responsible for the audio and visual elements of digital games, and the technology department, which is in charge of programming the software and making sure the game runs. The design department is the studio's crown jewel. It is responsible for the feel of the game, its rules and ultimately how fun the game is to play, which is referred to as the gameplay element of production. The marketing, operations, and production departments do not work

directly on game elements. Nevertheless, each department contributes to a successful product through services such as testing, market research and advertising, and publisher liaisons. Additionally, the producers are the creative managers that motivate and support the artists, designers, and programmers to ensure that a game is completed on time.

The chapter concludes with an interpretative account of teamwork, which is the style of collaboration the studio employs to produce digital products. The teamwork environment utilizes spatial, temporal, informational, or technological hubs to facilitate work between the artists, designers, and programmers. Ultimately, working on a team generates a subjective investment from project to project that propels individuals through periods of leisurely creativity or experimentation and periods of long, frustrating working hours called crunch time. Finally, even though subject positions based on gender, ethnicity, or sexuality are subsumed under the *logic* of corporate teamwork, the broader cultural ideal of who is and who is not a gamer ensures that white, heterosexual men more easily fit into the structure of teamwork than others.

The Office

Dynevolve's office is located in a three-building plaza, connected by an outdoor courtyard and an underground connection of hallways that house a Post Office, cafeteria, small convenience store, tailor, and fitness center. The plaza is surrounded by a giant parking lot on three sides and the main six-lane road that leads to the freeway. After a very short car ride or a tricky quarter-mile walk that entails crossing parking lots, grassy knolls, and the main road, office workers have access a town-center style shopping mall with a large gourmet grocery store, several breakfast and lunch options including chain restaurants, a movie theater and several retail shops and department stores. A light rail line also stops at the shopping area for office commuters.

The studio itself occupies space on the top three floors of one of the tall office towers, and the easiest way to access it is to take any of the six elevators from the

building's main lobby. The elevator bank is situated in the center of the building, cutting a rectangle of space out of the middle of the office. A few of the younger employees and the health conscious use the fire stairs to ascend in the morning or after lunch. You can tell by their satisfying, quickened breath as they spring from the side door on the second floor of the office.

For others, the company logo embedded into the tiled floor outside the elevator banks greets all who disembark on the first floor. Its message is simple: this is Dynevolve's floor and belongs to no one else. The second and third floors are shared with an investment firm. Needless to say, the clash of financier and gamer couture is all too apparent. The divergent paths that these two groups of men took through business school and computer science labs respectively have curiously lead to the same space in corporate America. The men themselves are strikingly different, however.

The secured entry doors to the first floor are see-through glass and provide a view of the office manager's reception desk, part of the waiting area with a promotional Xbox-television kiosk. Beyond this is a glass-walled conference room, which the employees call the fishbowl. Inside the conference room is a 50-inch plasma-screen television and a long, contemporary designed conference table with a dark lacquered finish. Framed computer and game magazine covers featuring Dynevolve and the company's creative director are lined up on the hallway on either side of the reception desk. Besides reception this floor, the biggest in terms of square feet of the three, takes on the majority of collective activity.

The glass entry may encourage the openness of public relations, but the two security devices negate democratic activity through the iteration of privacy. The 12-digit panel outside the office will only unlock the door if a human enters the correct sequence of numbers, and the green plastic button inside will only do the same if a human recognizes the outside individual or his or her intentions. Both security devices are part of a single human-machine network, and their association with the transparency of the glass

represents something much larger and remarkable. If this entryway is only all too familiar in design and function to the point of being *un-re-mark-able*, then its logic and not its significance has been successfully incorporated into the doxa of contemporary culture.

The way the security system performs its taken-for-granted status is through the production of its own arbitrariness. Most of the activity surrounding the security system is not based on the discussion of it, which suggests the existence not of doxa but of orthodoxy or heterodoxy (Bourdieu, 1977). Rather, the *taken-for-grantedness* is the performance of the common sense, multiple-times-a-day punching in of the code that allows one access into the office. The code is only given to insiders, but through the incorporation of the code into one's consciousness via daily use, the insider-outsider distinction melts away for the insider.[10] The process is disciplinary, and discipline "'makes' individuals; it is the specific technique of power that regards individuals both as objects and as instruments of its exercise" (Foucault, 1984, p. 188). In this case, the discipline of the human-machine interaction through the security system makes insiders and outsiders. It creates an arbitrary boundary between people and spaces with secrets to keep and those wanting to make the secrets public.

The secured glass entry of a digital game development studio is nothing less than a materialization of the discursive matrix of secrecy and publicity that forms technoculture. Publicity, argues Jodi Dean (2002), is the ideology of technoculture. Without its naturalized dispersion through all meaningful actions, strategies, and communications, we are not able to comprehend what is true and significant. In short,

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[10] This was only too apparent for me. Before entering the field, I assumed that security concerns would require an employee to grant me access to the office each day. This assumption was based on my initial visit when I was escorted from the waiting room to the fishbowl and then around the office in a quick tour after I had signed a non-disclosure agreement. Much to my surprise on my first day in the field then that I was given the security code in a matter of fact style that made me feel instantly welcome. After a few days, the surprise had turned into a routine of coded entry. If not for the initial field notes, I surely would have had trouble remembering what had become so arbitrary at the end of my visit.

claims to truth and significance are based on them having become public. So profoundly is our belief, absent publicity, we are not even assured of the importance our own existence. In addition to belief, publicity doesn't thrive as an ideology without secrecy, which is its other.

Publicity and the major form it takes as marketing is necessary in the more strategic sense through the publishing logic of the digital game industry. But I am not entirely convinced that all of the investment in secrecy at the studio is due to the concern over competition. Perhaps it is in a roundabout way, and the need for security is articulated by the studio and its employees as a concern with the competition. Rather, the "secret" information the studio and its employees hold about the production of upcoming game titles are the prized commodity of the hardcore gaming fan, who is heavily invested in conspiracies about this information because the open networks of communication allow for the search, research, and discussion of secrets, rumors and innuendo. The truth is out there, after all, and the thrill of the hunt for new information is one of the particular pleasures of being a dedicated fan in contemporary media culture (Jenkins, 2006).

Chris, the lead designer for the future franchise game and one of the first employees I got to know at Dynevolve, knows from experience about the passion of fans and the need to try to get information from employees at the studio. After all, he used to be on the outside looking in. "I don't get involved directly with the external community at all at least in regards to the new game that we are working on," he said. "If you respond too much they become aware of the fact that you are working on a game that they want to know about so you can't really get involved in that way.

"You do have to be careful about what you do and what you say externally because people can take things the wrong way and the internet is a scary place. It can be very valuable, but you also have to be very careful because there are people who try to push your buttons or try to get more information out of you that they should know or say things that are really dumb to get on your nerves. Everyone here who has contact with the

external forums is either really quiet or doesn't post at all. You have to be very guarded in that sense. That wasn't always true. We've had some people in the past who were a lot more involved, but occasionally they would get in trouble. So you have to be careful, and the reason why I say that is because I was actually from the forums originally before I ever worked here. I was one of *them*, you could say, until I got to the point where I became really involved by being a beta tester, then a contractor, and then doing this. So I have a lot of experience in that, and I know better than to get too involved."

Once on the inside, past the reception area, and moving counter clockwise around the office space, an open area called the fun zone is the primary gathering place for all-employee events such as Beer Friday (more on this and other studio rituals in Chapter 5), company announcements, and demonstrations. On the first day in the field, it was here that the marketing director, Jan, introduced me to the group, who had gathered for a free lunch of sandwiches, chips, and fruit salad. The studio provides these catered lunches every other Monday and also uses the time to make brief announcements about game sales, marketing and publisher updates, and social events like calls to join the softball team.

At one end of the fun zone, another 50-inch plasma screen television sits upon a raised platform. Linked up to the television are an Xbox 360, a PlayStation 3, and a Wii. Game controllers are strewn on the ground, from the traditional to the specially made, musical instrument controllers for the game *Rock Band.* A three-person gamer couch with cup holders on the arm rests is positioned directly in front of the plasma screen. In addition to the ping pong table, the rest of the fun zone has rows of plastic tables and chairs that can be easily stacked and stowed in the corner should the need for more space arise. If you make your way around the first floor counter clockwise, the first hallway has three smaller offices, three audio rooms, and the six-person Quality Assurance room. The next hall has a number of small two-person offices to the right and two, two-person cubicles in an open area with a small conference table and the back door leading to the

elevators. A number of shelves line the hall containing a library of computer games. The hall that leads back around to the reception area has a combination of small and larger, four person offices. It was Ron's idea to install corkboard on the hallway walls so that everyone can see and comment on the art work for current projects. One project has an entire wall with art concepts from characters to settings and vehicles.

The office's largest break room is also on this hall. This is where the studio has breakfast for its employees every other week. Lunch is provided on Monday one week, then breakfast on Wednesday the next week. The breakfast typically consists of apples, oranges, bananas, yogurt, donuts, bagels with cream cheese, and orange juice. Employees pop in and out, grabbing whatever they want. Some stick around to talk while others take the breakfast with them to their offices.

A wooden stair case connecting the first and second floor opens up into the fun zone. The second floor has a large open space with a frequently used pool table and an infrequently used foosball table surrounded by single-person offices and a conference room that was primarily used for small projects such as brainstorming sessions for the design of a new game. Two of the four walls of the room are floor to ceiling dry erase board. For example, a special team was set up in this room to evaluate the Unreal Engine that the studio would eventually purchase.[11]

A small break area on the second floor is underneath the steep, narrow wooden stair case that leads to the third floor. These stairs line up with, but are not connected to, the first and second floor stair case. The third floor opens to a space with three cubicles in front of three offices. Facing this open area is a hallway leading to the remaining offices,

[11] The Unreal Engine is a popular commercial game engine for the development of 3D digital games. It was developed by Epic Games, which holds the license for the software and sells it to development studios along with technical support. Estimated cost for the license for commercial game developers is between $350,000 and $500,000.

a narrow break room and a large, four person office with a large window looking in. A service elevator also connects the second and third floors.

When I first arrived at Dynevolve, the office space was more or less divvied up as follows: the art department; members of the operation department such as quality assurance, the office manager, and IT; and the audio rooms were on the first floor; the production department and design department on the second floor; and the technology department and marketing department on the third floor.[12] The department directors were on the same floor as their departments. So, for example, as art director, Keller's office is on the first floor. The president's office is on the third floor. As the department with the largest number of employees, it made logistical sense that most artists where on the first floor. There wasn't any hierarchical reason why the programmers were on the third floor, and with the second largest number of employees, it also made sense to have them on the floor that has the second-most number of offices.

The studio has a flat organizational shape, particularly between departments. The directors and executives hold the space above in terms of authority, but beneath these six individuals, the organization has little vertical structure other than seniority. On the team based projects, mostly senior employees are designated with a lead position, but these positions do not subsist past the life of any one game project. On the project I observed, for example, Robert took the lead 3D modeler position, technically under Foster, the overall art team lead, a position that Robert had on the previous project.

This organization is representative of what Liu (2004) refers to as the idea of knowledge work in postindustrial corporate culture. The idea of knowledge work is also tied to the shift from corporate concerns over material flows through production

[12] I say more or less since it isn't uncommon to find anomalies. Glen, a concept artist, has his own office on the second floor. Rebecca, a technical artist, was on the third floor with the Engineering Department before moving to the first.

processes to information flows through networks. Rather than scores of middle managers buffering information between the executive and the rank and file, information flows function best when everyone within an organization is super-informed. This is as true for executives as it is for the last hired, who is expected to know more than a middle manager ever did in the industrial era. "Every teamworker in the new regime, therefore, is trained and equipped for smart work" consisting of countless brainstorming meetings, in-house and at-home skills acquisition and upgrades, and "constant dissemination of company-wide philosophy and performance data" (Liu, 2004, p. 45).

About a year before my visit, the executives and board of directors decided to change the organization of the office to foster more team togetherness. This plan was just being fully realized during my visit, mostly due to the longer than expected development time of Dynevolve's newest console title. As I said, previously the layout of the office space was based upon the job category. So, programmers were near other programmers and so on. Now team members are in "co-located" office spaces based upon the project. Since there are two major projects in the pre-production phase at the same time, the team of one project moved to the first floor while the future franchise game project occupies the third floor. Under the new set up, the lead programmer, lead artist, and lead designer for each game project share the same office on the same floor. This large office would be the spatial connecting hub of the different aspects of production.

The new set up was not without its share of political and social wrangling. For example, Todd, a producer at the studio, called an initial meeting in the fishbowl with the future franchise game project's lead designer, programmer, and artist about the arrangement of office space for the team on the third floor. Todd was born in Dundee, Scotland, and grew up as a military brat moving from base to base as his father's career dictated. He was no stranger to the logistics of moving. He had lived in a diversity of climates, from sunny San Diego to chilly Keflavik, Iceland. His closely-trimmed hair style matched his upbringing, but the producer role is largely political. Todd stays in

constant communication with the studio's directors and his project team, relaying information back and forth.

Although Todd wanted practical decisions to be made at the time of the meeting, Foster questioned the obvious roadblocks to settling these arrangements there and then. What was the status of the president's office? Was it off limits? What other offices were off limits, then? Todd had clearly been told by the directors to come up with an initial plan for moving and situating the team on the third floor. Suffice to say that the president's office was the "sacred cow," which meant that he would not be leaving that space and thus the space was unavailable to the team.

At the time, there were too many unknown factors that prevented a smooth allocation of office spaces, but Todd pressed on with the meeting despite the uncertainties. On the left side of the dry erase board, he wrote the names of all the team members under their departments: programmer, production, and art. He is a visual learner, and he is comfortable when he has something to show for his work. There were six known programmers and five "to be hired" (TBH) positions; two known producers and one TBH; 15 artists and one TBH. On the right side of the board, he wrote down the elements of production, such as animation, modeling, interface, terrain, and team leads.[13] This made it easier for him to discuss which person from the left will be in what offices together, based upon the elements of production they will be working on. The pairs and combinations of office mates would depend on what aspect of production a team member works. For example, they decided during the meeting that Kyle, the graphics programmer responsible for writing an editor program for the terrain art pipeline as well as getting the terrain to render in real time, should share an office with Jason, the lead terrain artist.

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[13] The term "team lead" is used by the studio instead of "team leader." These lead positions are temporary and transitory. Employees are given the lead status from project to project, usually but not always based upon seniority. The distinction is that "leader" emphasizes a stable management structure and practices associated with middle management such as hiring and firing decisions, etc., which is not the case at the studio.

It almost goes without saying that exclusive meetings among leads and department directors about plans to move generated a lot of speculation, discussion and frustration among the employees, some of whom were quite happy with where there were and others who would just like to have a say in who they share an office with. Others questioned the execution of the plan. A few people had already moved. Chris, who had shared an office on the first floor with Foster and Ron when I first arrived, moved twice in the space of two months. First he moved to the third floor to share an office with Derrick, who had also moved from the first to the third floor around the same time as Chris, and Martin. Less than a month would pass before Chris again moved to a larger office that had just opened up where he was reunited with Foster. During the moving process, a rumor began to circulate that the studio was going to be moving to another building altogether. Sensing the unease, the president called a meeting of all employees to the fun zone and discussed the possibility of moving once the lease was up.

The decision to reorganize the office space from departmental to team can be interpreted as a competition between the logic of space and the flow of information through computer mediated communication networks. Highly technological corporations involved in the commodification of information also believe in the ability of information to smoothly transcend the constraints of space (and time). Information is maintained on a computer mediated network so that all employees can have instant, simultaneous access to it. If these conditions exist, then *where* one person is located matters less than his or her ability to access the network and the information within it. That's the logic, anyway.

At the studio, the departmental organization of the office space was getting in the way of communication and information processing among individuals who were supposed to be working together as a team, despite the existence of networked information that is available through a wiki-style system where everyone contributes to the collective information ordered by the most recent contributions. One of the major complaints everyone had of the last game developed was the breakdown in

communication between team members. Jan, the marketing director, said during one meeting that employees needed to consider information as an "asset" just like the digital assets that make up the game's audio and visual components.

Having team members on the same floor was the studio's solution to an underlying problem in the belief that the technical aspects that make decentralized networks function efficiently can be translated to an organizational structure made up of human actors. At certain times human organization begins to mimic or incorporate machinic organization (Latour, 1999), but the process is never smooth. The problem at hand is the tendency of actors (both human and machine) in this kind of network to differ (Terranova, 2004). In this case, the difference is not in terms of subject position but rather in terms of occupation and function. As the next section details, subject positions at the studio are relatively cohesive around the axis of gender. The differences between artists, producers, programmers, and designers tend to affect the team network established during the production of a game.

Departmental organization and functions

Before moving on to analyze, from a perspective of teamwork, the broader implications behind the movement of personnel from departments to teams, I want to provide an examination of the departments and further elaborate on the organizational structure of the studio, including the department's gendered component. Although the primary area of focus is on those who have a hand in the day-to-day production of a digital game, it is important to situate them within the enterprise as a whole.

From a hierarchical perspective, Dynevolve has a two-man executive team consisting of the president and the director of creative development, who is also the head of the design department. Directly under is the four directors of the company: the executive producer, who is in charge of the production department; the director of marketing, Jan, who is the only female in an executive role at the studio; the art director,

who is in charge of the creative team made up of audio, visual, and technical artists; and the director of software development, who is responsible for the technology department made up of software programmers and engineers.

There are six distinct departments: marketing, operations, production, art, technology, and design. The marketing department is a two-person team and works closely with the much larger marketing apparatus of the multinational publishing corporation that owns Dynevolve. The operations department is a loose confederation of individuals employed in varying capacities such as human resources, accounting, IT, quality assurance, and office management. There are about ten employees in operations. The human resource representative, accountant, and office manager are female, while the two IT workers are male. Of all departments, operations has little direct input into game production, save the quality assurance team, which is five males (one manager and one lead) who all test games for bugs during the production and post-production phases of the development cycle. This team can expand to include interns and contractors depending on the amount of work during the development cycle (usually at the end of production, though, when testing becomes one of the more labor intensive aspects of production). My initial informant, a professor at a nearby university, keeps in contact with friends at the studio by doing some contract work for quality assurance in the summer.

When I arrived during the summer of 2008, there were two males in the production department, one a senior producer and the other a producer. This department expanded in the space of a couple months to include two females hired as associate producers and another producer, a male who had moved over from the studio's marketing department. Producers are responsible meeting deadlines such as getting the game to the publisher on time; making sure the artists, designers, and programmers have the resources they need to complete the game; maintaining good team morale; communicating with reporters, marketers, and the publisher regarding game features and gameplay; and

keeping executives and directors informed of the general progress of the game through the phases of production.

Carl, the senior producer at the studio, described the key elements of the role of producer as communication and time management. “You have to be diligent in your efforts to make sure that people know exactly what is going on and what’s expected of them. Letting people float out into space or not have clear direction can be a huge time-suck. One thing that we do not have is time. Managing that time is critical. It doesn’t mean at the end of the process you can’t get more time to polish it out, but the more time it takes, the higher the cost.”

Producers also need to maintain a certain energy level and excitement of the team as a whole. “From a production standpoint,” Carl said, “what I think is key is providing enthusiasm and making people believe in the project – providing people with a vision that they can wrap their heads around and get excited about. From a design standpoint, that’s important as well, but from a production role it’s like, we make games for a living. And that’s all. I really feel that in a creative industry you can provide propulsion behind a project that is given through a clear idea about what you are trying to accomplish. And what you are trying to accomplish is cool and exciting enough that it gets the entire team motivated and emotionally involved in the process. I take that part of my job very seriously. In the end you have not only a better product but also with a really happy team. There’s nothing like at the end of a project where everyone is patting each other on the back. We did something. We really accomplished something.

“Trying to be open minded enough to see others’ points of view, open minded enough to notice red flags that come up during the process, not ignoring those or putting them off until later, but truly solving the problems and having a pulse for the morale of the team, addressing people’s concerns the best you can. Trying our best as production members is, when people are here; let’s work because when we leave at the end of the day we can feel like we accomplished something. I don’t like wasting time. When I have

meetings, I like them to be quick, direct, and then to move on. I know that working here is supposed to be fun, but we are also here to work. We don't have a lot of time, so I try to keep things very focused by keeping the energy up.

"Once the project gets going, it's a matter of telling people exactly what is expected of them and constantly checking up on them. Hey, 'did you get that done? Are you where we thought you would be?' Everybody works differently. You have to adjust. Some guys will take their time or take vacation at the beginning of a milestone to relax a little bit, and then they will crunch at the end and get everything done that was assigned to them. Some guys spread it out and work at an even pace throughout the project. So understanding that people work differently is really important to the producer's job. Otherwise, you can go crazy. I think being lenient is important. Being able to understand that people have lives. They are humans. They are not machines. You should expect a lot from them and should be constantly working with them. My job is as easy or as hard as the team that I have working with me on this. If they hate what they are doing and hate the process and hate everything about it, then it is not going to be a fun experience. My job is to make the process as easy and fun as possible"

The studio producer at Dynevolve is not asked to manage how money is allocated to the project, although he does influence monetary decisions in terms of requesting additional resources if needed in terms of personnel, equipment, or outsourcing work. "When I came to [Dynevolve] I was told not to worry about money," Carl said. "If I needed something, I was told to ask, and then I would get what I needed. The focus shifted completely away from money, I guess. I mean, money in relation to time. Ok. It's like; this is the game that they want. This is the time frame we have. This is what we can deliver.

"I believe that if we are going to compete in this market and make games that live up to our vision statement, then we need to be willing to put the money where our mouth is. So we've got to spend the money. But I'm not going to just blatantly spend without

thinking about it. I'm very conscientious of the number of people working on the project and the amount of money that we are giving to contractors. I know kind of how much it is costing us to make the game. I kind of know what my limit is. I wouldn't want to hire an actor to do a motion capture if he wants a million dollars. So, I'm aware of it but it's just not a driving concern."

Thus the producer and associate producer roles at the studio are a mix of what Hardt (1999) describes as affective labor and Hesmondhalgh's (2007) more media industry-focused concept of creative managers. The part of their immaterial labor that creates, communicates, and maintains enthusiasm, comfort, motivation, and resource support is the production of affect for the team, which is itself concerned with making entertainment products that manipulate specific affects of players. Ultimately, the inward directed affective labor of producers goes a long way in producing the team, reproducing the conditions of teamwork, and the belief in the team. Creative managers:

> Act as brokers or mediators between, on the one hand, the interests of owners and executives, who have to be primarily interested in profit (or, at the very least, prestige), and those of creative personnel, who will want to achieve success and/or build their reputation by producing original, innovative and/or accomplished works. (Ibid., p. 64)

The studio's prized department is design, since it is here that the director of creative development, an executive who is still "super-informed" and involved in creating games, leads a small cadre of men passionate about games and dedicated to creating fun gameplay experiences that are tough to put aside once picked up. There are five designer-developers in this department, all male. Talk to anyone at the studio about what the company is known for, and the first thing he or she mentions is the design-centric focus instilled by the success of the director's long and distinguished career.

Designers at other studios are typically active at the front end of production, creating a design document during the concept phase that is then handed over to art and programming for the prototype and production phases. The design document becomes a

solid bookend with the publisher's completion date at the other end. These are the aspects of game production that are usually set in stone (Dovey & Kennedy, 2006). In contrast, Dynevolve's designers are free to make changes to the design document well into production if they believe that the result would be a better game. "For most companies this document is a bible," explains Chris, the lead designer on the future franchise game. "This is exactly what the game is and what the game ends up being. These are the rules. This is the vision of the game. But here the vision is in the prototype and in the game itself. If something is in the game but not in the design documentation, the game wins because that is what you are making. You're not making a document and putting that in a box."

While there are relatively few designers at the studio, they rely in part on the ideas and feedback from an external test community. This test community is the outsider within, comprised of dedicated, passionate and knowledgeable fans of the franchise series. These player-testers are given access to prototypes of games in progress called builds. They play updated versions and are asked directed questions on an invited discussion forum. Chris said that giving outsiders a look inside and giving them an opportunity for feedback while the game is still being made is pretty rare in the industry. "Some companies do beta tests where they bring in people for the last couple of months," he said, "but at that point there is no way that you can make major design changes. So if the game's not fun, they may find bugs but the game is still not going to be fun even if you fix those."

The size of the external test community, collectively known as Frankenstein, depends on the phase of production. Chris began working with a 10-member team on the future franchise game, but more testers were added the further the project went, topping at 20-30 testers. The initial group of ten was selected from a larger pool because, at the concept phase, Chris wanted only those individuals he knew would be able to think very

broadly, pointing out basic flaws or strong points in the design while overlooking things that will be polished later such as art or minor code glitches.

The community is very responsive and each member has plenty to write about a range of topics posted on the discussion board. For example, Chris, who seemed to always be "at work" or at least thinking about work if not at the office, posted a detailed, nine-part question for the community one evening at 2:10 a.m. One member posted the first response one hour later at 3:14 a.m. In that hour, the external tester considered and addressed seven out of the nine questions by pulling out each of the seven questions, block quoting it from the original post so it is right above his answer to the question. The next post was from another external tester four hours after original post and another post an hour later. The third tester posted another message a few moments later that was "more polished." It's not as if all members were awake in the witching hours monitoring the forum. Some testers live in Germany or Eastern Europe, so Chris' 2 a.m. post was received during reasonable hours. There is one tester in particular, though, who Derrick said "never sleeps." Intervening, Chris told me that he sleeps during the day. They agreed that basically he's a vampire but a good tester, so they don't hold his bloodlust against him.

The technology department is the second largest at the studio with around 20-25 employees. In terms of digital game creation, this is the department that makes the game run. Programmers are essentially concerned with writing the underlying code that determines the stability of performance of the game software given the amount of memory for information retention. Programmers are responsible for game performance, memory and stability.

The department is comprised of highly skilled software engineers and programmers, although there is little distinction between these two terms at the studio, and most of the members of the technology department I talked to consider themselves programmers. The distinctions in this department are the types of programming involved

in creating digital game software. Some primarily implement AI programming, while others work on programming the interface, systems and networks, or graphics.

Rebecca was originally an intern but was subsequently hired by the art department as a technical artist. She now is the only female in the technology department. She works as a user interface engineer. Interface implementation is unique in terms of its deployment among the different departments during a project. "As interface," Rebecca explained, "we are like a little band of programmer-artists in a little group. And although we should or could report to programming or something, even in the org' chart we report directly to design, doing what the designer needs and responding to it."

The technology department embodies the knowledge and informational component of immaterial labor. This point becomes apparent, for example, with an analysis of the major difference of the computer screens that show the interfaces of the two main software programs used by either digital artists or programmers. Artists use 3ds Max. Although this program requires users to have advanced modeling and animation skills to create digital art assets with commercial appeal, the interface is nevertheless comprehensible to anyone who has used commercial software programs such as Microsoft Word or a photo manipulation program. There is an orderly arrangement of icons for the tools available in the program that allow for a quick, visual confirmation of what the user would like to do. The interface of Visual Studio, the game development software the programmers use, is all color-coded text and text-based headings for menu items. Programmers do not need iconography to work because they essentially build and manipulate the functionality behind the icon.

The other departments rely on the technology department to build tools that hide the computation and coding that is the heart of computer software. As Chris explained, "an example of a tool might be an interface layout tool that allows the artist to say, 'I've made this piece of art, and this is where it's going to show up on the interface on the screen. I can move it around. I can resize it. I can do these things.' Without that tool, they

might have to do it manually in XML and mess around in numbers to determine where the x and y coordinates would be for that particular element on the screen, whereas the interface tool would allow them to see that. … So we need the tools to help us simplify the process so we don't have to spend as much time on stuff that we don't want to be doing."

Art is the largest department at the studio with around 35 employees, all of whom are male. Artists develop and create the game's audio and visual elements. Artistic work is divided into sub-specialties covering digital painting and sketching of concept art; 3D modeling and texture painting; computer animation and effects; technical and interface art; and sound, which includes composing or selecting musical scores as well as sound effects. On specific game projects, visual art is further divided into subject-oriented and object-oriented creation. Character creation will be handled by one sub-group of artists while settings such as buildings, rooms, and landscapes are done by another.

The artistic aspect of digital game production is arguably the most public face of the industry as a whole. The dominant theme of violence preferred by designers is a close second because it as well is so easy to read on the surface of mainstream games. Hypersexuality linked to violent themes as an aesthetic and narrative combination is so ubiquitous and so in-your-face that it is easy to critique, thus condemning the entire industry for basic immaturity and deep seated misogyny. Roz Kaveney (2008) writes that mainstream comics suffer a similar fate. This is because the very visible hyperfeminine and hypermasculine representations alienate almost everyone except the young, heterosexual male demographic to which they are addressed.

Hard core gamers and the game creators who spring from this group counter that this critique of representation elides the richness of the themes spread over many distinct genres and the deep, satisfying immersion that comes from a superior gameplay experience. What this counter-argument fails to address, however, is that surface interpretation, based on common sense, is the only level of interpretation available to the

uninitiated and un-habituated. The premise, which I am basing on Bourdieu's (1993) work on the sociology of art, is similar to the middle-class reaction to abstract impressionism which insists that their children could produce such paintings. What could non-gamers know of the richness that lies beneath surface markers, and why would they venture into territory that appears at first sight to be so unwelcoming to them? If the richness of gameplay is the essential reason why digital games have such a loyal following, then the simplest way to create more gamers and expand the market is to diversify the surface.

In making this critique, I do not wish to condemn the artists at Dynevolve for the sins of an entire industry. Artists at the studio neither lead the way nor shy away from representations involving hyper-muscularity or hyper-sexuality. If anything, the design focus of the studio's strategy games rather than the artistic focus of first person shooters and fighting games where we see the most troublesome representations should allow the artists here to sleep better at night. These surface interpretations – this sense that digital games are not "for me" – have an impact on whether a novice will give a second look to the studio's games on the display shelf of the super store. This is why I would claim, in the end, that the work of the art department is the most public of faces. The marketing department would respectfully, and maybe convincingly, disagree.

Teamwork

Any extended discussion of the organization of work at the studio is incomplete without an understanding of the teamwork element of game production. Although the departments organize the types of employees hired and who they report to, teamwork essentially reorganizes programmers, producers, artists, and designers into a common unit with an overarching project goal. This section provides a description of the team that was forming around the future franchise game project I observed. Within this team

environment, different hubs are utilized to facilitate teamwork. These hubs can be spatial, temporal, informational, or technological.

Before describing the team for the newest franchise product, I want to situate gender as it informs teamwork and the subjectivity of digital game creators. The logic of teamwork in a corporate environment subsumes categories of identity based on race, gender, class, and sexuality within a more generalized identity (Liu, 2004). Whether the logic is matched by any particular team is contingent on the practices generated by that team and the cohesion of the generalized identity to each of the team members. For the digital game industry, this identity is commonly referred to as the gamer, which is related to the broader identity of the hacker and is defined here as having a passion for games. Like the hacker identity (Dovey & Kennedy, 2006), there is an idealized version of who is "naturally" a gamer, which is partly defined against those who are not "naturally" gamers.

The idealization of a gamer in the United States is one who is young, white, male, and heterosexual. In terms of teamwork, even though subject positions are subsumed under the larger sign of the gamer, this idealization allows some to fit more comfortably into the team environment than others. And the more homogenous the team in terms of the idealization of the gamer subject position, the better the subsequent teamwork in terms of the ability to communicate and to be "on the same page," despite the diversity of skills that arise in the division of jobs and tasks required to create a digital game.

Between August 2008 and February 2009, the future franchise game project team was becoming fully formed with 10 newly hired employees and three to four in-house team members coming in or being shuffled out for a new project that siphoned off a few artists and programmers. The core leadership of the team had been working together for two to three months, and an initial wave of artists and a few programmers had joined the team about two months prior from the console project. In late summer a minor wave of a few artists, a designer and programmers joined the team from a franchise expansion

project that had just completed. The team is still looking to hire a few more programmers, a senior animator and to replace the lead animator who had left the company for a rival development studio located in the same office plaza.

Chris, in his role as the lead designer-developer, was the only person from the design department initially although he was working closely on the prototype of the game with the AI programmer, Derrick, and getting feedback from the 10-member external testing community. Ryan, an industry veteran, joined the team from the design department in late July. Martin was the lead programmer, but he left in mid August to join the new project team. Derrick took up the lead position from Martin. Along with him are two graphics programmers, Kyle and Ed, and two systems programmers, Stuart, who is working on network issues and Gerald, who makes sure all the game files and systems link up and run smoothly. Gerald would also move to the new game project with Ken. The studio hired two programmers in September to compensate for Gerald and Ken. It also hired two more in February to work on interface and graphics, respectively. Todd is the producer, and Cheryl was hired in July and slotted into the associate producer role on the team.

Foster is the lead artist on the team, and he is a self proclaimed smart aleck. He generally has little patience for organizational wrangling and rule making, and his reaction to these kinds of office annoyances sometimes devolves into cynicism. Yet he is also passionate about making games and dedicates himself fully to articulating his artistic vision. He sports alternating pairs of green and blue DG skater shoes and fashionable dark rimmed glasses that speak to his artist's sensibility. He is very knowledgeable about art and was educated in fine arts, but in his career in software and game development he has also adopted a mathematical outlook to managing creativity and artistic work on a digital game project.

The ideals Foster holds as an artist and the necessities of team management comes out when he describes the role of creativity in making a digital game. "You can

illuminate the creative input really early on in the process," he said. "If you start locking in decisions and you just roll with them and you don't involve a lot of people, sometimes projects will not have a lot of room to be creative. Ideally you want to have a tremendous deal of creativity early on. When I say a lot I mean that half of your day would be spent thinking of new things, and the other half would be spent trying to learn techniques or play with software. Usually what happens is, during production that ratio goes to 80:20, and then towards the end of a project it's 100 percent making things work.

"That kind of creativity is very localized. So it might mean creative ways to get things to look good, to save files, get a final look or finish something, but that's a very different level of creativity than broad thinking. So that is the general flow: 50:50 early on, and as the project time winds down it gets less big picture creativity and a lot smaller. Ideally at any moment somebody should be able to step in and take another broad creative view and really evaluate how you have done in terms of the big picture goals. You should be open to doing everything over even if you would never do that for money reasons or whatnot. What that allows you to do is to see where you have maybe mis-stepped or fix some things with small creative processes or creative problem solving.

"I think it might be the difference between idealism and pragmatism. The creative mind is the mind that lives in the realm of the ideal. You want to pursue ideals no matter what the cost. You don't want to worry about ends or the production schedule and not worry about time lines. You just say, 'what do we want to make?' And at the end you have to throw all your ideals out, swallow the decisions that have been made, and work pragmatically towards the end goal. There's a point at the end of the project where you want to reverse that process, and you should open people back up and ask if we hit our initial goals and what we can do to get really close to there. It's like a nice wave. It's downhill, but there's a little launch ramp at the end."

There is a layer of sub-leads in charge of different artistic work under Foster. Robert is the lead 3D artist, and he works with the other 3D artists Ira and Harvey. Larry

is the lead terrain artist, and Geoffrey works on terrain as well, taking the lead position when Larry leaves for the new game project. Ron, whom I introduced in Chapter 3, is the lead prototype artist working mostly with Chris to place temporary art in the prototype as well as doing other special projects for Foster as the need arises. At one point during the summer he led Harvey and Ira in the 3D modeling and animation of a cut scene.[14] Mitchell is acting as the temporary lead animator while the studio looked to hire a more senior animator as a replacement for the outgoing lead. Working with him on animation are Doug, who left to be the lead animator on the new game project, and David. Glen is the first concept artist on the team, and he mostly works on character creation. Foster contracts a free lance artist for terrain mock ups, and Tim joined Glen doing concept art, initially focusing on landscape and other objects such as buildings and city scenes. Vincent is the lead interface artist, and he works closely with Chris and Foster. James is the sound engineer.[15]

Teamwork is generated from this amalgamation of artists, programmers, producers, and designers through common points in space, time, information and machine. I have already discussed the major spatial dynamic – having all members of a project team on the same floor. The previous office layout that had programmers two floors away from artists was seen as a spatial debilitation of the ability to communicate with team members during past team-based projects. "When I first started," explained Rebecca, "I was all the way downstairs with the artists and [one of the programmers] was up on the 3rd floor, and we found that it was really difficult to get anything done because I would build something and he would plug it in. … It was incredibly hard being that far

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[14] Cut scene is perhaps not the most accurate phrase here, since it usually refers to a non-playable scene that furthers a narrative. Ron's project is non-playable but doesn't advance a story narrative.

[15] For additional demographic information on the team members, see Appendix C and Chapter 3.

away because, even though you can ask something or just try to figure it out on your own, so much time is wasted. Now we are four feet away from each other, and I can ask, 'hey, what's this one thing' – back and forth – in both directions. It's like having a sounding board to say, can I explain this to you and during that explanation you figure out how to do it? A couple of other programmers had big chunks of the game, and their offices are now right next to me. So I found that really, hugely important."

One of the major informational hubs is the design document, which is kept in a wiki format on the studio's intranet.[16] For each game, there is a wiki entry, and under this category, there are links to specific aspects of the game such as the game's summary, the state of the prototype, lists of art assets, technological requirements, general game design, and gameplay mechanics. Everyone on the team is responsible for reading and keeping up to date on the information posted on the wiki. Under the links are specific tasks or information that can be or should be updated so that anyone in the company can access current information on any project. Wiki topics and categories are mostly updated by the leads, and these updates are all stamped with the date and time along with the user's name. When Todd reaches a production milestone, he will "strip it," which means he will create a stable, Word document version of the design document with the game project's title and the following information, for example: "Game Design Document, Version 1.0 (rough draft) June 24, 2008." This document, which is 170 pages, is forwarded to the publisher and the board of directors as an update in the production process.

Artists refer to the information that comprises the design document on wiki to get a sense of artistic direction or check basic technical data such as polygon limits and frame

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[16] The format – organized by category and with the newest information above older information – is indicative of the studio's focus on design and the designer's freedom to make changes to the game during production.

rates for animation sequences. For example, when Mitchell and Doug met to plan out the combat animation in the game, they checked the wiki for information about the length of the animation sequence, how many characters to animate during a combat sequence, the different types of characters that engage in combat, and the attacking and defending moves for each type of character. With these requirements in mind, they decided how to make combat animations dramatic with combat action that is realistic, detailed and cool.[17] Additionally, after realizing that there may be as many as 48 characters that need to be individually animated for any given combat sequence and thus maybe too time consuming, Mitchell and Doug also discussed if there could be a programming or technological solution such as using John Conway's game of life simulation theory that is based on an initial set of determinate rules of behavior (Gardner, 1970).

Another essential teamwork hub is the prototype of the game, which goes through many different versions as the designer and AI programmer adjust rules and add gameplay elements. During the team's first milestone meeting, which is production-based meeting with all team members on the project required to attend, Todd informed the team that the latest version of the prototype of the game was on Steam, which is Valve's online downloading and networking site for games. He said everyone should be playing the game as new versions are posted. The prototype also links the external testing community to the designer. The community plays each new version and provides directed feedback to Chris. And finally, changes to the prototype are updated on the design document. Eventually, the prototype becomes the base from which the production of the actual game begins.

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[17] Realism for this particular task is determined by comparing the realistic combat in *Braveheart* or *Gladiator* to the unrealistic combat in *Crouching Tiger, Hidden Dragon.* I examine realism and other aesthetic decisions at the studio in Chapter 6.

Playing the prototype or latest versions of the game represents one of the key ways in which individual team members make an investment in the project as a whole. One of Cheryl's first assignments was to play the prototype to get up to speed on the production of the game. At her first project leads meeting two weeks into her tenure, Todd asked her how the gameplay was progressing, and she told the team that after getting an initial feel for the prototype she was "stomping" it on an expert setting.

Playing the builds intensifies during the life of a project. Team members are asked to become proficient with the game. "It's encouraged that in the last months of development to play the game and get good at it," Ron says. On one of the first games he worked on, for example, he played it every day for a couple of hours to get "used to" the game. "You will see something that will not break in the first few minutes of the game," he continues, so "you have to go deep into the game. Luckily [the studio] is small enough that designers and programmers are open to feedback. Sometimes an artist has feedback about gameplay or there's a fatal crash. The more eyes you have at the end of the game, the better. It's essential to find and hopefully fix the bugs. Sadly I don't think a lot of studios use their artists to check for bugs like that."

One common outcome of the investment in playing the prototype over and over again is to become naturally attuned to the rules, logic, look, feel, and play of the game. "Sometimes when an artist has been looking at a specific aspect of the game they don't see the forest through the trees," Ron says. "Some artists may be working on a task in a box for a long period of time, and they are not seeing how it fits into the entirety of the game. You need a fresh pair of eyes to look at something and say, 'this isn't quite right' or 'this could be better if this was changed or x-y-z was changed.'

"Toward the end of the project, we are pulling artists from other projects on the game to look and give us feedback. That has resulted in some really great things. Overall tone, overall color adjustments, saturation levels, stuff on the macro scale is excellent when talking to artists about their projects. When you are working on a game for three

years, you end up taking stuff for granted. You are looking at the same thing, day in and day out. You know how it works and that there are bugs, but you've been playing it for so long you know the workaround for those bugs. And when someone new comes on he will say, 'this is a terrible bug.' And you are like, 'oh yeah, it is a terrible, broken bug. I've just been dealing with it for so long that I forgot it was a bug.'"

Perforce, the software file management system that keeps track of all the game's digital assets and software code is a server-based hub that connects the work performed by members of the team together. Perforce works like a digital library where employees check out the files they need, and the system tracks who creates, borrows, and changes the files. Many disputes arise over the naming conventions that are used to label files and folders. Files and folders need to be understandable. And given the large total number of files and the types of elements that go into creating digital game software, individual files and folders need to be easy to find. Everyone has his own preferred style to naming files and folders, and the person most responsible is given the freedom to name them according to his conventions but within an overall sense of the entire project. However, there are differences in the logic individuals use to name files and folders. There is the "old school" naming convention where all file names are less than eight characters because in the early development of computer technology, this was the limit beyond which a file wouldn't be recognized by programmed code.

Programmers run naming conventions by other programmers on the team. For example, one of the first tasks for Martin was going through the engine code from the previous version of the franchise game, and he conferred with a graphics programmer about his naming convention. "I'm trying to take Gamebryo stuff out, and I wanted to re-write some ways that textures are kept track of," he said. "You know, I could do it. It's just a data management type of thing, but I'm still going to ask Kyle what he thinks of it. It's not really a graphical problem. It's a data management problem, but it still falls

within the graphical realm of what he is going to need. So if I'm building something, I will still want to know from the people who will be using it if it will suffice."

Sometimes naming conventions break down between artists and programmers. Each group brings its own discourse into the practice of naming game elements. "Naming convention is huge," Ron said. "Is it a river piece or is it a body of water? For instance, is it a tree or is it a plot? One thing that kept coming up [on a previous project] is: What is a plot, and what is a tile? For some reason they change. A tile was four plots and each plot is what normally people would call a tile in the game. So language kept getting confused as to what was the performance of the tile. For programmers, the tile meant four plots. For an artist, the tile was a plot. Stuff like that would get confused all the time. And then naming conventions like, you might have a tree called 'tree01.' And then its texture is 'tree01_dif' or 'tree01_normalmap.' Just the way it is spelled, if it is one letter off it wouldn't work. And sometimes tracking that down is a heck of a headache because of a typo. One problem was adding spaces. People would put extra spaces in their names or put a space where an underscore was supposed to be and vice versa."

Meetings were used frequently during the project's pre-production stage. Meetings are either scheduled or impromptu and primarily dedicated to either brainstorming or progress reports. In addition to the bi-monthly, team-wide production milestone meetings, there are specialized art, programming, and leads meetings on a weekly basis. The weekly art meetings I attended would alternate between brainstorming sessions over the overall artistic themes and show and critique progress updates on concept art, 3D modeling of characters and environments, and animation sequences. For the brainstorming sessions, the lead artist, Foster, would ask everyone to provide references and examples of what they thought best capture a particular theme. During the brainstorming session on "belief versus reality" for example, artists brought in references such as Google images of New York City's skyline or heroic military posters to show what they thought was the difference between the two concepts. The weekly

programming meetings are more progress oriented, but there is also time for brainstorming such as deciding on the use of Hungarian notation.

Teamwork creates the conditions necessary to reproduce the team members' belief in the process and product that is essential for the creation of project-based media on deadline. This is accomplished through a cycle of subjective investment and divestiture that is closely aligned with the beginning and ending stages of a digital game project. The early stage of game development for team members is also conducive to creating the investment that lasts during the periods of crunch time at the latter stages of testing. During the concept and pre-production phases of game development, there is more time for employees to be creative with artistic ideas or to experiment with new algorithms or physics and other technological game mechanics.

For example, Ed, a junior graphics programmer, was given the freedom during the pre-production phase to explore the possibility of generating a complex urban network of streets by implementing and using an algorithm that he read about in a computer science journal. There is pleasure in the ability to experiment even if it doesn't work, and Ed said that is one of the reasons why he prefers to work at a studio that is not driven by the latest technology. "I want to take the technology to the same level as design," Ed reasoned. "To me this is an opportunity to do more than if I was at a company that was cutting edge. If I did work at a company that was cutting edge, they would already have four all-star graphics programmers, and I would be doing something stupid. … I have a better opportunity because they let someone who has less experience make these decisions. So I actually prefer to work here. I get to do more because for us it's less of a risk. But for a company that makes its name off of technology, it's a huge risk to have someone who is newer. If it doesn't look as good, that's a huge thing for them."

This early investment in experimentation by programmers, prototyping for designers, or creativity for artists goes a long way toward ensuring that an employee will have the desire to see the game through to completion. At the latter stage of production

particularly, there is little that is positive to hold on to when working hours shoot up to 70 or 80 per week. Additionally, most game projects end at different times for different people. It takes a team effort to complete any digital game, but towards the end the team members dissolve out of view from each other. Even though the studio has an official release party for its games, some artists and designers will have been off a project for months while some programmers still would have been fixing bugs or working on service patches. Martin said that the best way to end a project is to wind down with fewer and fewer people because this is the best way to ensure that new bugs don't enter the process.

After one particularly grueling crunch period "it took a couple of weeks to get my brain to turn off," Rebecca told me. "It's like you have a hamster on a wheel in your head, and it's running and smoking and everything is there. … There were a couple of times when I just snapped. … They said, 'Just go home. It's ok. Everybody freaks out about something.' After [crunch time] it was a lot of *not* doing anything on the weekend. I didn't have to check my email four times on a Saturday. Just stopping was really hard because I'm a huge overachiever. I like to do things more, and when the bar is set to high that nobody can get to it, that's just the nature of the end of a project. Everyone's chasing a carrot that you can't get. It was so frustrating."

In terms of a financial return on the investment these employees receive for working on a game, when the studio was an independent company, there was a profit sharing plan in place. Now, employees who are on the official team for a new game get a bonus from the publisher only if the game gets a reviewer score of 85 out of 100 by Metacritic. Many employees don't personally mark the end of a project other than to take a week of vacation or play some new games that came out during crunch. One employee said that he likes to go to a game store to see the package on the shelf. For some, like Martin, the end of a project is nothing special. Just time to move on to the next and try write down what you learned.

A return on the personal investment in a project has its affective rewards. “It has really helped to have the demo out because I’ve convinced some of my friends to play the demo,” Rebecca said. “The demo’s been out for a few weeks, and a good girl friend of mine sent me an IM and said, ‘Dude, my game ends [soon]. This thing is fucking addictive! This is terrible in a really good, I-really-want-to-play-this kind of way.’ Having that personal feedback from people I know has been really good. It’s like, wow, it might have been worth it. This thing is really awesome.”

Conclusion: belief and network boundaries

This chapter addressed the second research question, which asked if there were aspects of the working environment that might hinder a more gender-equitable field. And if this is indeed the case, how are these hindrances manifested in the spatial dynamics of the studio, the organization and function of occupations, and the deployment of employees into team-based project work? In this final section, I argue that space, organization, and teamwork form layers that are analogous to layers in a decentralized network. Each layer creates boundaries of inclusion and exclusion along multiple lines, including gender. Those included in the network invest in crucial attributes that allow the network to function, though not without problems. Additionally, the network is supported by a collective belief that is generated by producers’ affective labor, play testing the game as it is being produced, and processes of creativity, prototyping and experimentation. Finally, I suggest that the within the logic of a decentralized network there is the potential to shift boundaries of inclusion and exclusion. This shifting of boundaries is important for the transformation of the digital game industry from a male-oriented culture of militarized masculinity.

The importance of the Internet as the decentralized network of globalization in the Information Age is central to the conceptualization of the networked organization of digital game work. Instead of drawing a one-to-one comparison between the two

networks, it is apparent that the production process of a digital game at a development studio shares a similar feature of open architecture, which is in part due to the similar origins of Cold War funded military and computer technology research and the hacker counter-culture of the 1960s.[18] However, one key difference is the high degree of control that time has on game development through the imposition of publisher's deadlines and milestones.

The Internet allows for the interoperability of different information and communication processing systems, which is a network of networks (or an inter-network). It is a heterogeneous network that holds together diverse communication systems through common protocols. Open architecture networking:

> assumes that individual networks may be separately designed and developed, using their own specific and unique interfaces to fit the user requirements and the environment in which they operate. Whatever the interface or scope of individual networks, … the design philosophy of open architecture dictates that they should all be equally allowed to connect to the internetwork and hence to each other by way of a system of gateways and routers directing traffic between them on a best-effort basis. This process involves the design of common protocols that are meant to impose no internal change on the participating networks. (Terranova, 2004, p. 55)

In establishing the network that constitutes the space, organization, and work at the studio, active processes of inclusion and exclusion are at play. There is a distinction between insiders and outsiders around the ideology of publicity and secrecy. This applies to the studio's competition, but it also indicative of a relationship with avid fans of Dynevolve's franchise game who hunger for new information about what the studio is working on.

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[18] For a review of the literature documenting the history of the Internet, see Roy Rosenzweig's 1998 essay "Wizards, bureaucrats, and hackers: Writing the history of the Internet," in *The American Historical Review,* 103(5): 1530-1552.

Boundary work is also apparent in each occupational category that comprises the core of content development. For artists, the problematic, hypermasculine and hyperfeminine representations perform a surface level ordering of distaste for female and progressive game players to negotiate or reject a gamer subject position or a passion for games. This passion for games, as I discuss in the next chapter, is one of the key structuring principles of game workers' habitus. Programmers' superior knowledge of computer science and software development produces a boundary between them an even other occupations at the studio. This knowledge is used to develop specialized software tools and create the underlying code for the game that other employees frequently refer to as magic (a term I discuss in more detail in Chapter 6). The producer's affective role is designed to keep the belief going throughout the life of the project. Along with the social organization of work and the overarching passion for games, both aligned along a gendered dimension of masculinity, these elements shore up the inclusivity of the working environment.

Designers' use of an external test community draws a boundary of inclusion and exclusion among fans of the studio's games. The external test community, although not privy to the entire network of the formal teamwork structure, is invested as well. What instills its belief is that working without monetary payment is fine as long as individuals are given insider status. These community members are given access even before the public announcement of a game project – a closely guarded secret by industry standards. The community's sense of belief also comes with being a part of the process of game development early on. Individuals who provide free labor by playing the prototype and giving feedback to the designer are given insider status in relation to the outside community of fans. But one of the keys is to get this community working early enough so that its feedback may be relevant should the designer choose to accept an idea or critique and make changes based on that information.

The previous version of the franchise game and two subsequent expansion pack games used this model of early feedback where the studio set up what it calls “internal” test forums composed of outside fans. “That’s something that I think is still pretty rare within in the industry – providing outsiders a look inside and giving them an opportunity to give you feedback on the game while it’s being made,” Chris said. “Some companies do beta tests where they bring in people for the last couple of months, but at that point there is no way that you can make major design changes. So if the game’s not fun – they may find bugs – but the game is still not going to be fun even if you fix those. Getting people involved as early as possible is important for that reason. And making sweeping changes because somebody notices something, then it doesn’t matter where they come from. If it’s a good idea then you should look into it.”

Dynevolve’s use of an external test community early in the production process represents a link to the potential of diversity in decentralized, open architecture networks. Like the Internet, the allowance for the interoperation of diverse communication systems through common protocols expands the space of the network and the number of networks while allowing a high degree of system autonomy. It is not as if the external test community is going to start dictating the entire production process. Decentralized networks tend toward difference because they are not subject to centralized control (Terranova, 2004). Although the external test community itself doesn’t tend to differ from the cultural milieu of the digital game industry, its existence and function to provide feedback into the production process while remaining outside of the boundary of studio employees is instructive for those interested in making the industry more diverse.

External test communities do not have to be comprised of already dedicated consumers. Other social groups can be added as external feedback networks, and this is beneficial to game development because when an individual has been working closely on a project – play testing the game every day – he or she tends not to see or overlook some of the game’s problems. “Getting fresh eyes on a game is unbelievably good because you

get a ton of information out of it," a designer told me. "Luckily we are at a size where we have multiple games going, which means that we have people who have never been able to check out the game in the beginning. Or they can come back and the game is kind of new to them. One place where we got the most information was from an interface designer who … had never played [the game]. She came down and did a two hour session where I got to watch her. She gave a ton of information that was very basic but was good because everybody else was too close to the game that they couldn't see it. Getting these new eyes, especially informed eyes, gives you so much information back. I wish we could have done it sooner than when the game was 50 percent complete. If we had implemented this from the beginning, we wouldn't have been trying to rush at the end."

CHAPTER 5 – GAME WORKERS: HABITUS, RITUALS AND PRACTICES

Introduction

In this chapter, I examine the gendered disposition of game workers within structures of socialization and enculturation that in turn inform working practices and workplace rituals in the field of digital game production. Interview questions about the role of computer technology and digital games in the early lives of game workers revealed three structures of socialization and enculturation. These overlapping and interconnected structures include growing up in a patriarchal gender order, the sexual division of labor in terms of working with and modifying computer hardware and software, and the development of a passion for playing digital games.

Through game workers' practical action and participation in ritual activities, gendered social structures in the field of digital games are reproduced. I examine two workplace rituals to analyze this process. The workplace ritual of a series of weekly lunch-time "university" courses taught by employees for other employees both captures the logic of employees learning new skills and processes on their own time and reinforces discourses of masculinity. The studio's bi-weekly Beer Friday ritual creates a masculine social space that fortifies the work = play ethic of digital game production. These rituals were selected for analysis because they represent both studio-instituted traditions and employee-led traditions that occur regularly as part of the organization's culture.

Additionally, I examine three working practices that also reproduce gendered social structures. The three working practices included in the analysis are the design and creation of the interface for the future franchise game, the implementation of an experimental algorithm by a graphics programmer, and the uses of 3ds Max, the software program for artists at the studio. I selected these three working practices because they

capture a range of activities among all three core game creation occupations: designers, artists, and programmers.

The Dispositions of the Game Worker

Individuals are strategic improvisers whose dispositions shape action within the contextual opportunities and constraints in the various social fields (Bourdieu, 1977). Habitus is a cultural theory of action that accounts for the sets of dispositions or schemes of perception and appreciation that organize and regulate the social body (Swartz, 1997). To account for the interaction of structure and agency, habitus is theorized as both the product of structures as well as the reproducer of structures through everyday improvised, practical actions. This section focuses on the game worker habitus as a product of structures of gender in social fields ranging from the family, education, leisure activities, and labor. It maps out the structures of gender that are incorporated into the early socialization and educational dispositions of the game workers I interviewed and observed.

The gamer disposition is the result of the acquisition of structures relating to the family socialization dynamics, the sexual division of labor, and play. Patriarchal family structures and socialization pressures channel boys rather than girls toward interests in computers, science and technology (*Beyond Bias and Barriers*, 2007). The careers of fathers and other male family members play a key role in developing these interests. Interestingly, in explanations about how game workers chose their career paths, mothers were often (but not always) the foil for the pursuit of a dream job developed out of an early obsession with games. The sexual division of labor is "an allocation of particular types of work to particular categories of people" and "is a social structure to the extent that this allocation becomes a constraint on further practice" (Connell, 1987, p. 99). This structure predisposes more men than women to see the field of digital games as a viable and desirable career choice. Finally, the game industry provides its own gendered

structure built around cultural, technological, and marketing circuits of interactivity (Kline et al, 2003). This structure influences the passion and love of games strongly resonant in game workers.

Family socialization and dynamics

Fathers typically introduce computers and programming to their sons. Larry remembers his father taking him to his government job and allowing him to play simple computer games like *Rodent's Revenge*. Marco, a young software engineer who is also in a band that plays covers of digital game themes and songs, says that he "was always into computers as a kid. I'm sure you hear this from a lot of the older guys, but I also had a crappy computer with DOS and Basic on it. I had a book that my dad gave to me. He said, 'Here's a programming book. You might like this.' I was just hooked from that moment on." When I asked him what his father did, he told me that his "whole family" is engineers. "They are all hard core engineers, my grandfather, my uncle. I'm the only programmer, really, but it's a math kind of thing I fell into."

Chris, who is about the same age as Marco, had a similar experience with his father. "I first starting learning to program at about eight because my father is also a programmer at a company," he said. "He would bring stuff home and show me stuff. I forget what because I have a bad memory. But – whatever. I started programming because it seemed cool, and I could do things. Most of what I know about programming is self taught. That's because I spent a lot of time when I was younger making my own games and playing around with things. And that is what developed my love for this industry." Chris is a game designer with a degree in History, so I was interested to know how he was also able to acquire high level programming skills such as using the C++ programming language. "I think I learned part of it on my own, and I took a class in high school, and after that class was over, I kept doing things on my own. And then I took one class in college and learned a little bit more and took a couple of years off of school and

learned more of my own. I took another class later and learned a little bit more. When I came here I had a fairly limited knowledge of C++ at least relative to someone who has a [computer science] degree or has been working in the industry for a while. Most of what I learned I kind of picked up when I started working here three years ago to a point to where I am now."

Other game workers acquired their skills through recreational play that was frowned on by their mothers. For example, after high school, Carl, a producer who worked his way up the career ladder through quality assurance, was compelled by his mother to find a job because he was spending more time playing computer games than going to school. "I left high school and got my GED," Carl recalled. "At community college I was just staying up all night playing video games like *Warcraft II* all the time. I was bombing out of college, and my mom basically told me that I either needed to get a job or she was going to throw me out of the house."

Carl started searching for computer jobs in the area and saw that Aaron, the well-known designer who created many of the games he enjoyed, had just formed Dynevolve. "So back in the winter of 1996, I put on a suit, and I came here and asked for a job. They said 'no, you don't have enough experience, but there is a company down the street. You could probably go there to get some experience.' I was heartbroken. I ended up applying for the job there, and a few months later, I got an interview. They hired me on the spot actually, which was pretty nice. That resulted in me not getting thrown out of my parents' house [laughs] and proving to my mother that staying up all night playing video games did not hurt but actually helped me. That was pretty cool."

I asked a game designer who monitored and incorporated gameplay suggestions from fans, testers, and co-workers how he was able to so quickly determine what a good or bad idea was. He said, "What helps me is that I've probably played more [of Dynevolve's franchise game series] than anyone else, which is both good and bad. It's good because I got a job, but had I not then it would have been a problem. My mom

wasn't too much of a fan of the game until I got hired, and she was suddenly a big fan. It's funny how that works. I've had lots and lots of experience with this genre, with this game series in particular. … You become aware over time the things that people like and dislike, and the issues that might arise from these ideas. … I just have the advantage of being so involved with [the game series] I may see more than other people will."

In contrast to discourses about mothers holding back their sons' dreams of working in the game industry, Ron's mother, who is an architect, took him to work where he developed experience using 3D software. "Before going [to college] I only had a little 3D experience. I worked at my mom's firm doing some AutoCAD type stuff. They taught me how to use AutoCAD. I would do very menial tasks like labeling room numbers and storage buildings, getting used to computers and architectural CAD software really young, 13 years old, playing with these $1,000 computer packages, learning from the guys in the office how to be professional at a really young age. My mom was a professional too. She tried to teach me as much as she could." Ron's mother and father were both into computers, although his mother primarily used them for routine data manipulation such as word processing and power point presentations.

Ron's older sister also gave him an opportunity to explore the field of 3D modeling. "I got an internship really young at a small firm in Stanford where I grew up called Ball & Chain Studios," Ron said. "I did that because my sister dated one of the artists there. So my sister dated this guy and said, 'You know, my brother is into video games. How about you give him a summer internship?' They had software called LightWave, and the studio was known for doing the commercials for Stephen King. If you see a Stephen King book, they do the CG or film compositing commercials for that stuff. I got to work with them, but I don't think I was a real help to them. They let me use their computers when they weren't using them. I got to model Star Wars figures, X-Wings, and fighters in 3D. And I thought it was awesome.

"I was really excited about it. I loved the atmosphere. I loved working at a CG house where you could wear flip-flops, shorts, sandals and t-shirts to work. The bathroom had a stack of heavy metal magazines. It was in an old Victorian house that had been renovated for the computers. I loved the juxtaposition of old Victorian architecture with high-tech wiring and computer screen everywhere. It was a really unique dystopia. And they had a giant TV with Nintendo 64, so whenever the guys were rendering something in 3D they would take a break and play Mario Kart. Awesome! What could be cooler than that? But then they told me about crunch – those periods of time when you just need to get a product done. So they had couches so people could sleep if they needed to or food. For some reason that sounded exciting to me and appealed to me, so when I got to [art school], I came in with a lot of computer experience."

Sexual division of labor

The sexual division of labor in terms of computer work can often be traced to the general disjuncture between women and technology through the practice of men "tinkering" or hacking, which perpetuates a gendered dichotomy between working *on* rather than solely *with* technology (Croissant, 2000). When Carl struggled to maintain his college enrollment and was told to get a job or else, he looked for computer work. When pressed about what qualified him for computer work without a college education, he said that he and his brother saved their money to buy a computer, building it from parts. "So I knew how to assemble a computer," Carl said. "I knew how to use DOS, and I was using BBS back before the internet. Using that knowledge to play games and download games. I was even selling copies of shareware games at flea markets as a kid. I knew how to use a computer and make games run on it. I was playing all the old school games like *Hero's Quest*, *Leisure Suit Larry*, a bunch of those older games. The knowledge that I had was I loved computers. They made sense to me. I loved games. ... I just really liked computers, so when I was looking for computer jobs, I remember reading in the old *Nintendo Power*

[magazine] people getting jobs where they answered calls from players like, 'how do I solve this puzzle? How do I get past this level?' So I looked for game analyzers, and what I came up with was quality assurance. I thought; there's actually a job where you play games and figure out what's wrong with them?"

Todd, another producer who had worked his way up through the quality assurance ladder, also spent his youth and early adult years building and understanding computer hardware. "For a while, my hobby was digging into hardware and figuring out how motherboards and RAM work," he told me. "I was just interested in the finite system. It's got to be logical and reasonable how these are being made and how memory and electricity is used. I dug into it a little bit and built my first machine. I tried to figure out where the bottlenecks were in terms of performance and then built a better machine. That was when I was into the PC rage playing a lot of first person shooters and [strategy] games. Once that machine died, I was so busy in my personal life that I let that hobby fall to the wayside. That was around the time my daughter was born, and I never picked the PC back up. … Will my affection for the PC come back? Probably. The days of building them for performance are gone. The PC manufacturers wised up and figured out what people were doing, and they started making affordable rigs that you could build and piece together online where you put in what you wanted. It was a little more cost effective."

Ideologically, "digging into" and "building" computers are seen as natural practices of men. There's no ambiguity between these practices and a man's identity as a computer person. In contrast, Rebecca's narrative about her education and how she came to the digital game industry is filled with contradictory interests between art and science manifesting in subjective discord. As mentioned in the previous chapter, Rebecca interned at Dynevolve, was hired as a technical artist but now works on interface programming. Interestingly, her narrative doesn't begin from familial gender experiences. She originally went to a university intending to major in biology, but she also wanted to continue pursuing art. Since the university also offered art classes, she chose it over an art

institute that had also accepted her. She left after one year of trying to fit into the culture of science, which is only one aspect of her identity. “I love biology stuff, like cellular biology,” she said. “I am big on that. But the science personality type, the culture, was so uptight and rigid, which a part of me really loves, but the creativity was very different. I’m not saying they are not creative because they are, and I enjoyed that. But there was something that I was missing because I was an art nerd in high school. I was a classically trained artist; that’s what I did. I really missed that, but at the same time, the art people were too flakey and float-y, and I’m like, ‘I need a schedule. I need more rigid performance stuff. So I said, ‘forget this.’ I left [the university] and went to … community college.”

At community college Rebecca had the freedom to take whatever class she wanted. She had no particular plan and took an introduction to multimedia course as a general education requirement. At the end of two years she realized that she had taken every course within the multimedia program. “Originally I started going down the multimedia design path, but I thought, what’s this programming stuff and code? I don’t know very much about it. I mean I’ve always been a computer dork and later in high school when my family got a computer, probably when I was in 8th or 9th grade, I was always tinkering with it, playing with it, but I never thought of myself as a computer person.” She transferred to an upper year university and finished her degree in simulation and digital entertainment. For Rebecca, a job in the digital game industry required formal training and attention: it was not internalized through familial or recreational contexts although she did play video games as a child. Women are less likely to enter the field because they do not encounter the lifestyle of gaming through casual socialization without negotiating a problematic gender position.

The passion of games

It's no coincidence that computer games played a prominent role in shoring up interest and career choices in computers and technology. But the passion, love, and obsession with games expressed by digital game workers transcend the category of computer interest. David, a plain spoken digital animator from rural New Jersey who only had been working in the industry for a few months, re-skilled away from a well-paid career in computer engineering so he could work in the industry. "I was a huge video game buff. I knew that I wanted to do something technology based. Where I am from, South Jersey, it's all fields so even finding somewhere to work on computers was difficult. A lot of people didn't know computers. Most people didn't have computers in their homes. I reserved the thought that if you work in video games or movies you were like a god at what you do. It was something almost impossible to get into."

David went to college and got a degree in computer engineering. "My first job was with the government. I worked with them for a while on the anti-bioterrorism team. After them, I thought where I was working was making me unhappy, so I went into the private sector. While I was in the private sector I realized that I didn't like doing computer engineering anymore. I started to go to a school called Animation Mentor, which is an online animation school. From there, it's history. I really loved that school. I would send anybody there. They gave me everything I needed to know to learn the art of animation. They weren't that strong in the technical side like how to use the program. It was more or less I could use that art of animation across any medium such as drawing or 2D illustrations. After I finished there I put my demo reel together and tried to find work. I primarily wanted to work for gaming because that's what I always loved and spend most of my free time."

Foster originally went to art school wanting to become a gallery artist, but he became disillusioned by the similarities between promotion of artists through galleries and the commercial art world. "So I took a few classes in computer graphics," Foster

said, “and they felt great because I grew up playing video games, and I played a lot of computer games. And to me, working on a computer making art felt a lot like playing video games and drawing at the same time. It was a really good experience. It felt really powerful. It’s like when you just draw or paint and say, ‘man, I just really want to do that. I’d love to do that as a career.’ Doing that on a computer felt good for the first time, like when you first do a really good drawing or painting. Working on a computer felt very freeing. It loses a lot of the tactile, but a lot takes place in your brain. And I was really interested in the computer as something new as a 3D tool. I was really interested in the fact that you can have 3D in a 2D space. You can have 3D that didn’t exist anywhere or the potential of interactivity in a 3D environment. If you make a sculpture, there’s a finite amount of people who can see that sculpture. But if you make a 3D model in theory anyone can see that and see exactly what you had seen when you made it. So the populist idea, video games and the difference between 2D and 3D really appealed to me.”

When I met Dennis, he was beginning to wind down from an intense period of production on a project in which he was lead designer. During our conversation, his thoughts would drift back to the few remaining bugs and tweaks lingering in the game before it was scheduled to be shipped out to the publisher. Growing up, he was always obsessed with the rules and strategies of games. “I went to a community college for a criminal justice degree,” Dennis said. “I wanted to be a cop when I got out, but I’ve always had an obsession with video games. Not even video games but games in general. While I was going to college for law enforcement, I ended up talking to a professor who was a cop and FBI agent. He talked me out of being a cop. He asked me some questions, and I decided that I didn’t want to do that.

“At the exact same time, a friend had invited me over to play Monopoly, and I did this huge analysis of it. I always beat him at Monopoly, and we started talking about basic game mechanics and strategies and why I made the choices that I did. He told me about a startup company that tested video games and said I would be perfect for it. I

didn't even realize there was a job that could be had. This was about 10-12 years ago. I went and interviewed, and I really didn't know anything about computers or anything along those lines. I saw that the person interviewing me had a bunch of book and board games that I recognized. I went through and started going through the different mechanics and why they worked the way they did and got hired based on my knowledge of games. It was an outsourcing testing company."

Dennis moved up to a lead tester position and then made his move to Dynevolve, which "was luckily in the same building," he said. "I got a little bit of interaction with them. I got to come over as an onsite tester to get some games out. I saw it as an opportunity to get to know the people here and to let them know my opinion about games. One of the people that I worked with at the testing company got a job as a producer here. The other company downsized, and I had gotten laid off. I came to work here as an associate producer on a contract basis. Luckily they needed some help designing. They had outsourced an expansion pack to another company, and the design didn't turn out well, so I redesigned all the scenarios for that. And then my contract ran out. They hired me on after that. … I wasn't trained to work here. It was more or less my obsession that led me."

Software programmers I talked to said that it is hard to break into the industry without prior experience working on a commercial game title. For some game workers, the practice of modding displays a passion for games, and sometimes these independent mods are used as demos for recruitment into the industry. Modding is the practice of making modifications or "mods" to a game. Mods "range from changes in the physics of the virtual world to total conversions in game play that can lead to changes in story line and game type" (Postigo, 2007, p. 301). Marco did a fair amount of modding growing up, although he doesn't consider himself a "modder." He did little mods of *Doom* and *Duke*

Nukem levels and also worked on a bigger mod project at the end of college.[19] "I did a project called pirates v. ninjas," Marco said. "That was really fun. I'm still working on it to this day, actually. It was a senior software engineer project, but really it was an excuse to write some game code. … Although, it has gotten out of hand recently. Every now and then I will pick it up and keep working on it. Last weekend I added this big physics system, and my girlfriend does the storyline and art and stuff. It's really kind of funny. I showed this game off during my interview here. I had made something that is kind of completed. A day or two before the interview, I was up all night working on it to polish it and make it not suck in places. It was to show that I have worked on games before. It was mine, but I have some experience. Everyone wants all this experience. It's very hard to get a job as a game programmer if you have never worked on a commercial title before. It's a big catch-22 sometimes. You have to get a lucky break. I think I kind of did."

Members of the modding community engage in the practice as an artistic endeavor, to identify more deeply with a game by making it their own, and as a means to get a job in the game industry (Postigo, 2007). The industry benefits from this practice by extending the shelf life of commercial games that are open to modification and by providing the basic tools for self-education of the programming skills required to get a job in the industry. Modding was one of the primary reasons why Chris was hired at the studio. When he interned at Dynevolve as a programmer, he was one of the first to test the modding tools the studio was creating for the (then) latest installment of the franchise game. He previously had modded several scenarios and maps on an earlier game in the series.

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[19] Popular historical and journalistic accounts of the practices and culture of modding point to Id Software's decision to release the code of the popular first person shooter computer game *Doom* to the public four years after it was published. In particular see Au, 2002, and Kushner, 2003. Scholarly writing on various aspects of modding includes Morris, 2004; Sotamaa, 2005; Jenkins, 2006; and Postigo, 2007.

I asked Chris if he shared his mods with other players in the community or if he did it more for his personal satisfaction. “It was primarily because I just thought it was fun,” he said. “Most of the time when you make a mod, it usually doesn’t get finished. You just work on something until it stops being fun, and you drop it and do something else because you don’t have to [finish]. And that is something that you can’t do with real games. You can’t just drop them and move on when you stop having fun. It was something that was beneficial to the community as well because all of the modding efforts are done through the external community. So when you make something, you post a thread and say, ‘hey, take a look at this. I made a map. Have fun, or whatever.’ You may do it for your own satisfaction but other people can have access and play. One scenario I made … about WWI ended up with 30,000 downloads. Quite a few people played it even though I did it in my spare time because I thought it would be fun. It kind of ends up being both.”

From a political economic perspective, the practice of player modification extends the shelf-life of games, increases consumer loyalty, and provides the industry “with a voluntary training and recruitment ground for digital talent” (Coleman & Dyer-Witheford, 2007, p. 941). There have been a few wildly successful total conversion modifications that are celebrated by digital game culture. For example, *Counter-Strike*, developed by a computer science student in his spare time, was one of the most popular online multiplayer games in the world, and it was a total conversion modification of *Half-Life*. Development studios “see the release of their mod tools as consumer research; they monitor the amateur mods to see what game features are popular and try to provide more professionally polished versions when they upgrade their franchises. In some cases, they buy the rights to the amateur-produced games and market them directly to consumers or recruit the most gifted amateurs” (Jenkins, 2006).

For Jenkins (2006), the existence of mod communities and the labor of modders in creating content represent the blurring of producers and consumers. This blurring

points to attempts by media corporations and marketers to find alternatives to courting media consumers. Instead of the ratings-driven model used by television and radio that seeks to satisfy the broadest range of consumers, courting and catering to smaller but more active fan bases is seen as a legitimate way of generating entertainment and media-based profits. However, by providing mod tools for fan-programmers, digital game companies shift labor costs that generate extra content while relinquishing total control over intellectual property. In one estimate of labor costs associated with mod projects, companies would have to pay out between $10.1 million to $30.4 million to produce the content of 40 large-scale mods, while smaller mods would add an additional $2.5 million in labor costs (Postigo, 2007).

The practice and culture of modding fits into a broader category of free labor, where the blurring of work and cultural expression follows the logic of value creation based upon the uneasy co-existence of gift exchange within an already constituted capitalist commodification process (Terranova, 2004). In this way, free labor such as modding is free in the sense of being unpaid as well as free in the sense of non-imposed. However, capital depends on its ability to extract value from free labor, but in doing so, there is a tendency to exhaust it. "It exhausts it by undermining the means through which that labour can sustain itself: from the burn-out syndromes of Internet start-ups to under-compensation and exploitation in the cultural economy at large (Terranova, 2004, p. 94).

The structures of family and educational socialization, the sexual division of labor, and passion for games are internalized into the habitus of game workers. When individuals enter the industry and work at a commercial studio, their practical action and work activities in creating digital games tend to reproduce these structures as it reproduces the field of digital game production. This is the externalization of interiority that is produced by practices (Bourdieu, 1977). I examine this process through rituals of the studio and through the routines of individuals as they work on projects during the pre-production of the future franchise game. Rituals are time bound practices that are

meaningful to the individuals or social groups who engage in them. Routines are what people "do" everyday that orders the progression of a day (Goodall, 2000).

Reproducing androcentrism at work: Game studio rituals

There are several distinct workplace rituals at the studio. Some occur on a weekly or semi-weekly basis. Semi-weekly rituals are Beer Friday and studio-provided lunch on Mondays and breakfast on alternating Wednesdays. The company also has a company picnic every summer and release parties held whenever it completes a digital game for the commercial market. There is also a party every December. Some employees practiced their own weekly rituals with others. A few get together for breakfast at Denny's or other restaurants every Friday. Others go out to lunch every Wednesday to eat and discuss comic books.

Two young and energetic employees of the company, Marco and Ira, approached the managing directors with the idea of setting up a "university" for the studio, which they have named "Dynevolve University." They based their idea on a model of skills training set up at DreamWorks and Disney. The model consists of weekly, one hour classes taught during lunch by employees for other employees. The studio provides pizza for anyone who attends the class, which is usually held in the fishbowl conference room or the fun zone. Marco and Ira are responsible for setting up the schedule of training by asking others at the studio to give demonstrations of their work.

During my visit, there were courses in 3D modeling, lip synching animation, and two courses on Flash covering programming and animation. The classes were all well attended, averaging about 15-20 employees. Some classes are recorded so that others can access them later. For example, Ira taught a class called "Introduction to modeling." The class introduced the basics of the modeling software 3ds Max, which is the primary software used by the modelers and animators. The artists at the studio refer to this

software program as "Max" for short, giving it a masculine inflection. Ira used Camtasia software to record his demonstration activities on the computer, and there was also podcast equipment to record his voice. These two elements are combined and stored for access in the studio's networked drive.

"The mechanics of lip synching" class is a particularly compelling instance of the reproduction of the gendered structures of the field of digital game production. The class was led by David, the South Jersey computer engineer now working at his first digital game job. Lip synching animation is a combination of mechanics and art, he instructed. Artistically, digital animators attempt to capture expressions and emotions. Mechanically, animators should mimic the shape of a mouth as it changes according to the tones produced by phonetics.

Masculine discursive codes underlie the checklist of proper and improper lip synching techniques. The checklist includes declarative statements such as "use a mirror;" "favor extremes;" "avoid soft dialogue;" "cohesive unit;" "mouth shapes;" and "study the dialogue." The first two items on the checklist advocate realism and hyper-emphasis, two aspects of masculine aesthetic particular to the industry, which I will discuss in greater detail in the next chapter. Privileging hard dialogue over soft follows from the hard/masculine, soft/feminine dichotomy. Military discourse is used to account for the practice of animating the entire face as a "cohesive unit" instead of only lip synching the mouth.

Masculine style is treated as natural and invisible, not really a style at all (Easthope, 1990, p. 82). The whole process of lip synching is about making the naturalness of language and speech unnatural, scientific, and technological so that the animation of speech appears natural and "real" to consumers. It usually takes an animator at least three passes over the animation of dialogue to make it appear natural again. As with all animation, lip synching should have "no straight lines" because this would make the character appear too robotic and therefore less natural or real. The driving force of the

demonstration is the mechanization of a "natural" biological function of speech. But gender differences are fused to the biological. According to one book on animation and lip synching that David had read, there are natural differences between women and men that lip synching must account for. As an example, the book says that women snap their mouths faster than men, especially when they are angry.

The classroom setting for Dynevolve University provides a gender-neutral space for the expression of discourses of masculinity that are tied to specific work practices and skills training. To perform successfully as a trainer in this space means to take on the discourses of masculinity, and this empties the meaning of gender neutrality at work (Tonso, 2000). Comparatively, Beer Friday is a staple ritual at the studio that transforms the collective spaces of the fun zone and fishbowl into distinctly masculine spaces of work and play. Every other Friday at around 5 p.m., the studio's managing directors buy different types of bottled beer (imported and micro brews mostly) and fill up a red plastic tub with beer and ice. The tub is placed in the fun zone along with potato and tortilla chips, pretzels, soda and dip. For about three hours, the fun zone converts into a bar or lounge atmosphere where male employees stand around talking in small groups, playing card games like *Magic the Gathering* or playing digital games on the large plasma screen televisions. No female employees joined the Beer Friday gathering on any of the days I observed.

The plasma televisions in both the fun zone and the fishbowl are used by employees to play console games on Beer Friday. On the fun zone television, a number of different games are played according to the differing tastes of individuals. The first Beer Friday I observed, the newest *Gran Turismo* car racing simulation game was played first, and later, four employees played a series of multiplayer matches of *Call of Duty 4*, a first person shooter. I played a few spirited games of EA's *FIFA Soccer* with an artist from Mexico. The plasma television in the fishbowl is usually implicitly reserved for a group of men, sometimes referred to as the Smash Bros crew, who multi-play either the

Super Smash Bros. game or *Halo III*. I played on a few occasions, but being generally terrible at first person shooter games such as *Halo*, I opted to hang out and watch most of the time. During one match, I was placed on the team with the best FPS player and had only two kills out of 50. Still, he almost beat the other two singlehandedly.

Beer Friday demonstrates the work as play atmosphere. As the gathering wound down one night, Chris, Martin, Gerald, and Stuart stood in the fun zone by the beer tub, talking about the industry, the publishing company that owns Dynevolve, and whether or not the studio should purchase the Unreal Engine. Martin and Gerald didn't think that it would be too useful for the type of games produced by the studio. As these four men were having this serious and knowledgeable conversation, the employees playing *Halo* in the fishbowl could be heard yelling and screaming, really getting into the game and the competition. The managing directors also make announcements and give updates before Beer Friday begins. The president or marketing director usually provides information about the studio's game sales, advertising spots on television, reviewer scores used in determining bonuses, and news from the publisher. Project teams also use the time before Beer Friday to give demos of works in process.

An immediate distinction in terms of gender needs to be made between the official pronouncements that are attended by most employees and the transformation of the space of the fun zone and fishbowl during Beer Friday, which was only attended by men during the period of my observation. There are no overt, conscious attempts by the men at the studio to exclude women from this ritual. However, the consumption of beer, which is culturally encoded as an alcoholic drink primarily for men, presents an opportunity for male bonding around enactments of masculine identities that tend to be bolstered by discursive critiques of out-groups (Gough & Edwards, 1998). Not all talk in these male-only social settings are directed at out-groups, though. There are also the serious discussions about the industry and work or about the attendance at trade shows or

game developers' conferences that contribute to friendship and professional development among the men.

In addition, the kinds of digital games played based around competition (multiplayer first person shooters or fighting games) can be considered exclusionary around the axis of play. As noted in Chapter 1, the technical mastery of skills that are required in these games to defeat competitors is indicative of a militarized masculine culture (Soukup, 2007; Kline et al., 2003). While there is a certain gender-based enjoyment for women who are power gamers to master the skills to compete with men at these digital games, women who are moderate gamers do not tend to prefer FPS games (Royse et al., 2007). Because of the cultural associations of masculinity with drinking beer and playing competitive shooter and fighting games, the ritual of Beer Friday – however unintentional – excludes women from full participation and professional development in the organization.

Reproducing technical masculinity: Working practices

In addition to workplace ritual events, the everyday working practices of individuals also reproduce the gendered social and symbolic space of the field of digital game production. These working practices are associated with a particular kind of techno-masculinity that is different than hegemonic masculinity, although the tendency towards domination, exclusion and idealization vis-à-vis femininity is similar. The differences are in their associated virtues. Hegemonic masculinity is defined in relation to attributes such as aggressiveness, assertiveness, roughness, and selfishness (or individualism).[20] The virtues of techno-masculinity can be defined around the concept of "technological edge," which is the ability of hackers to employ complex techniques to

[20] The opposites of these character attributes are traditionally seen as virtues of femininity: submissiveness, docility, gentleness, and self-denial (Bourdieu, 2001).

manipulate advanced technical hardware and software that often pushes the technology in new, rebellious, or anti-authoritarian ways (Dovey & Kennedy, 2006).

Technological edge is encoded masculine through the four main practices associated with it: (1) constructing and deconstructing complex systems and models; (2) engineering; (3) machinic manipulation and hacking; and (4) improvising within a defined set of rules or mathematical probabilities. Vocations such as those that comprise digital game creation are defined partly by what the positions promise and partly by what they permit (Bourdieu, 2001). It is the latter aspect of permission that I want to focus on in the remaining analysis. Work practices *permit* the masculine attributes of technological edge to become the natural and universal definitions of what vocations *promise*. So, for example, the vocation of software engineer both promises a kind of work such as writing code and the permission to construct a complex software system, which is the expression of a techno-masculine pleasure.

My definition of techno-masculinity shares features with Sydney Eve Matrix's (2006) use of the term, which she develops to analyze popular culture texts such as *The Matrix* and idealized lifestyles of hackers in magazines like *Wired* and *Mondo 2000*. At the root of both definitions is the hacker ethic and the ability and pleasure derived from controlling and manipulating information and complex systems. Matrix (2006) argues that "technomasculinity" in popular culture idealizes this form of masculinity over others and even incorporates hegemonic masculinity within it. Technomasculinity in popular culture narratives also takes on a playful and transgressive relationship to androgyny. The incorporation of hegemonic masculinity and androgyny, however, is not part of the working practices of game workers. Instead, hegemonic masculinity and techno-masculinity play off and against each other in the culture of digital game production. I separate the two types of masculinity in my analysis to account for this.

In the next three sections, I analyze the practices of technological edge in the design, programming, and artistic work at Dynevolve. Through an interpretation of the

practices associated with the design and artistic expression of the interface of a game project, I examine how the studio's iterative design philosophy is put into practice through masculine improvisations within a defined set of rules. Next, I provide an analysis of the experimental phase of graphics programming. In this phase, I examine the techno-masculine practices associated with constructing a complex system, hacking, and improvisation from abstract computer science research. Finally, I analyze the practices associated with the use of 3D modeling software, which comprises one of the primary and work intensive aspects of game development. The practices of 3D modeling are interrogated through the masculine encoded construction and deconstruction of complex models. Additionally, I examine this kind of "digital artisan" work through the lens of critical theory to discuss the political economic implications and potentials.

Working practices I: The game is the interface

Noted Nintendo designer Shigeru Miyamoto described his job of making video games and controls intuitive as *ningen kougaku* or "human engineering." *Ningen kougaku* is the "art and science of creating a smooth, natural interface between the machine and the user" (Kohler, 2005, p. 33). No one buys a digital game for its interface, yet a poorly created or confusing interface can make a game unbearable or at least very frustrating to play. "The goal of a good interface," Vincent says, "is not to be recognized."

On a project that was just finishing in the summer of 2008, no one thought too much about the interface until very late in the production cycle. When a technical artist was hired and given the responsibility to create and implement the interface, it began to slowly take shape. But the technical artist was better at the technical implementation than the more artistic elements of design and creation. Those tasks were left to the lead artist on the project, who simply had too much else going on to scrutinize the process of translating his interface design mock-ups in Flash and then implemented into the game's

code. Vincent, a 3D modeler with a decade of experience in the industry, was hired and brought into the team to take care of asset building for the existing interface.

It is a delicate balancing act when a new employee is thrust onto an existing team. There isn't the usual period of mutual investment that bonds team members together, as I discussed in the previous chapter. This can create distrust, the feeling of "not being on the same page," or apathy in terms of day-to-day interaction and communication. When Vincent joined the team, he immediately set to work creating a new look and feel to the interface. The design and art leads rejected this approach. They only wanted him to improve the existing look and feel. At that stage of the project, they needed somebody dedicated to creating art assets.

"After a month or so," Vincent recalled, "I was fortunate because the game on the programming side was a little bit behind by nine months. So what I did was little stealth attacks. I would modify the interface in increments. I got to a point where people finally trusted me. And finally they said, 'ok, do it.' But that wasn't until the very end. … So when I mocked up a new design, they were like, 'whoa. What are you doing?' I felt like I had zero leadership about the direction I should have been going in. The position was new to them, too. They didn't know how the interface would work. … The kind of person that I am is the kind who takes the ball and runs with it. I wanted to do the best I could. I really liked everyone I was working with, and I saw that they were working really hard. And that makes me want to work hard. Even though I made the other interface artist really frustrated through the process, I wouldn't give up. I didn't challenge him by arguing. It took six months to get into the position without hindrance."

With the lesson learned from the postmortem of that game project, the interface design, creation, and implementation was an early priority for Dynevolve's future franchise game project. Vincent filled the lead interface artist position from the very beginning of the project, working closely with Foster, the lead artist whom he had known several years prior to joining the studio, and Chris, the young lead designer. According to

the design document written by Chris, this new game should have the best interface of any game in the franchise, with an early interface up and running in the prototype that could be put through a series of iterative design phases. Popular franchise titles have a dual challenge of trying to satisfy hard core fans who are already comfortable with the basic interface as well as tempting new players with an interface that allows them to get past the initial learning curve.

Chris' role in designing the interface is to consider what input keys the player will select to initiate action, provide information, and move the game forward. He also determines where this input information should be on all of the types of screens that the game will have. For example, the future franchise game will have a main menu screen, a main interface screen where players will spend about 95% of their time, a data management screen that provides additional details of one of the game's strategic activities, and four advice screens that are planned to help new players and give general recommendations on gameplay. Chris also planned to design a series of gameplay "widgets" and their functionality. These include labels, panels, buttons, dropdown lists, status bars, slide bars, and icons.

From a programming standpoint, Chris decides whether the interface will either be written in C++, Python, or a combination of the two languages. Either choice presents a basic tradeoff. C++ compiles files into a single document that allows the software to run faster, but this makes it less open to modification. Python is more open to modification because it doesn't compile files. A value that is changed in Python is "hot loaded," which means that the change is seen immediately by the modder without the step of recompiling or restarting the game. In the design document, Chris suggests that most of the "guts" of the interface system would be written in C++ while basic information could be stored in Python.

Dynevolve encourages the practice of iteration throughout the production process. As a design-driven studio, the lead designer of a game project creates a prototype, plays

the game, collects feedback from the external testers and team members who play the latest version of the game, and makes changes to the design and rules of the game. New iterations of game design even occur during the production phase of a game project. This phase is normally the time when the design and rules are set. Iteration taps into two mutually reinforcing ideological tropes. The first is the virtue of choice, which is supported by "more choice is better" or what Roland Barthes (1972) refers to as the quantification of quality indicative of the language of dominance. The second trope of iteration is that the latest iteration is always the best one yet. This is a quality measurement based on a unit of time that is always future directed. The logic reinforces the "upgrade culture" that drives the industry:

> It is impossible to discuss the creative work of games designers or programmers without the sense that they are constantly constrained by hardware specifications, which will be ameliorated by the ever promising 'next generation.' The platform is never stable; designers find themselves permanently looking for and exploring new capacities, falling enthusiastically upon each new generation and its development kits trying to work out what it will be capable of. (Dovey & Kennedy, 2006, p. 53)

Finally, the process of iteration that results in design prototypes or versions of the game is the result of continuous tinkering with the rules and logic of the game. Chris efficiently incorporates this practice of hacking in his daily development of a prototype. On one computer screen, he writes or changes a few lines of code and then runs the prototype game with the changes on his other screen. Then he reverses the process, starting from the prototype, playing it until he finds a rule or interface or gameplay that needs to have its underlying code changed. This masculine practice becomes a deep structure of the gameplay experience for hard core fans. Chris' decision to use Python for player-programmers to modify the interface and other elements of the computer game reproduces the masculine practice of hacking and manipulating the software system.

As the lead interface artist during the pre-production phase of the game project, Vincent is responsible for mocking up a basic aesthetic translation of Chris' design

decisions. Foster also weighs in, making sure that Vincent is working within his overall artistic vision of the game. During preproduction "it's almost like we are trying to create the engine of a car," Vincent says, incorporating the language of mechanics for artistic working practices. "And then we are going to scrap that engine and create the engine that is actually going to be in the game. I think that's where we are at. That's where I'm at. So Foster came to me and said, 'I want art deco.' I love art deco. I love the buildings, so I researched and picked three images that I wanted to be influenced by. I modeled two of them, and I am working on a third."

Figures 1 and 4 are reference images, while figures 2-3 and 5-6 are iterative models Vincent created based upon the references. Vincent said that a co-worker can't tell what the interface will look like just by looking at the references or the models. He translates the references according to style and so he can *embody* and *incorporate* the sense of style when it comes to actually producing the art objects for the game's interface. "In each of these models, I want to get to a point where it's 50 percent what I am seeing and 50 percent what I am influenced by. It starts to make it easier for me to make things look art deco without having to look at source material. What I didn't want to do is just start creating buttons and try to make it look like an art deco button. I want to create a frame and then try to fit buttons into it. I want to create a definite feel. I want to create the direction where the interface will point."

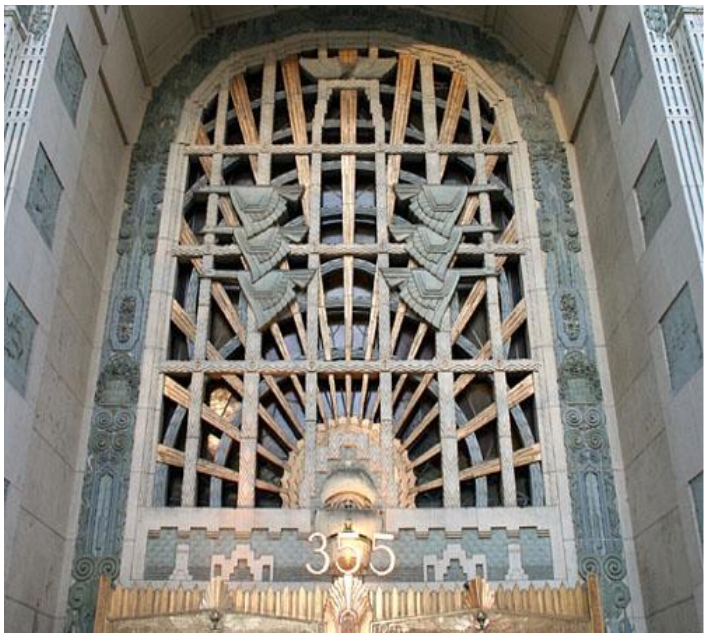

Figure 1 – Reference image of art deco architecture

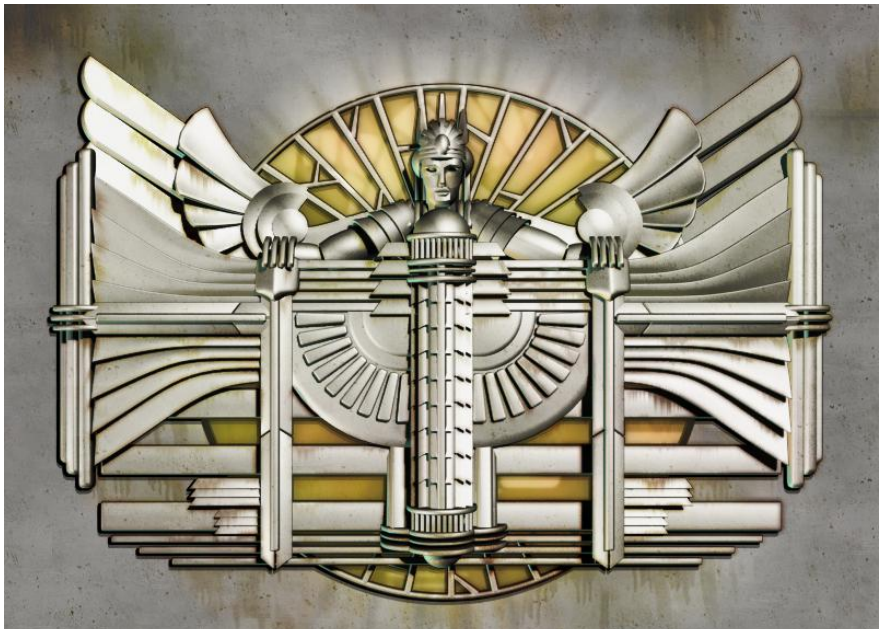

Figure 2 - Interface artist's abstract model image iteration

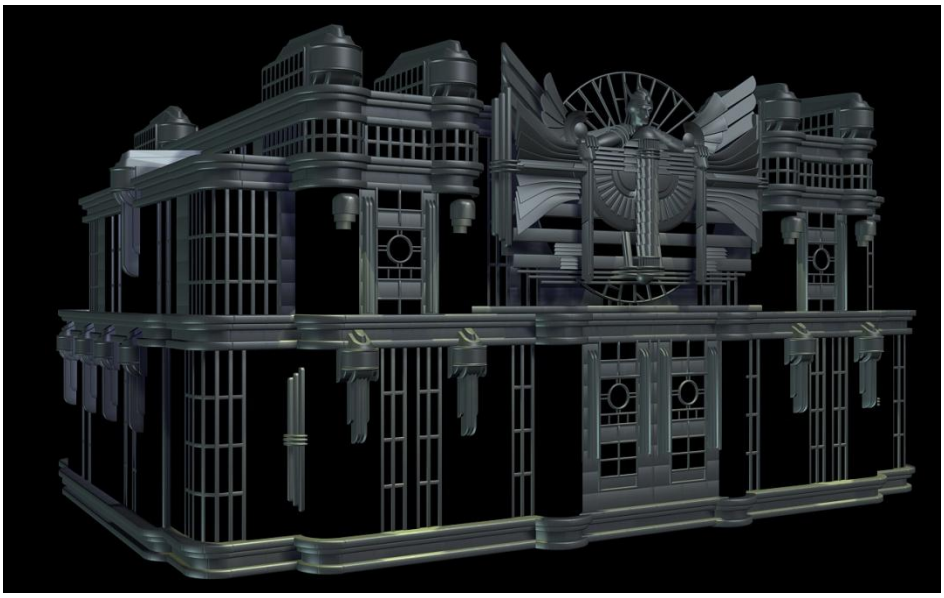

Figure 3 - Interface artist's building model image iteration

Figure 4 - Reference sketch of art deco interior design from *Grim Fandango*

Figure 5 – Interface artist's model room iteration

Figure 6 – Interface artist's dark lit model room iteration

Vincent creates a mock up interface that might not be the finished interface, but it gives him a feel for what art deco is. "I want to be able to get the shapes, trim and anything that has the feel of art deco. Hopefully I can remove it enough so that people will get the feel for art deco without thinking that they are being hit over the head with an art deco sledge hammer. Right now, when you look at what I am doing you can see that I am hitting you over the head with an art deco sledge hammer. I'm trying to get to a point where it's influenced by it but at the same time it's fresh and new. Some people get frustrated or worried at this point. They look at it," he said, referring to Figures 2-3 and 5-6, "and [they] just don't see the direction I am going. The direction is really getting an understanding of the look and feel so when I start creating this stuff I don't have

questions about look and feel anymore. You need ten buttons? I know exactly how to make them, and I know exactly how to make them fit with the design."

When translating the interface from the lead designer and artist input, Vincent produces several iterations, for example, Figures 5 and 6. "Well, let's say someone wants it this specific way," he stressed. "I have to try to mock it up exactly the way he described it. And then I would try it how I would like it. That's two iterations. What I would do is take those iterations and do quick mock ups. I don't spend more than an hour cutting and pasting in Photoshop. To get to the look and feel that I want for these two I would spend the majority of time. And then I would do different versions of them. I would try it with black trim, gold trim, or white trim. If something had a blue tint behind it, I would try a partial green tint. I would do variations on what I think might work.

"Here's an example. I didn't like certain colors being used, so I would definitely show brighter colors or better colors that I think read better. I would do what Foster asked for exactly. Then I would show him that these other things would look a little better. They are not completely different variations in look and feel. They are taking a look and feel and modifying them, maybe putting a glow behind some of the text areas. My goal is to make it readable. I mock it up based on the existing interface. If it doesn't read well, I might have to tweak something, make something look darker or put a shadow behind it so it would pop out. These are the iterations I would do, and people really appreciate that. It allows for me to show somebody something and have a discussion about it. The pitfall is if they chose an ugly one. So I have to make sure that I don't put any in there that I don't want."

Vincent's iterative artistic practices are not the same as Chris' hacking and manipulating the software system, but they do reinforce one of the techo-masculine attributes – improvisation within a given set of rules. The result of iterative practice here is the incorporation and naturalization of the rules of art deco that isn't an obvious mimesis of the references from the actual early 20th century design movement. Foster and

Vincent want to capture art deco's underlying celebration of progress through technology in its past and future forms. In artistic meetings, they talk about the mash-up style of art deco that plays on past and future time. "The art deco designers sought to blend ancient imagery – from classicism to the symbolic repertoire of ancient Egyptian and Aztec art – with the futurist imagery of Buck Rogers and Flash Gordon" (Striner, 1990, p. 22). It was also overtaken by the dominant international style with its emphasis on scientific rationalism and efficient functionalism based upon the industrial model of mass production. Art deco, conceived in a time of uncertainty during the interwar years, was revived in the context of the uncertain 1970s. This revival was partly a response away from the dominance of international style during the formative decades of the Cold War, but interest in art deco "was also the kind of cultural epiphany that drives almost any historical revival, the sudden remembrance of things past, the flooding back into consciousness of a lost period savor that evoked an age" (Ibid., p. 33).

A similar logic is at work in the adoption of the style for the future franchise game project. The use of art deco as a design influence for the interface of the game project is more than the result of Foster and Vincent's professed love of the style. It is a nostalgic response against the dominance of realism in digital game art. It ties into the artistic vision of the game, which is to create a "romanticized view of history," as Foster puts it. There are mass media influences at work in the use of art deco as well. The dominant influence is *Bioshock*, a first person shooter that won critical acclaim for its art deco artistic style and historical-fictional setting (an underwater dystopia circa 1940). It was a radical departure from the realist aesthetic that is dominant in first person shooter games such as *Crysalis*. Vincent's influences range from the art deco architecture to early the masculine-coded Superman comics, Tex Avery cartoons, and *Grim Fandango* (see Figure 4), an critically acclaimed but commercially unsuccessful computer adventure game created by LucasArts in 1998.

Working practices II: Algorithmic experimentation

Designers, programmers, and artists have an initial period of time during the pre-production phase to express themselves, put new skills to use, and try out upgraded middleware and software in a free form manner. They are given time to think about new ways of doing things, new artistic approaches or techniques of modeling and animating, and creative problem solving. For programmers, this period of time is "experimental." Martin, who was working as the lead programmer for the future franchise game in the summer, said that experimenting is about "taking an approach to something that might fail." Since it is early in the production process, a failed experiment can be dropped in favor of improving a tried and true method. The time provided to experiment and problem solve is a challenging yet beneficial aspect of a programmer's job. It's a chance to put technological edge into practice.

For one particular experiment, Ed wanted to figure out the best way to implement an algorithm that would generate unique road patterns and city blocks in a map-based digital environment. Although he had implemented a road and city system that generated a similar effect on a previous project, he wanted to take it to "the next level" and push the technology in several different ways. One of these is to make the layout patterns more diverse. The previous algorithm only generated a grid-style layout, which is fine for Chicago perhaps, but not for recreating the concentric circles of Washington DC or Paris. With this experiment, Ed was hoping to create more complex layouts such as circular grids or grids that bend around geographical objects like mountains, rivers or oceans. This process depends upon the pleasure of utilizing the techno-masculine practice of constructing a complex system.

After Ed talked with the environment artists about what they wanted in terms of the look of the cities and roads, he read recent computer science research on graphical programming and geometric computations. Not all programmers go through a research stage, but since Ed was getting his master's degree he felt comfortable researching and

reading academic papers and book chapters. The most relevant information comes from articles that explain the application of original research, but this source of information is usually only available for mature areas of computer science. For original research, one place he checks is the Association for Computing Machinery website. The site contains the society's publication journals and magazines among other sources of original research. This is where he accesses "cutting edge" graphics research, including the 2008 paper he used as inspiration for his road system experiment.

After accessing the research, Ed developed a prototype that tested the research concepts by implementing them to see if they actually work for him. In this case, he read another research paper that used a different algorithm that was more suitable for the task. "Sometimes you can have an algorithm that a paper claims works but you are not able to get the same results," Ed explained. "It's either difficult to use or requires a lot of tweaking." The implementation process requires knowledge about the specific end results compared to the original research, which can be interpreted as both an improvisation of mathematical computation as well as machinic manipulation. "When I design stuff, I change a lot of implementation details from what people describe because I know my end application is going to be different. What I am doing here is using a completely different algorithm to solve part of it because I knew there would be a better algorithm for me and my work. I know the target hardware for this game. The hardware they use is completely different, and it wouldn't work well with this hardware."

The new article Ed used to obtain the different algorithm advanced the process one step closer to what would turn out to be a successful experiment. "This paper is about rendering mosaics. It has nothing to do with city layout. But I noticed that the technique that they used could be changed to do city layouts. That's why I went to the prototype phase and started working on that. … You always have to keep in mind the end goal and not get distracted by incidental things along the way like what the original paper does. I think that is the reason why there is a gap between the research and games. People get

distracted by the results of the paper because the results have nothing to do with what they want to do. But [the research papers] do have all these techniques."

The technique that the paper on rendering mosaics uses is called a centroidal Voronoi tessellation and is derived from the field of geometry. The improvisation is the realization that the technique can be used to generate unique road and city layouts that are determined by geography and generating points from the artists. "I started with an algorithm for laying out roads that takes input," Ed explained. "That input is a direction field. Then I say, take a step back and look at the directional field. How do I get the directional field? The directional field is a combination of influence on the terrain and influence of the artist. Those two things combined create the directional field, and the directional field and some seed positions start the road system. And the road system will start the city system, so they all build off the terrain and the artist's input. In order to work the terrain in, I make sure the road layout algorithm was one that I could influence with the terrain in a straightforward way. Mathematically the way it influences is very straightforward. It's just a little bit of differential geometry. It's not really complex at all.

"And the other thing is the infinite variability. Even for any given input from a directional field, there are an infinite number – up to machine precision – of roads that are generated. The way that happens is that there are a few seed positions that are where things start. And depending on where those seed positions are, you'll get a different road system. So if you want the city to be the same, you have to have the same input and the same seed positions. If you want to make them different, then even the directional field or the seed positions have to be different. So the way to make sure of that even if they have similar directional fields is to change the seed positions. It's not a randomized algorithm because with the same input you get the same output. On the other hand it is a random algorithm because you can change the seed positions randomly, and you will get a different output. It's seeded, but it's controlled. It's the best of both worlds"

Theoretically, Ed's experiment was easy enough to explain, but he still needed to write the programming code or find code that used the same algorithm, which would save him a few days. Previously written code is stored in "libraries" housed by commercial or open organizations such as Boost.org. In this case, Ed and Martin discussed if Boost's graph library could be used, but they decided that it was too complex for the relatively simple algorithmic need for the city system. "It would take me a week to figure out how to use it, but it will only take a day to write the code with the algorithm myself," Ed informed me. Still looking for previously written code, Ed asked other programmers. Larry, an environment artist who shares an office with Kyle, said that that the algorithm was used in another game the studio worked on, but it was developed by an outside party. Ed needed the code and not just the tool for this project, so he emailed another programmer who worked with the outside party and asked for the code file. The email back was bad news; the outside party was uncooperative. At last, Ed decided to "roll his own," which meant he would write the code himself within the technical requirements based on speed and size and using performance metrics given by the lead programmer.

In order to turn the experiment into an implemented system for the game software, Ed needed the artists to invest in the system he created. He needed them to believe that this is the best solution to their needs for unique road and city layouts. "I have to keep the artist happy," he said. "The whole point of a graphics programmer's job is to provide the technical back end to give the artists the visual front end that they want. That's my job description. So a big part of what I am doing now because the technical side is going really well, I have to be able to sell this to the artists. It's my job to present it in the best light that I can without distorting anything. I'll do my best to say that I think this is the best solution to the problem. I want them to believe that it will do what they want it to do. Understanding the details of the algorithm, while I can explain it to you, takes a lot of background knowledge, and most of the artists don't have that. I have to

convince them that this is the best way to go." Instead of an explanation of the details of the algorithm, Ed provided the artists a visual demonstration (see Figure 7).

For a young man in his early 20s, Ed is a very knowledgeable and intelligent graphics programmer. He clearly enjoys the challenges that come with implementing complex algorithms and solving graphics problems. The job he got here is his dream job – the one he has wanted ever since career choices became something to think about. The only problem with the job is that he doesn't have an office yet, which is confirmed by the fact that his desk in the open space of the third floor veranda is the only one that isn't personalized in some way.

When Ed tried to explain the city system to one artist, he was surprised when the artist asked him, "You mean we can do all cities using this?" That was the point of the experiment all along, but it was lost in translation. The ability to communicate ideas to individuals who are not computer scientists is hindered by the strong tendency at the studio for programmers to primarily socialize with other programmers. Ed has yet to master the ability to verbally translate the advanced technical and computational aspects of his work because this is not a component of the techno-masculine habitus. A successful hack is one that other programmers understand and appreciate, but the arcane technological knowledge draws a boundary around the practices required to implement it. It generates cultural capital based upon masculine technological prowess.

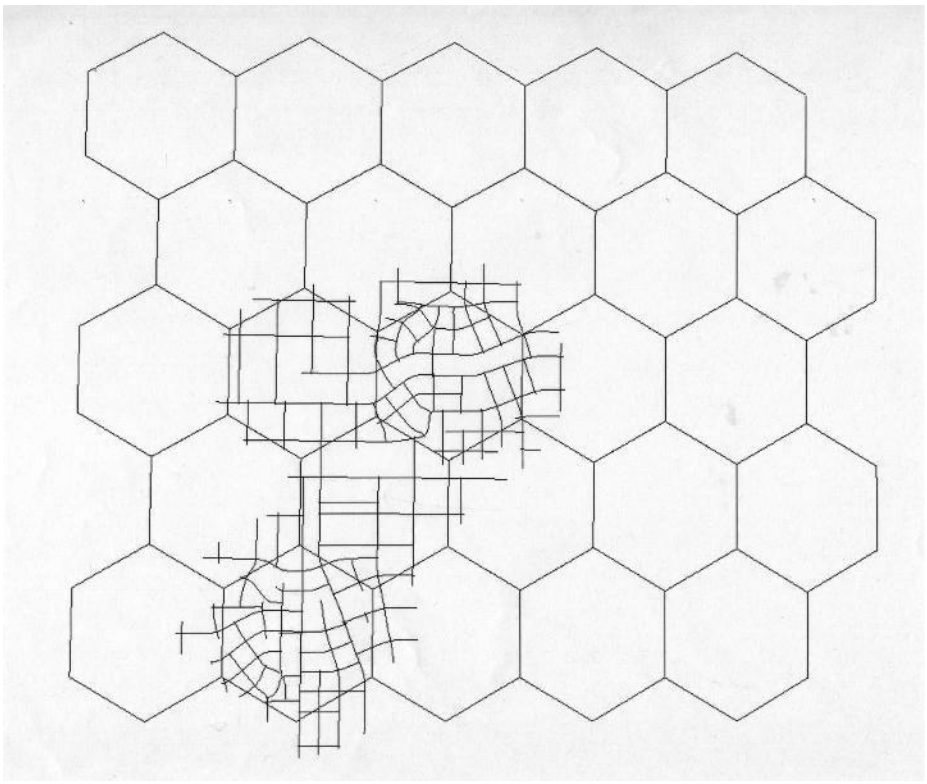

Figure 7 – Visual representation of road layout algorithm

Working practices III: 3ds Max

Critical theory offers perhaps the most plausible argument about the social construction of technology. This is because critical theory had developed methods to read social relations and their reification in machines. Nowhere is this more apparent than in the struggles over the implementation of machines designed for capital into the production process (Robbins & Webster, 1999). However, taken to the extreme, this view relegates technology to a crystallized past that says nothing about the way technologies assist in shaping the present and the future. “Critical theory is unable to explain why

artifacts enter the stream of our social relations, why we so incessantly recruit and socialize nonhumans. It is not to mirror, congeal, crystallize, or hide social relations, but to remake these very relations through fresh and unexpected sources of action" (Latour, 1999, p. 197).

In his fragment on machines section of the *Grundrisse*, Marx (1978) argues that as capital adopts the means of labor into the production process, labor passes through stages of subsumption whereby the culminating logic is found in the machine or automatic system of machinery. This is the most adequate form of labor for capital because it is set in motion automatically and moves by itself with little interruption and even smaller demands. Humans in this sense are merely conscious linkages in the machine system. The machine supersedes human labor through its form that is developed by, and corresponds to, capital. The "real" subsumption of labor means that the machine does not appear as an individual's means of labor because it doesn't transmit the worker's activity to the object. What is transmitted is the machine's work and action. "It is the machine which possesses skill and strength in place of the worker, is itself a virtuoso, with a soul of its own in the mechanical laws acting through it. … The worker's activity, reduced to a mere abstraction of activity, is determined and regulated on all sides by the machinery, and not the opposite" (Marx, 1978, p. 693).

I foreground the work of Marx on the role of technology in class relations to examine the working practices of artists who model and animate characters and environments at the studio. The argument is that the deployment of computer technology by capital subsumes the knowledge and skills of workers. Workers are not a homogeneous social category, of course, and the concept of technological edge and its associated techo-masculinity is essential for understanding whose knowledge and skills are affected in the context of digital game production. An examination of 3D modeling software and the artists who use it for commercial production offer insight as to how

computer technology and masculine-encoded action are shaping the contemporary digital workplace.

Autodesk's 3ds Max is the primary software used by digital artists in the creation, animation, and rendering of 3D "assets" for the production of games. The total software package is a virtuoso in itself. The software does more than any one artist at commercial game studios that have increasingly created specialized artist occupations. The latest version is the product of several years of refinement and addition by Autodesk. But the software developer also works in close concert with its commercial user base, offering ways for this base to provide feedback and share ideas about improving or changing the newest version of the product. The result is that the software offers as near a complete set of tools for the creation and animation of 3D art and graphics as possible. Users can make literally thousands of adjustments, modifications or "tweaks" on everything, whether it is lighting and shadowing settings, camera angles and movements, or material textures and the manipulation of digital objects and characters. Part of the pleasure of using the software is how the myriad tools offered by Max aid in the practice of construction and deconstruction of models that is a feature of techno-masculinity.

Max's interface (see Figure 8) is typically dominated by four viewports or views of the 3D scene as it is being worked on by an individual. These views can be changed if an artist needs to see the top, front, left or right and other views, although the default is set to the top, front, and left orthogonal views and the three dimensional perspective view. The perspective view shows the x and y coordinates as well as the z coordinate that translates the sense of depth needed for three dimensionality within a two dimensional space of the computer screen. The viewports are bracketed by all of the tools, commands, and navigational devices needed by modelers and animators and even some that are almost never needed (partly because the software is used for different media such as digital games, television, and film making).

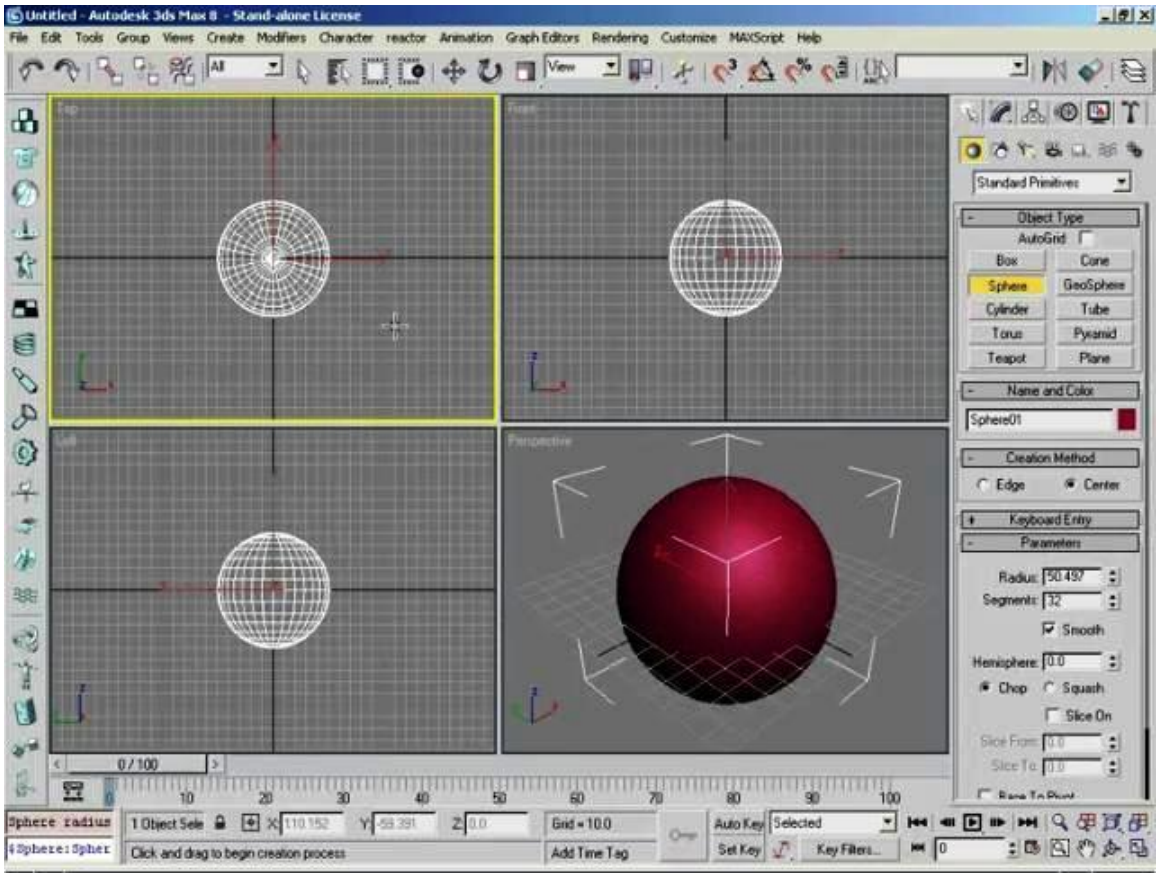

Figure 8 - 3ds Max Interface

Among the knowledge and skills needed to create and animate using 3ds Max (or the masculine encoded "Max," for short) are spatial and mathematical geometry, aesthetics, lighting and shadowing, and modeling and animation techniques. The production process or "pipeline" is typically set up so that a concept artist creates a

digital 2D scene, setting, object, or character. The concept art is then passed to a 3D modeler, who translates the concept art into a 3D model. Max offers artists an automatic conversion tool that changes 2D images into a 3D mesh, which is the skeletal framework of intersecting lines for a model. However, this automatic conversion creates a high polygon model, and the higher the polygon count, the more memory it takes to render the model through a computer graphics card. The modeler for digital games typically has to be wary of high polygon counts on gameplay models because digital games need 3D models to render in real time or at a certain frame rate per second. To overcome the issues of automatic conversion, the modeler can draw the mesh over the 2D image or reduce the density of the mesh created by the automatic feature.

Some modelers prefer using the concept art as a visual reference and create a 3D model in Max using the object creation panel (shown on the right-hand side of Figure 8). Certain modeling tasks, such as creating a dense canopy of jungle rather than each individual tree top, are better suited to this creation process as well. In Max, an artist can create geometry, shapes, lights, cameras, and effects. This includes the ability to easily create common objects such as stairs, doors, and basic male and female bipeds. 3D objects can be modified, cloned, grouped together, or linked in a hierarchical "parent, child" relationship where one object becomes the central object to all subordinate objects. When the parent object is moved by the artist, the linked child object moves as well, but the child object can be moved on its own without the parent object moving.

Once a digital object is created, the artist goes through a typically long process of un-wrapping the mesh into a UV map, which flattens the model into x and y coordinates (see figure 9) and allows the artist to add textures, paint, and materials to the polygons using other software programs such as Photoshop or CrazyBump. These additions are then imported into the Max's material editor. Max has an automatic UV map creation feature, but there are problems in translation similar to the automatic 2D to 3D feature.

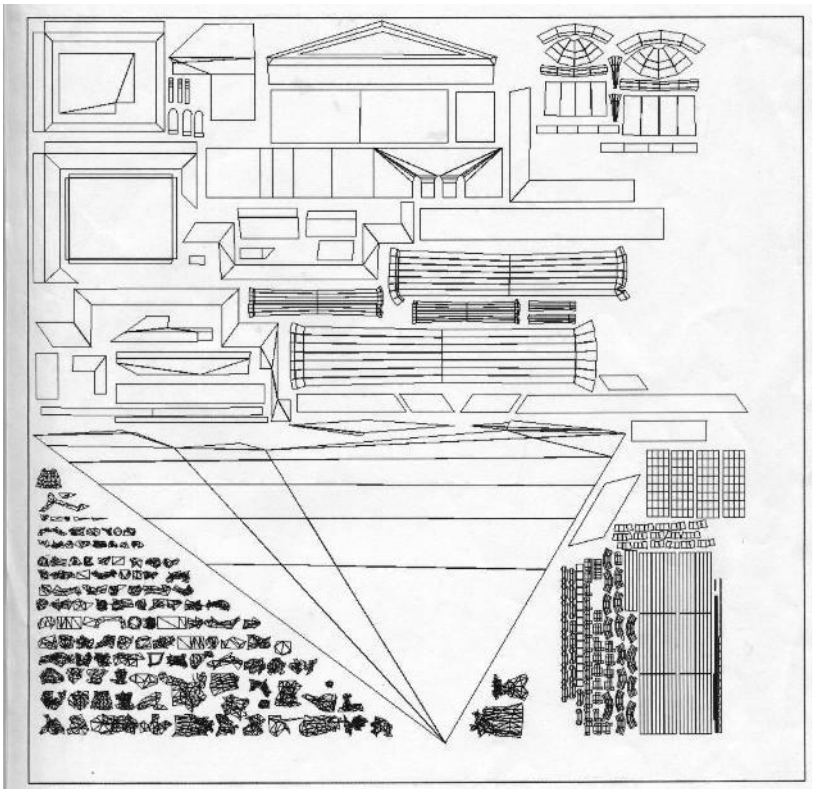

Figure 9 – UV map of a 3D scene

Robert, who is a senior artist, said there are about a thousand different ways to match a 3D model to the concept art. One day when I was sitting in his office, I watched as he went through a trial and error of different approaches to match a character's suit of armor to a piece of concept art created by Glen, a soft-spoken, humble man whose office is nevertheless decorated with art he has created for the studio over the course of his long tenure. In the first two attempts, Robert modified the armor directly on the model character in Max. Not satisfied with the results, he switched tactics and modified the clothing by importing a texture painted on the UV Map into Max's material editor.

Robert said the difference between the two approaches is a matter of time and efficiency. It would take longer to model without much of a return on the investment. From the perspective of what a player will be able to see in the game, the texture approach works well and will give him the option of doing other textures and modeling with Zbrush, a sculpting software program used in tandem with Max. Also, the modeling approach created additional polygons, which increases memory and affects the render speed.

The expression that there are "a 1,000 different ways" to approach a modeling task is interesting. It is an expression of ambiguity in technique given the amount of tools available from computer software packages. It also suggests that artists have the freedom to utilize their skills and knowledge in ways they feel would make the best art they can make. In other words, no one instructs Robert to match the model to the concept art using the model or the texture approach. There are technical reasons why the texture choice works for this specific example, but the decision rests on Robert's skill and knowledge. The practice of trial and error is a chance to construct a complex model through improvisation within the technical constraints of polygon counts and memory requirements.

This working practice appears artisanal, and each artist makes similar kinds of decisions based on their skill and knowledge on a daily basis, at least during the pre-production phase of a game project. The historical relationship between artisanal labor and the onset of capitalist industrialism was one of the moments of formal subsumption of labor practices by capital documented by Marx. It is this kind of digital labor that proponents of the information society point to as a signal of the return, through computers, to the artisanal aspects of production. Computer and communication technology-based economic changes will fundamental improve society:

> The undesirable features of industrial society--meaningless work, huge impersonal organisations, rigid routines and hierarchies, anonymous and alienating urban existences are seen dissolving. In their place, the information age holds out the hope of diversification, localism, flexibility, creativity, and equality.

> Promises include the computer-aided recovery of craft skills and artisanal traditions; the convenience of universal teleshopping, telebanking, and interactive entertainment; the assistance of expert systems for education, health care, psychotherapy and home security; the revivification of domestic life in an electronic cottage; the participatory democracy of electronic town halls; and an historically unprecedented diffusion every sort of knowledge--'all information in all places at all times.' A brilliant culture of individual and collective self-actualisation is seen arising from the matrix of the networks" (Dyer-Witheford, 1999, pp. 41-42).

In theories of post-industrial society, the immaterial labor that is part of the manipulation of 3D modeling and animation software in the creation of digital art is seen as an increasingly dominant form of labor within capitalism. According to Hardt and Negri (2000), immaterial labor has the potential to liberate the working class by shifting knowledge of work from machine technology to humans.

Although there are several aspects of immaterial labor at the studio that are quite creative and artisanal, other factors temper the potential of liberation contained in their emergence. Worth mentioning up front is that there is no distinction between the subject positions that may or may not be liberated. The sexual division of labor in computer work immediately infects the totality of this potential with the virus of the privilege of the technical disposition of masculinity. Other factors include the steel grip of production deadlines that forces periods of crunch time. The studio has made a trade off indicative of post-industrialism. It doesn't tell employees how to do their work if the employees agree to stay for as long as it takes to get that work done on time. In this sense, the labor is skilled and the laborer's skill is his own but still under relation of capital exploitation of time.

Additionally, 3ds Max makes several of its own demands on the artists who work with it. Its moments of automation create more problems for the artist than it sometimes solves. As a commercial software package for the digital game industry as well as the television and film industries, Max tries to do too much as well. Artists often complain that Max is much better at modeling than it is at animating digital objects. Animators are at a disadvantage when they work with the software. They would much rather work on

Maya, a similar modeling and animating program used mostly by the television and film industries.

Since there is no dynamic texturing, the non-creative UV unwrapping process (the result of which are maps of strategically placed polygons as seen in Figure 9) becomes one of the most time consuming aspects of digital modeling work. Robert explained the process of adding texture to a character. "I always start textures from scratch. There is nothing I can really reuse in the texture areas. The most time consuming thing about that is the unwrap – trying to lay out the mesh so that there are no a lot of seams when you go to paint your texture. You'll see a lot of heads that are cut from the top of the forehead down to the back of the head because you have to have someplace to pull the mesh apart. So it's like you took the head and unwrapped it from there and flattened it out. There's a lot of manipulation where there is overlap like the ears. You can't project onto that, you have to shape the ears a little so that you can render onto the back of the ear. That takes a little bit of time."

The human-machine relationship between Max and artists at Dynevolve is dialectical between artisanal labor and the mundane labor required to coax Max into producing workable models for a commercial game under deadline pressure. The artisanal qualities include finding creative ways to construct 3D models within technical constraints and having the autonomy to find the best approach to each modeling task.

Artists describe the dialectic as cycles of learning new skills and tools through communal resource sharing combined with the rigors of production. "It's a learning process first of all," Ron said when I asked him about how his work during the prototype phase influences the work done in production. "You are learning the tools. The tools in the industry change every year. What version of 3D Max or Photoshop are you using? With learning a new tool it's learning how to use … new lighting solutions and stuff like that. That's part of the learning process and part of the plan. A prototype artist like me or the first artist on the line develops a new asset. They have learned how to use the new

tool hopefully efficiently. That can be communicated down the line. That's something that may be unique to these creative technology jobs in general. Unlike a trade where you are learning from a master, you are the master and you have to learn the new technique every year. There's a community of people who share information."

When a game hits production, 3D modeling work becomes much less creative and autonomous, especially for junior artists. "In the production environment," Ron said, "most artist work under a hierarchy of other artists. You have a lead artist, then a sub lead, and then a front of the line artist. The lead will tell the sub lead, 'Hey, I want you to take care of all of the units in the game or all the soldiers.' The sub lead creates the standard and passes off the standard to the line artist and tells him to make a bunch of these different guys."

Finally, the new tools that are offered and consumer expectations can become problematic and frustrating for an artist to maintain control over his working practices. "There's new tools that come out every year that hopefully make our lives easier but sometimes are as much of a headache as they were before," Ron told me. "The expectation changes every year. The audience wants better graphics and more gameplay. They want a deeper experience and more immersion every year. And so that drives artistic production and the tools you have."

Conclusion

By examining the dispositions of game workers and their labor practices at a digital game studio, we can see characteristics of gendered immaterial labor working together in powerful yet contradictory ways. The specialized knowledge and information work that goes into the design, programming and creation of digital game content has been glamorized by the industry, and employees generally talk about the pleasure they derive from performing this type of labor (Dyer-Witheford & de Peuter, 2006). However, the pleasure and passion of the employees also provide a linchpin for the game industry's

exploitation of labor that takes the form of overwork during "crunch time" (Consalvo, 2008). For many development studios that create game content under forced time frames by game publishers that control economic resources, crunch time is a structural and nearly total part of the production process. Every day during my fieldwork, an intercom announcement would remind employees to get their "crunch food" orders in for dinner. Although crunch time is dependent on the stage of production and not everyone at the studio was doing crunch time work, the nightly call for dinner orders was so deeply routinized that most employees I observed treated it as white noise. Employees I spoke with were resigned to the fact that crunch time was part of their job, although some mentioned that the studio was better than other studios in the area that made 60-hour work weeks mandatory.

Due to these periods of overwork, the affective labor of spouses or family members is another area of unpaid work that goes into reproducing the digital game workforce each day. This type of immaterial labor is strongly gendered (and aged). That is, mostly young men are able to perform in this work environment because they are not engaged with other types of labor such as managing a household and child-rearing (Dyer-Witheford & de Peuter, 2006; Deuze et al., 2007). At Dynevolve, the average age of the employees differs from the youthful industry average. There are many male employees who have worked in the industry for more than a decade and some who have two decades of experience.

The early acquired habitus of contemporary game workers, which includes structures of family socialization and education, the sexual division of labor around computer work, and a passion for games, ensures that game workers in the commercial field are produced as a socially homogenous group. When this is combined with an examination of rituals and everyday work practices, we get a detailed understanding of how the practical action and activities at a game studio reproduce the structures of gender in the field of digital games.

Studio and employee rituals such as Beer Friday and Dynevolve University either reproduce masculine enclaves of space or provide spaces for the performance of masculine discourses. Although it is not the intent of the employee-instructors to give lessons to other employees in how to be men, the style of instruction at Dynevolve University is infused with masculine ways of knowing. Beer Friday transforms the collective centers of activity at the studio – the fun zone and the fishbowl – into spaces of masculine play and socialization. The culture of masculinity is reproduced by drinking beer and playing competitive shooter and fighting games, which unintentionally excludes women from fully participating in the culture and in professional development.

Everyday working practices infused with techno-masculinity also reproduce the social and symbolic space of the field of digital game production. The virtues of techno-masculinity, which includes engineering, the construction and deconstruction of complex systems and models, the ability to manipulate and hack hardware and software, and practical improvisation within limits, plays an active role in structuring design, art, and programming work at the studio. When we separate, following Bourdieu (2001), what an occupation promises and what it permits, we see how the category of gender attaches itself to occupational categories. This move is important because it allows us to see that content creation work at a digital studio is not naturally men's work. The techno-masculinity associated with content creation of digital games is socially constructed and contextual. Techno-masculinity comes in through the permission of these occupations. It is not what is promised as a result of performing this kind of work.

CHAPTER 6 – CONSTRUCTING A MASCULINE SYMBOLIC SPACE

Introduction

The purpose of this chapter is to analyze how digital game content creators construct a masculine symbolic space by drawing upon three distinct yet interrelated discourses of masculinity in their day to day interaction with other members of their project team and with the other coworkers at the studio. These three discourses are (1) masculine aesthetics, (2) hegemonic masculinity, and (3) science and technology. Gender symbolism refers to the structuring of practices around sexuality. Masculine domination of the symbolic order collapses the structure of gender relations by making gender distinctions appear natural (Connell, 1987). The masculine symbolic order is difficult to analyze because the process of naturalization removes cultural justifications of its construction (Bourdieu, 2001).

The culture of digital game production is largely drawn from the masculine cultural codes represented by militaristic and heroic aesthetics, which are discussed in the abstract but often take the form of influence from other mass media including comics, military historical fiction, science fiction, fantasy, and action films. These mass mediated masculinities are hegemonic and appeal to men not only through aesthetic style but also through narratives, myths and tropes of hegemonic masculinity and stable, hierarchical gender representations. Finally, employees at the studio also draw upon a masculine encoded discourse of science and technology.

Techno-masculinity is the lived identity of digital game culture and the culture of production. It is based off of the idealization of a hacker who is defined in reference to computer technology and who is a fusion between work and playful rebellion. However, the cultural tastes of this group include fantasy and science fiction, violent or heroic militaristic themes, as well as hegemonic masculinity and emphasized femininity (Dovey & Kennedy, 2006). These strongly defined but limiting scripts of femininity and

masculinity are preferred despite the lived actuality of the techno-masculinity of game workers. With a clearly defined lifestyle based upon the ascendency of technological work, the ideal of masculinity around the hacker identity has entered into the arena of the struggle for symbolic legitimacy with competing forms of masculinity. Increasingly, it is digital games with their cultural themes that sell the lifestyle to younger boys who make up the primary demographic for the industry. But the appeal of hegemonic masculinity in the culture of digital game production produces a contradiction within the hacker identity. Hegemonic masculinity defines techno-masculinity as subordinate, geeky, and asocial. In the sections that follow, I trace masculinity as it is used in the discourses of aesthetics, hegemonic mass mediated influences, and science and technology. Finally, I discuss the ways in which the three masculine discourses are deployed throughout the studio's culture and the contradictions between hegemonic and techno-masculinity.

Masculine Aesthetics

The discourses that constitute the distinctively masculine aesthetic style are analyzed by looking at the art direction for the future franchise game project during its prototype phase. The art team and individual artists discussed amongst themselves around office desks and during weekly meetings the movement of art from previous games in the franchise that was a more abstract representation of reality, what they classified as "iconographic" or symbolic, to one that was more, in their words, "believable." However, this expression of believability is measured against notions of realism, which would be the most concrete representation of reality. Realism as an aesthetic for digital games is itself opposed to a "toon" (short for cartoon) aesthetic, which also was an opposition to the kind of believability the art team was striving for – a heroic or romantic aesthetic. The goal of the team was to hit this mark of heroic believability without transgressing into ultra realism.

There are practical reasons such as issues of scale as well as artistic reasons for the overall direction of the project not to attempt a realistic aesthetic, which I will detail below. But the direction the artistic style was moving implied a progression to the point of more realism for future games in the franchise. I have mapped out this movement in Figure 10.

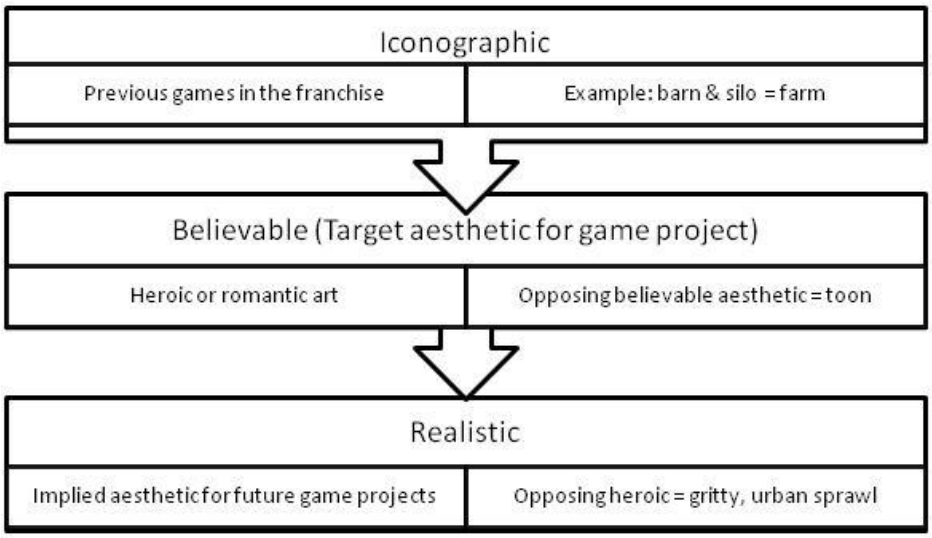

Figure 10 – Direction of artistic style for the future franchise game project

The movement and the artistic styles available to the artists through discourses and visual representations do not in themselves constitute a masculine code of aesthetics. Within each classification, whether iconographic, heroic-believable, toon, or realistic, the examples and discourses the artists use privileged masculinity over femininity within all of its pertinent oppositions (such as hard/soft, strong/weak, technological/natural, etc.). Additionally, hanging above and coursing through these specificities and differences of masculine style and aesthetics is what I am interpreting as a hyper-emphatic masculine aesthetic. This means that whatever is selected for emphasis must make its presence felt.

Digital game creators use the word "pop" to describe this hyper-emphasis, and it applies to audio as well as visual game elements. The hyper-emphatic masculine aesthetic commands space and attention just as men are socialized to command a room from the moment they walk into it.

Masculinity and iconography

As the lead artist for the project, Foster's influence in moving the current project away from an iconographic style of previous games of the franchise is apparent. At this early phase of game development it was important that these distinctions get made. To him, the previous versions of the game felt like they had abstract layers that disassociated them from what he believed was the dedicated or hardcore player's primary reason for buying the game – the historical context. Having worked on the previous game, he remembered having a conversation with the lead designer, who has since left the studio but who at the time really wanted the game to feel like historical fiction rather than the iconographic, "complex chess" game that it was.

For games that fall under the broad genre of strategy and simulation, iconography has been vitally important in their historical development because the digital worlds that are created are based on maps with various levels of scale. During one art team meeting, when the discussion turned to the issue of scale, an artist reminded the others that strategy and simulation games are digital versions of board games such as Risk. The earliest versions of these digital games were precisely that – two dimensional spaces with icons representing armies, types of geographical terrain, and so on. The introduction of three-dimensional graphics and their subsequent refinement by the industry is now able to get closer to a realistic element of scale. What this means is a group of soldiers should no longer be roughly the same size as a skyscraper or church cathedral. With scale, there is also movement toward more realism with next generation graphics capabilities. However, it is like taking "two steps toward realism out of 100," according to Foster.

The decision to move from iconography to believability doesn't mean that iconography is banished completely. During one particular afternoon when I was following the lead artist through his day, an issue of "readable" iconography was perplexing the members of the terrain team. It began when Larry, who is the lead terrain artist, popped into Foster's office. He asked Chris and Foster to follow him so that they could look at the current iteration of a model Geoffrey was working on. Geoffrey, who is a young 3D artist, had been given instructions to create an ancient trading post. The main trouble was that no one knew precisely what an ancient trading post should look like. During the pre-production stage it didn't really matter whether he got it right the first time. So Geoffrey spent a few days mocking up a model, which was then subject to being scrapped, modified, or given the green light depending on the critiques of Foster, Chris, and Larry. In the meetings that followed, discourses of masculinity are used to form homosocial bonds between the men and in their critique and development of the iconography that will help orient players through visual clues in the game.

As one of the newer artists at the studio, Geoffrey worked out of a shared cubicle on the first floor. We all crammed into the space, forming a semi-circle around Geoffrey, who was seated in front of his computer screens with the model on display. The 3D model in Max was fairly crude; the buildings were in bright pink hues so that they stood out from the other elements and the brown terrain. For a 3D artist, the texture and color of models are added toward the end of the process. The comments about the bright pink colors turned into a quick round of mock homosexual banter, with the mimicking of lisping speech patterns to describe the feminine color of the buildings.

With the quick display of heterosexual male camaraderie aside, Geoffrey explained that he was trying to make the trading post look like an ancient market. Chris, studying the model, said that it was not what he had envisioned when he wrote up the design document for the game. Everyone agreed that the model was not quite working as it stood. The iconography was too cluttered and thus wouldn't be readable by players.

Foster, who often tackles problems by stripping away the detail to focus on the basics, wanted to know what the definition of the trading post was, and what the function of the trading post would be in the game. Chris said that the idea was to replace small towns that were used in the previous games with trading posts. Rather than representing a place primarily for residence, the model should represent a place where trade occurs. A player should be able to look at the model and tell that it is a place for trading goods.

With this in mind, the group went to Foster's office (a much bigger space compared to Geoffrey's cubicle) for a quick brainstorming session on how the trading post should look from scale. Since Foster shared an office with the lead prototype artist, Ron joined in the discussion and suggested that they use the dry erase board to iterate designs and provide examples throughout the process. Chris used a contemporary analogy to describe what he wanted. "The trading post would be an ancient truck stop," he said. This didn't seem to clarify the issue, which would be the representation of active trading going on at the place. A trading post is where people go to trade. A truck stop is where people stop on their way to another place to trade.

The brainstorming session boiled down to a discussion of how to make a large, iconographic model that would be recognizable as a trading post. The trouble was the lack of a clearly recognizable icon that would show up at the normal playing scale. As a counter point, a barn and silo are instantly recognizable icons for a farm. When people see that, they instantly think: "farm." Ron sketched some large tents on the dry erase board, but these may just as well have symbolized a travelling circus than a temporary trading post. As the lead designer, Chris had to be wary of what could potentially create confusion for the player. Foster, literally back to the drawing board, suggested that it should look like a Middle Eastern bazaar or perhaps a North American fur trading post. For the moment, the group settles on a large tent for the iconography of the trading post, using white or off-white color to make it pop from the landscape terrain as well as to distinguish it from a more colorful circus tent.

The suggestion of making the model after a fur trading post during the meeting devolved into banter about fur and its symbolic association with female pubic hair. With this display of humor, the spontaneously formed group symbolically and subconsciously completed its masculine enclosure (as small groups of men often do), starting with the mimicking of a stereotypical homosexual male lisp and ending with objectifying humor. The performativity of homosexual speech is one of the most paradoxical forms of proving a white, American man's heterosexuality in a small group setting of other men. Other forms, such as bragging about sexual prowess and athletic abilities (Decapua & Boxer, 1999) are mostly missing at the studio.

As with any other digital game or most commercial software for that matter, iconography shows up in the interface design and layout. Vincent is the project's lead interface artist, and he used a book of art work from the digital game *Bioshock* as reference. The art book is called *Breaking the Mold*, and it contains images of settings, weapons, and character sketches from the game that had pleased critics and fans with its art deco style that, for a first person shooter, differed dramatically from what Foster calls the "dystopian, harshly lit games of the now." Vincent was working on small icons for the game's interface that will tell the player, with a single image, what type of resource is in a particular location on the map. The iconic images, still under prototype and thus open to change, are set upon a stained glass background.

Vincent told me the idea for doing a stained glass effect came from Foster, who had just recently discussed the direction of the overall interface design. Some icons are hard to visually represent while others are straightforward. The color palette is light aqua blues and greens, burnished brass and soft gold. These final two colors are reminiscent of the art deco style of *Bioshock*. It's hard not to notice that the artists are influenced by the aesthetics of that game, although Vincent showed me several other examples of art deco that he uses for inspiration. These images include a poster of a 1950s prop plane flying over the port of San Francisco; a poster for *Superman Returns* with New York City's

gothic skyline as the back drop; posters from two Indiana Jones movies; a poster of a train with the title, "New York Central System;" and a poster of the X-Men comic book series. One and all of the images falls under a particularly masculine translation of art deco with the sensibility of professional advertising and graphic design work. The use of art deco as an interface style fits into the project's goal of hitting a heroic and romantic believability based upon movies of historical fiction.

Believability: A heroic masculine aesthetic style

As Foster explained it, coming up with the believable artistic style was a process of pulling out elements, themes, and styles from romanticized and heroic historical fictional films while simultaneously avoiding realism and a cartoon-like aesthetic. "I took it through the process of asking, what would it be like to be historical fiction? Whether it would be like the movie *Braveheart* that isn't very historical, something like *Master and Commander*, or something that is strictly historical like a *Gettysburg* thing. What are the things that those movies have that the game doesn't have? As we went through it, we came up with a list of eight things." The list was arranged in the following order: believability not reality; meaningful battles; vast and diverse landscapes; trusted advisors; stronger adversaries; transforming chaos into order; cities are unique and have character; and the game is the interface. The artistic vision for the first theme on the list is worth focusing on in detail because it articulates the inflection of heroic masculinity that romanticizes war and conquest. It stated: "Our goal is not to make realistic art, but more believable and compelling art. We will emphasize the heroic and romantic moments of history, not the gritty reality."

In order to hit the first target, "a lot of the artistic elements started from looking at historical fiction and determining what would be epic," Foster told me. "But epic is so over-used right now. It means nothing. So what does a big historical film look like and how can we embody that? That was half of it. And the other half was how can we be

different than [the previous game in the franchise] that came out on the console? So taking a few of the things that felt really console-y and making them the opposite so that the PC players who get frustrated by the cartoon-iness of the exaggeration of the console version would become huge supporters of what we are doing."

In one example of making artistic elements in the game bound by historical fiction, Harvey, a tall, lanky artist who is quiet and fairly new to the studio, created a 3D model of an American Indian character to demonstrate the believable aesthetic. His modeled character was influenced by the movie *The Last of the Mohicans*. He showed the character during one of the art meetings dedicated to demonstration and critique, where each artist on the team gives a visual demonstration of what he is working on. At the meeting, artists praised Harvey for making the character look like he was about to kick ass and take names. The art team discussed the character's physical anatomy, suggesting improvements to the neck muscles and clavicle proportions. The cheek bones needed to be more Asian than European. The concept art Harvey was working from was distinctive and "not European," like a Hollywood version of an American Indian. This was an issue with translating concept art into a 3D model, with the facial bone structure between what the concept artist was shooting for and how Harvey modeled it. Still, though, the members of the team were in agreement the assessment of the character's hegemonic masculinity. The American Indian was aggressive and had a no-nonsense stare and a take-no-prisoner pose.

Not only was the aesthetics of believability informed by the relatively romanticized versions of militarized masculinity in historical fictional films such as *Braveheart*, *Master and Commander: the far side of the world,* and *Gettysburg*, but also by the pre-Raphaelite artistic movement of the mid-19th century that romanticized the Medieval Era represented by such Renaissance-inspired works as Dante Gabriel Rossetti's "Persephone" and John Everett Millais' "Ophelia." This "Western way" of romanticizing history resonates with traditionalists who purchase the games of the

franchise, Foster said. In terms of situating this artistic style vis-à-vis other genres or other games in the strategy and simulation genre, Foster argued that there hasn't been a game that has been able to capture the idealization of the pre-Raphaelites.

As I have pointed out, the art team was moving from notions of iconography to a more believable art style that was articulated in relation to the aesthetics of realism. At another weekly art team meeting that was dedicated to brainstorming around major artistic themes, Foster had asked his team to give demonstrations and references of "believability" as opposed to "reality." Among the examples given, a dominant theme emerged that believability was more vibrant than reality. Real weather, for example, included phenomena like fog, which is depressing. Believability, by contrast, would be to make the sky more blue than it really was or to make the grass greener.

The rhetoric of realism still creeps into the overall logic of digital game art through lighting and shading techniques, but the art team wanted these techniques to be used in the service of believable heroic or romanticized environments. Thus the art team was finding it difficult to remove realism entirely from their work. They just didn't want their art to spill over to the more uncanny aspects of computer animated "realism," such as the recent Scooby Doo and Garfield CGI movies.

It's hardly surprising that realism is a baseline aesthetic principle from which to judge the particular style that the art team will use. Dovey and Kennedy (2006) found a similar discourse around optical realism at work when they visited a development studio in England. In a general sense, the discourse of realism is tied to the notion of technological progress. The greater level of detail provided by the advancement of graphics capabilities results in a drive toward naturalistic realism. However, artists I talked to, while certainly agreeing with the assessment that newer graphics technology could make game art more realistic, believe that a cohesive art style, whatever that may be, is more essential than making every game realistic.

Ira, a Midwesterner with a prep school upbringing and one of the originators of the Dynevolve University idea I discussed in Chapter 5, said that "there's no right answer" to the question of what is the best artistic style in digital games. Having said this, he subsequently rattled off five games as examples of unique, cohesive styles that have all impressed him. "If you take a look at the new *Diablo III* trailer, Blizzard has taken that pastel style and cranked it to a whole new level again. And it looks really nice already. Then you look at *Metal Gear Solid 4* and it's cinematic, hyper-real. It depends on what you want. A lot of people griped about *Gears of War's* brown, gritty style. I agree. There are a lot of games out there that give you another shade of tan. And *Gears of War* suffered from another shade of dark. … But overall, it was still a good art style in terms of good detail per se. A little too much. They could have pulled it back. It had a good feel overall despite its flaws. It was a valiant attempt. Even *Conker's Bad Fur Day*, despite its limitations on the N64 and the low poly counts, it still had a nice 'toon feel to it. And they played it up real nice. You can contrast that with when they tried to port it to the Xbox. Higher graphics. The fur was real nice, but everything else just didn't feel the same and on top of that they butchered their own game in terms of design. *Katamari Damacy*; that is an awesome example of design art: blocks, cubes, blocky people, simple primitives with bright colors, but it was so addictive. And the art style fits into the zaniness of the game."

Hyper-emphatic style

The discourses and work practices of the male artists are heavily influenced by an overall hyper-emphatic style. To hyper emphasize is to make everything "pop" or stand out above the rest. As Donna Haraway (1997) reminds us, "*hyper* means 'over' or 'beyond,' in the sense of 'overshooting' or 'extravagance'" (p. 3, italics in original). Tied to idealizations of masculinity that stress technical precision and perfection along with individualism and competitiveness, the hyper-emphatic style underlies artistic discussions

ranging from human characters and body features to the audio style of the entire field of digital games.

Even though the aesthetic for the art in the game project draws a boundary between realism in the sense of a photo-realistic quality, the artists themselves rely upon a common sense idea of realism in their day-to-day work that simply acknowledges the importance of having a real-world referent for art assets. As with Vincent's masculine coded examples of art deco style, other artists similarly borrow from these codes. During a one-on-one meeting, for example, Foster invited Glen to his office to discuss his concept art, in particular the facial features of a Japanese character. Foster was referencing the 3D model, which was a translation of the concept art by Robert, a very experienced artist who is working as the lead for the 3D modelers. Foster was concerned that Robert was making the character's nose look quasi-European, and he wanted to check with Glen to see whether or not the concept art was different than the model. He explained how the noses of Europeans and Japanese or Asians generally are different in terms of size. Asian men do not have as large of a nose as European men.

Glen excused himself for a moment and ascended the staircase to the second floor to check on the character he initially drew. Returning, he explained that this particular character had a different nose that regular Japanese or Asians. It is *stronger*. Foster said it would be good to create another conceptual piece so that Robert will be absolutely sure in his mind on how to translate it. Later, Glen stopped by with a sketch that Foster liked. The new iteration had an aggressive male nose worthy of the character's status as a samurai warrior. Later, however, when Robert showed the character to the art team during a meeting, he had to explain the decision about making the character's nose more "European" looking.

In the case above, a masculine, hyper-emphatic style dominates, trumping the biological realism of phenotypes that usually help artists and game designers connect with an audience by having these kinds of distinctions that model out well. The

masculine hyper-emphasis derives from many sources. It comes through ideas associated with an artist's "ownership" over his art assets, the principles of design, Hollywood action-adventure or science fiction films, comic book illustration, and the homogenous field of digital games.

Jose, who has been working as a sound programmer in the industry since the early 1980s, explained the role of Hollywood and the similarity of sound work in different genres of games in developing and relying upon hyper-emphasis. "First person shooters sound like first person shooters regardless of who makes it. They are all doing the same thing. They are all running. They are all pointing and shooting at something. Somebody is dying; something is blowing up. And they usually always have a pounding background unless it's pointing to a clue for what you are about to go through. Sometimes it's more of a creepy kind of thing, but most of them sound the same."

Strategy and simulation games "sound more majestic and classically oriented than the first person shooters," Jose continued. "The driving games all sound the same, with the screeching and the brakes and gear shifting with the pounding rock background. They all sound the same. To the people who created them, they are different. But not really. [laughs]. Yeah, some different kid wrote it, but how is it different when they have to sound like car engines? They have to sound like the rubber is squealing as they take the curb. When they crash into a wall, it has to sound like a car crashing.

"And the movies have influenced games a lot. Not only games based off movies, but in terms of style, everything is really big, over-the-top, and in your face. … If you are walking around outside, they want to be able to hear the wind and leaves rattling and be able to hear birds chirping like you are really out in the world. Then they want to have guns start shooting and explosions that sound like world war three – a rifle shot that sounds like a cannon and an explosion is ten times as big as it actually sounds. They want over the top, but with realism at the same time, like a movie. There will be sections of a movie where you can hear everything going on like when someone walks by and brushes

up against something you can hear the rustle of the fur or the cloth or whatever. And the next thing there's a car wreck and the speakers in the theater are rattling. They want the same thing in video games."

The influence of hegemonic masculinity

In order to document the influence of hegemonic masculinity derived from other mass media, I developed five categories to classify references employees made during interviews, conversations, meetings, direct viewing or playing, and descriptive notes from the field about books, posters, and other memorabilia on walls, shelves, and common areas of the studio. The five categories that capture a range of mass mediated hegemonic masculinity are: science fiction; fantasy and role playing; superhero; military; and historical fiction. The categories are not mutually exclusive because some references draw upon multiple genres or elements. One could just as easily place *Braveheart* in historical fiction or the military category. Exclusivity is not too much of a concern here because comparing the categories themselves is not the primary motivation in their development and analytical use. Additionally, even though all of the above could be loosely grouped into "mass media targeted toward men," I think lumping these together elides different emphases of gender and masculinity found within each. I do agree with Douglas Kellner's (2008) overall assessment that

> hegemonic masculinities in the contemporary era in the United States are associated with military heroism, corporate power, sports achievement, action-adventure movie stars, and being tough, aggressive, and macho, ideals reproduced in corporate, political, military, sports, and gun culture as well as Hollywood films, video games, men's magazines, and other forms of media culture, and sites like the frat house, locker room, boardroom, male-dominated workplaces, bars, and hangouts where men aggregate. (p. 18)

These other mass media are influential because they form a set of readily available narratives, myths and tropes of gender, most of which are based around notions of hegemonic masculinity as well as stable, hierarchical gender representations. Some of the examples the group gave were simply in passing, others were used to dramatize a

point to a co-worker or during a meeting, make a comparison, or impart influence over certain artistic, design, and programming decisions that were being used in the development of the digital game. A majority were references to comics, digital games, and cinema. However, classifying according to the type of media loses both the sense of the fluidity of their use in daily interactions as well as their associative cohesiveness. When taken together, the impact of hegemonic masculinity in mass mediated influences is symbolic domination that is "exerted not in the pure logic of knowing consciousness but through the schemes of perception, appreciation and action that are constitutive of the habitus and which, below the level of the decisions of consciousness and the controls of the will, set up a cognitive relationship that is profoundly obscure to itself" (Bourdieu, 2001, p. 37).

The military warrior is an enduring symbol of masculinity (Higate, 2003), as enduring as masculinity is to militarized subjectivity during the capitalist era. Along with the obvious violence associated with military action and practice, hegemonic masculinity is tied to the nation, honor, protection, and duty. One of the key themes of popular culture's mainstream representation of the military is the valorization of the core of military identity as hyper-masculine, which is cushioned by the willingness of displays and performances of softer masculinities or homosocial bonds "in the throes of military survival," as noted men's studies scholar Jeff Hearn (2003, p. xiv) puts it.

Media culture depictions that valorize the masculine military warrior also tap into the very real ways in which contemporary armed services dramatically transform male soldiers into aggressive killers by developing a meaning system that welds the masculine/feminine dichotomy around "a number of mutually informing binary oppositions such as war/peace, death/life, strong/weak, military/civilian, defenders/defended, friend/enemy, and uniformity/diversity" (Kovitz, 2003, p. 6).

Military games and the associated hegemonic masculinity are an integral part of the men's daily lives at the studio. For example, on my second day of field work, I was

invited to go out to lunch with Ron, Foster, Chris, Darren, and Larry. It was a burning summer day that began in the mid 90s and settled upon a steamy, humid 102 degrees. Most of the employees at the studio were wearing shorts and t-shirts, many were in sandals as well. Chris viewed my choice of jeans as a tactical error, but my long sleeve shirt, although the sleeves were rolled up and it is made of light weight cotton, was judged to be a strategic mistake that could very well cost me my life. He and Darren broke off from the group and headed toward the parking lot and the reasonable comfort of the car's air conditioning. They both decided it was too hot for the 10 minute walk, but before they left they made sure to tell us that we were, in fact, crazy for even considering it.

As the rest of us walked over to the town-center style shopping district to grab burritos, we traversed streets, grassy banks and office parking lots that were not designed for pedestrians. Ron, who is outgoing, kind, and curious enough to make me feel welcome to the group, discussed his educational experience and the path he chose to get into digital art. At Chipotle, where we arrived sweaty but unscathed, the group decided on to-go orders so they could spend the rest of their time playing a digital game back at the office.

After we returned to the office, we all quickly ate our food in the first floor break room. I tried to match their speed just so I would not be left alone there on my second day, but they were readying themselves for a multiplayer match of a real time strategy game during the last half hour of lunch. The WWII game is called *Company of Heroes*, and it won awards for best real-time strategy and overall PC game of 2006. The game's tag line is "command the company that changed the face of history." In single player mode, the player controls an Allied company as it invades Normandy and other historic battles against the Germans. In multiplayer mode, players team up on either the Allied or Axis side and battle for territorial supremacy over various maps.

There were eight employees playing via Valve's online Steam network, each at his respective desk. Ron, Foster, and Chris shared an office, and they were all playing, although not all on the same team. Another player on Ron and Chris' team was on speaker phone so they could communicate with each other, although they do not communicate too much during the game. Foster was a novice at this particular game, and every so often he had to ask how to perform actions such as, how to retreat. Ron or Chris would help him even though he was on the opposing team. During the game, the sense coming from Ron and Chris was that Foster would be no threat to a winning outcome.

From a single player's perspective, the gameplay requires the production of various units such as infantry men, engineers, snipers, machine gunners, paratroopers, and tank squads from a home base. The fighting units are then moved by the player to defend or attack the enemy around strategic flag points or home bases. The opposing sides have different units and also different strengths and weaknesses, such as the Allies' ability to quickly mobilize manufactured weapons. After the player selects a unit and directs it to a location, the algorithms of the program's code takes over, faithfully doing whatever is commanded. The general point of view is command and control over the strategy and resources, leaving the fighting to the ability to carry out orders and the probabilities the designers give to whether or not a group of infantry men can withstand a flanking maneuver by a tank. At one moment during the 20 minutes of gameplay, Todd, the producer for the future franchise game, stood in the doorway to the office, but since no one noticed he quietly took his leave.

After the game was over, all eight players gathered together in the office to talk about what they did. They watched as Ron selected the replay feature of the game. During this time, players dissected their strategy, talked about surprises along the way, what they did right or wrong, and which player from the opposing team that they were fighting with over one part of the map and then another. The normal scale is a few miles over the map, but the game has a zoom feature that allows the player to get an on-the-

ground perspective. Ron zoomed in on one part of the map during the replay to focus on a single soldier, who was wildly firing a machine gun. He switched to slow motion and said, "Look at this Rambo," mimicking the voice of Sylvester Stallone.

There was a noticeable transition between playing and analyzing the game during lunch and getting back to work. The players dispersed and the office quieted down as Chris, Ron, and Foster began working again. But later in the afternoon, Larry came back to the office and discussed the game further. At one crucial moment of gameplay, Chris said he couldn't get his troops past some barbed wire. He also lamented the fact that he spent too long, about two to three minutes, on one objective. A little practice on the map with the AI as the enemy would better prepare him for the next multiplayer match with his office mates.

The match among the men playing *Company of Heroes* is representative of the high degree of daily interaction with military themes, thinking, and hegemonic masculinity tied to romantic and heroic notions of war. The entire time during lunch for that day was geared toward the moment of gameplay, and it was a highly pleasurable way for these employees to spend their time. But it wasn't only tied to that specific moment of gameplay. The after gameplay discussion and replay, the promise to learn better strategies in anticipation of the next match, and the fraternity established through the context of play are all tendrils that reach out into the subjectivities and the symbolic space at the studio.

On our way back from Chipotle before the start of the game, Ron asked me about my research project. I was not sure what he wanted to know, so I started with the working title of the project, telling him a little about why I was using the word "*illusio*" to represent the investment they make in working in the industry and how this generates certain beliefs that they hold about digital games. He wanted to talk about another word in the title: gender. For the rest of the walk back, the group discussed gender in terms of the industry. They all agreed with the facts of social organization – more men than

women work on digital games. That's hardly an earth shattering statement to them. Ron was definitely in favor of more women joining the workforce. Larry offered his take, suggesting that the current generation coming of age in their 20s and early 30s were a product of the 1980s where digital games appealed and were marketed to young boys. Now, he reasoned, more women are playing games like *The Sims*, and in the future this will lead to more women in the industry. While the discussion was progressive and engaging, the underlying aspects of hegemonic masculinity that shaped the hour of lunch went unexpressed because they were naturalized into the practices of the gameplay session.

The hegemonic masculinity of military themes and representation is probably the most deeply entrenched, but the other categories such as science fiction, fantasy and role playing, and super hero representations are influential as well. I have already analyzed the influence of historical fiction in discussing masculine aesthetics, so I will not belabor the point. Examples from this category typically romanticize heroic masculinity around narratives of an extraordinary leader of men or heroic figures. Most of the narratives are or are closely related to nostalgic militarism, which is a kind of conservatism. Movies and popular histories about military rulers such as Alexander the Great and Ridley Scott's *Gladiator* fall under this category. This also is the most practical category for the main genre that the studio makes based on strategies and tactics that are often militaristic. Artists and designers use reference books devoted to ancient military empires and the weapons they developed and used. Ron's desk is surrounded by posters of *Moonraker* and Bob Marly alongside models of tanks, helicopters, and jets; sketches of a soldier with an assault rifle, a team of soldiers, and a soldier with a sword; and books such as *WWII combat aircraft*, the graffiti artist *Bansky*. There is also a long poster called "The Story of Flight," which is a chronology of manned flight with pictures of aircraft and associated descriptions.

Mainstream and popular science fiction in literature in film in the United States is connected to discourses of the American frontier with the centrality of the rugged individualist, adventure-seeking, masculine hero (Baker, 2006). Of the few movies and books that attempt to portray a realistic story of space travel based upon the Apollo and Mercury programs wedge this aggressive, individualistic masculinity of the Western genre into the elitist and bureaucratic masculinity based around advanced scientific and technological knowledge that is needed by mission control as well as the astronauts (Ibid.). The science fiction mass media references that are part of the cultural milieu of the studio elide this tension all together. The wonderful potential of science and technology is still present in science fiction, but the need for the hegemonic masculine hero to understand the technical minutiae of how it works is not required.

The incorporation of dialogue from the movie *Predator* is a particularly apt example of the kind of hegemonic masculinity in science fiction that influences the culture of the studio. As five of us made our way to the elevator one day, Todd got held up at the reception desk, which is visible but not audible through the glass door from the elevator foray. At first, he raised a finger to indicate that he would just be a moment. Raymond, a senior artist, stood with one foot in and one foot outside of the elevator, holding the door for Todd. The elevator's occupants grew impatient as it was becoming increasingly clear that Todd was now deep in conversation with one of the studio's directors. Todd peaked his head through the glass door to tell us to go ahead without him, but before he could speak, Raymond said "Hurry!" This sparked a remembrance of the movie *Predator* in which Arnold Schwarzenegger's hyper-masculine military commando character emphatically commands his troops and civilian charges to "Get in the choppa! Hurry up! Come on! Now, now, now!" Raymond perfectly translated the dialogue into the holding the elevator. I say perfect because all the men, including myself, instantly get the humor and join in the call to get in the choppa, using our best take on Arnold's thick, Austrian accent.

This moment of mimesis, lasting barely 15 seconds but producing a lasting feeling of pleasure during the elevator's descent to the lobby, takes a very specific decoding and refashioning of hegemonic masculinity. This is the kind of science fiction movie, now 20 years old, that holds such a spot in the (hearts and) minds of men that it lends itself to spontaneity. Arnold's continuing presence in public life and the continuation of the movie franchise are spot holders of the original hegemonic, white masculinity that forms the core trope of *Predator*. They still show the original on cable from time to time. It's hard for me to watch it now without wincing/laughing at the obvious way it Others just about every social group in its quest to mark Arnold's character as the ultimate man. But watching it as a white, male teen in the late 1980s is a different story altogether. It mattered that he defeated the alien and that the woman made it safely on board the choppa.

Fantasy and role playing games, which are played by individuals at the studio, provide stable gender (and other) roles as a way for individuals to manage contemporary gender instability (Stone, 1995). The connection between Dungeons and Dragons and 1970s hacker culture is clear in popular historical accounts of the early pioneers of the digital game industry. "When Gygax's Dungeons & Dragons game rippled through these university circles during the mid-1970s," Brad King and John Borland (2003, p. 27) write:

> programmers immediately saw the potential for new computer games. In many ways, D&D was already like a computer program, overlaid with a dungeon setting. The game progressed on an *if-then* model that was familiar to programmers—*if* the character slays the orcs, *then* he is allowed to open the door and find the treasure. Many of the game's critical moments, from combat to success in picking a lock, were determined by rolling dice—the physical world's equivalent of a computer-generated random number.

The tension of science and technology in relation to hegemonic masculinity

A common perception is that programmers speak a different language. The first day I began observing the engineering team for the future franchise game project, for example, I thought for sure that this was indeed the case. I asked Todd how he managed to keep track of the engineering team's side of the games he produces. High level concepts are easy enough to communicate, but when programmers start describing tasks with granularity using different codes and different languages, he relied on people who can distill a programming task down in a way that he can understand as a producer. "When one person explains it, you can't understand and will do a thousand yard stare, but another one can make you understand it. It's a matter of getting that interpreter, for me at least, because I am not a programmer," he said.

In the highly technical field of computer software programming, along with the specialized language of programming for the digital game industry, programmers converse with each other in ways that only they know how to fully translate. But there is also another level of techno-masculinity built from the tedious practice of writing code. This layer closely approximates how men have incorporated the logic of machine language and use it in their everyday discourse and decision making.

For example, a simple algorithm is tacked to the poster board just outside of a programmer's office. The decision flow chart is designed to tell what kind of game system an individual should buy, considering the options currently available. It privileges PC gamers (hardly surprising given the studio's history) but is primarily meant to be a humorous take on the state of the industry's hardware systems and culture of gamers. Despite the joke, there is an underlying logic of absolute distinction, classification and differentiation that is important to understanding the incorporation of masculine computer language into everyday life. The following is the algorithm's flow.

Do you like video games? If the answer is yes, then you should buy a PC, ending the sequence. If the answer is no, then you should proceed to the second question. *Do you have friends?* If the answer is no, then you should buy a PlayStation 3, ending the sequence. If the answer is yes, then you should proceed to the third question. *Do you have real friends or internet friends?* If you have real friends, then you should buy a Nintendo Wii, ending the sequence. If you have Internet friends, then you should buy an Xbox 360, ending the sequence.

The distinctions in this algorithm classify the hardware but also classify the classifier, as it were. PC games are for people who are true gamers, and true gamers only play games using a personal computer. They play games for the passion of playing (playing for the sake of playing) and not because they seek friendship or because their friends play. All others play digital games for suspect reasons. There is an implicit ranking in the other three choices as well. The PlayStation 3 and the people who would buy it are a distant second to the PC-gamer, followed by the Wii, and lastly, the Xbox. The constitution and construction of an algorithm as the problem solving method is in itself a reflection of a mathematical, scientific worldview. Adams (1998) argues that there has been a similar discursive logic in the history and development of Artificial Intelligence. "AI systems, in taking a traditionally gendered approach to knowledge which reflects the style of mainstream epistemology, incorporate a view of the world which tacitly reflects a norm of masculinity, both in terms of the knower and the known. This leaves out other types of knowing subject and knowledge, particularly that which relates to women's ways of knowing" (Ibid, p. 8).

The foreclosure of affective or embodied knowledge expressed through mathematics-derived logic fits into a larger set of discursive practices among programmers that works to reaffirm their elevated intellectual status and cultural capital at the studio. The other way in which this is done is through an ideological claim about the number of programmers that should work on any given project. I hesitate to interpret

these practices as intentional strategies of dominance, but their effect can turn out that way. They are similar to the basic expressions of masculine specialized knowledge that Cynthia Cockburn documented at British print shops in *Brothers: Male dominance and technological change*. The way to ensure the importance of an occupation and the higher pay that comes with it is to limit the number of similarly skilled people by "owning" specialized technical knowledge. There is nothing wrong with bargaining for higher pay given the type of skill one has, but the active limiting often takes the form of exclusion based on gender, age and ethnicity.

There was a book called *The Mythical Man-Month: Essays on the Software Engineering* floating around the programming team. The copy belonged to Gerald, and he doesn't hesitate to recommend it to fellow programmers or anyone else interested. I first ran across it on Kyle's desk, part of the overall clutter of disorganization and chaos to which he is naturally inclined. Nothing on the desk stands out from anything else. There is a box for the *Company of Heroes* PC game, souvenir swag from the studio that is generally given out whenever a game is released, a pad of graph paper, a box for a NVIDIA e-GeForce graphics video card, and an abandoned wide screen laptop, resting upside down. The overall theme of *The Mythical Man-Month* is that the more programmers you throw at a software project, the longer the project is going to take to complete. The problematic tends to increase particularly at the end stages of software development. The main reason is two-fold. New programmers will have to spend a considerable amount of catch-up time learning how the code is written and implemented. Also, more programmers result in a breakdown of communication that results in more bugs being written into the program. The book includes a mathematical formula to demonstrate that the increase in communication channels among the programmers decreases the ability to communicate a single, unified message.

When distilled, the book's main message is less is more. The programmers take this to heart. At the end of the last project that suffered from a six-month production

delay, Martin, a senior programmer at the studio, summed up the main problem in essentially the same way as the book. The fewer people working on a project, the less likely it is to generate new bugs. But since there were so many bugs, the studio had to throw more programmers on it. Kyle, a younger programmer who is nevertheless a highly talented and thus well respected part of the technology department, has a philosophy to match the less is more credo. Upon graduating from Boston University, Kyle was recruited by Microsoft and worked at its headquarters in Redmond, Washington, for five years. However, Microsoft's culture began to change when the new CEO began treating it as factory work. This conflicted with Kyle's philosophy that you only need a few talented people, but Microsoft couldn't retain talent. Increase in size means it's hard to change. Inertia crept in, so he took the job here. For software engineers, working at Microsoft is held in high regard.

The ability to make things work through one's own creativity is tied to the tendency towards individual ownership over work expressed by all groups at the studio. For artists, ownership is over individual assets. For programmers, it is modules of code or specific graphics editing tools. "Lots of people don't like reusing code," Martin explained, "but I think that's just ownership syndrome. They say, 'I can write that better.' Everyone thinks they can. I tell lots of programmers never get attached to your code because no matter how beautiful you think it is someone else is going to look at it and say, 'That's crap.' Well, what does that mean? You know? In the end, they can't really say exactly why, they just would do it somewhat differently. I don't have time to reinvent the little things, but some people do like to do the little things."

Technological invention, innovation, and creativity are keys to techno-masculinity that produces the symbolic space of science and technology discourses. These elements attract young programmers to this studio. Because it is not known for cutting edge graphics technology, the studio allows younger programmers to experiment and develop their own solutions to programming problems. "We have really strong design," explains

Ed, who is just beginning his career as a graphics programmer. “We don’t need to step back and evaluate our design. What we need to do is get the art up to the same level to where the design is. I want to take the technology to the same level as design. To me this is an opportunity to do more than if I was at a company that was cutting edge. If I did work at a company that was cutting edge, they would already have four all-star graphics programmers and I would be doing something stupid. ... I have a better opportunity because they let someone who has less experience make these decisions. So I actually prefer to work here. I get to do more because for us it’s less of a risk. But for a company that makes its name off of technology, it’s a huge risk to have someone who is newer. If it doesn’t look as good, that’s a huge thing for them.”

Conclusion: The deployment of masculine symbolism

Programmers largely derive meaning from the masculine cultural codes of the physical sciences and technology in general and computer science and technology specifically. I am placing designers, who at this studio also have programming skills, closer to the programmers than the artists, but what they know above all else is the field of digital games. This means that designers draw on experience playing games as well as a bit of both masculine aesthetics and computer science and technology in their overall design ideas for games (or how the games “look and feel”). Designers also draw heavily from the masculine cultural codes already well established in most digital game genres (Kline et al., 2003).

Although each group tends to draw upon one masculine discourse more than the other due to their relative areas of expertise, these discourses interweave among the others as in a centrifuge, the force of which produces gender homogeneity in the culture of the studio. Because of this, these discourses are translatable through the others, although not without incident. For example, what may begin as a demonstration of masculine aesthetic through a sketch by a concept artist of a strong-featured, muscular

character translates into a 3D model with computer generated lighting and shading that are based on laws and principles of physical science. The details at either end of this discursive spectrum are the province of either an artist or a programmer. For example, the concept artist might be drawing upon a well established and distinct artistic style or movement. At the same time, the programmer uses complex mathematics to mimic the lighting of the sun or an indoor source of illumination as it hits the character's torso. Neither concept artist nor programmer can provide a full translation between the two sets of details. Both frequently invoke the word "magic" to describe when everything comes out just right in the end. The invocation of magic is not a naïve expression. Rather it expresses the tensions that arise from the interplay of competing discourses of masculinity at the studio.

Individuals express an ideal dynamic between programmers and artists that underscore the tension that evoking magic refers. "The thing I am looking for most is shared excitement," Forster explained. "A really good relationship with programmers is making real the things that we create. The assumption is, if we were making a movie and we had animators and modelers, we would have a film. When you work with a programmer … you take something that was static and you make it dynamic, interactive and somehow more real. The idea of translating is like a Golem. The artist can make a beautiful sculpture and the programmer is the magician who brings the Golem to life. So you look for a re-animator. Not a mad scientist who works on an undead creature, but you are looking for someone to breathe life into it and has the tactical know how to do that. But also someone who has the aesthetic and artistic way to do that. Hundreds of programmers can make 3D engines and make racing games, but really beautiful programming can make that driving game feel fast. Really beautiful programming can make the camera movement in the game beautiful and can make the experience worth having. No matter what a set of artists do, at a certain point there is going to be a programmer that translates our work."

When the magic doesn't occur or when digital game assets get lost in the translation between artistic and programming work, there can be mistrust, frustration, perhaps even disinterest or a loss of that shared excitement. Henry, a programmer who was recently put in charge of providing engineering tools for all projects explained when I asked him why this position needed to be created by the studio and why he advocated for it. "Artists had never been happy," Henry started only to check himself on such a strong statement about the feelings of another group and the feelings of co-workers to an outsider. "Artists have been a little bit frustrated with the pipeline in our games. Usually what will happen is an artist will make something in Max, and they will not be sure how to preview it properly in the game or need to go to a programmer to have them put it in the game. So they don't have feedback on what their art is going to look like, and they also don't get good turnaround time for feedback. I think that they are frustrated, reasonably. It's not an unreasonably frustration to have. And they can look at other games and say that their animations play so much better because it obviously has a good pipeline for these things.

"I think the pipeline problems that we have is because we don't have time to focus on these things. We always have middleware to take care of the problem for us, which most of the time, they don't. Usually they will give you the functionality to render, but they don't necessarily hook anything up for you to be shown what it will look like in the game or how it is integrated in the game. What I want to do is increase efficiency and reduce turnaround time. And at the same time improve the quality of the artists. And that also transfers to certain things that producers and programmers do, but the main focus is on the artists' pipeline."

In the end, for a digital game to be created at a commercial studio, there is really not an overriding need or even desire on the part of artists and programmers to understand the intricacies of discourses concerning aesthetics or computer science. All an artist wants is to see what his creation will look like in the game. That is, he wants to use

the skill of vision that he has been trained to hone on how games are supposed to look. If a graphics programmer has done his job, or if an interface tool can be created that allows an artist to see the end result of graphics programmer, then he is fine with calling it magic. The contradiction between competing discourses of masculinity remains unresolved.

The discourses and uses of science and technology resonate with the culture of the game studio, and it generally expresses the hacker subjectivity in the habitus of the group. But discourse and practices of technology and science sometimes runs counter to the overall affirmation of hegemonic masculinity in the symbolic space. The discourses produce a tension because hegemonic masculinity is simultaneously prized and at odds with techno-masculinity. From the perspective of power, both hegemonic and techno-masculinity are concerned with mastery. Hegemonic masculinity is often associated with mastery over other social groups or institutions, while techno-masculinity is associated with mastery over nature and machines through technology. However, hegemonic masculinity as it is expressed in American culture subordinates techno-masculinity, devaluing its cultural capital. Both, however, are expressed in opposition to femininity. Both construct a symbolic space that is heavily invested in drawing a division between men's and women's social and symbolic worlds.

CHAPTER 7 - CONCLUSION

Play is a fundamental part of social existence. It provides one way in which to safely navigate the slippery psychological terrain of life and death (Rehak, 2003). The investment in play, or what Bourdieu (2001) refers to as the ludic *illusio*, lowers the cost and de-realizes the investment of ordinary existence where much more is at stake. Through play, we develop and express postures directed at idealizations of what it means to be human. Within the context of specific cultures, masculine domination presents particular idealizations of femininity and masculinity that are hierarchically ordered and layered among matrices of other subject positions. Within this structure, play is presented as a coping mechanism to assuage the feeling that, in real life, we don't quite measure up to these impossible to reach idealizations. "It is because men are trained to recognize social games in which the stake is some form of domination and are designated very early, in particular by the rites of institution, as dominant, and thereby endowed with the *libido dominandi*, that they have the double-edge privilege of indulging in the games of domination" (Ibid, p. 75).

This passion for domination and control in play is deeply affected by the power dynamics of gender as it is organized, performed and symbolized. The field of digital games has incorporated this gender dynamic of masculine dominated play, and there is strong tendency to reproduce this dynamic given how game development is organized, how game work is practiced and by whom, and how the symbolic space of game development culture is constructed. A recent study that focuses on women in the industry shares my concern that it will be far from effortless to change the underlying dynamic. Mia Consalvo (2008) argues that we cannot "simply add more women to the industry and make it better—there are particular constraints currently build into organizational, everyday work practices that make it difficult for most workers, and in particular female workers, to survive and potentially thrive in this industry" (p. 179).

My analysis of the Dynevolve worksite and culture revealed entrenched rituals, practices, and discourses of masculinity that produce and are reproduced by the habitus of digital game workers. In this final chapter, I want to bring the analyses of the organization of digital game work, the habitus and practices of game workers, and the symbolic space together. Each represents a challenge that individuals and organizations in the field of digital game production will need to consciously address if they are interested in diversifying the workforce, working practices, game content, and gaming culture.

The cultural capital needed to work in the digital game industry is seamlessly acquired by the adoption and incorporation of the field's gender structure and symbolism. The close relationship of production and consumption around a narrow demographic tightly controls the conditions of entry into the field of digital games. Analogous to an aristocratic form of cultural capital, digital game cultural capital affords one social group (men) a privilege that is not readily extended to other social groups such as women (though this does not make it impossible for women to acquire cultural capital). "The embodied cultural capital of the previous generations functions as a sort of advance (both a head-start and a credit) which, by providing from the outset the example of culture incarnated in familiar models, enables the newcomer to start acquiring the basic elements of the legitimate culture, from the beginning, that is, in the most unconscious and impalpable way" (Bourdieu, 1984, pp. 70-71).

To address the first research question, once individuals become part of the field, the social organization of commercial game development, work practices and rituals, and discursive formations all condition the game workers' gendered habitus and naturalizes what Bourdieu (2001) refers to as masculine domination. The second research question asked about how the work environment hinders gender equity. At Dynevolve, the ratio of male to female employees in content creation and production positions is approximately 70 to 4, which is relatively aligned with the industry as a whole. Additionally, work is

organized in teams, which subsumes subject positions under the larger sign of the gamer. However, the gamer subject position is idealized as white, male, and heterosexual, and this idealization allows some individuals to fit more comfortably into a team environment than others.

My third research question intended to examine how game workers' habitus generated the *illusio* or investment in an androcentric workplace. Techno-masculinity tied to occupational positions is performed through everyday work practices and through studio rituals that turn work spaces into masculine space. Finally, the championing of hegemonic masculinity, masculine aesthetic and design discourses and discourses of science and technology provide an associated symbolic space of masculine domination. This addresses my final research question, which asked how symbolic power and gender symbolism was expressed in the culture.

In the *Field of Cultural Production,* Bourdieu (1993) argues that the art world produces an economic world reversed because the cultural capital produced by the art world stands in opposition to economic capital. To simplify the point, the higher the economic capital of a form of art or artist, the lower the cultural legitimacy or capital of the art form or artist. The current field of commercial digital games, in contrast, does not produce this opposition of capital types. High cultural capital acquired by a game, game studio, or game designer is likely associated with high economic capital. Cultural capital is marketable, and thus those with the preferential type of androcentric cultural capital in the field are able to profit from it. The equivalency of cultural and economic capital generates resistance to change in regards to gender. Considering the vantage point of those who have profited and attained high cultural and economic capital in the industry, Graner Ray (2004) asks, "why does the industry need women? So far, things have been going well with the male-centric teams. Titles are selling well, new hardware is well received, and the industry is out-grossing even the film industry. So, if it ain't broke, why

fix it, right" (p. 148)? Given the strong androcentrism in the field of digital game production, can gender equity be achieved?

The field of digital game production is not static and can change if there are significant shifts or challenges to its power structure. The exciting thing about this field is that it is relatively new and growing in size and legitimacy within the broader field of mass media culture. We marvel at how technological changes have made games faster, more complex, immersive, and aesthetically more realistic than games made just a decade earlier. Yet, when we assess changes to game aspects such as narrative, representation, and diversity of content, the changes are not as drastic. When social actors in positions within the field struggle for distinction and legitimacy through their use of symbolic, cultural or economic capital, it forces all social actors to affirm their interest in preserving or changing the field. Because there are social actors with different amounts and kinds of capital, social actors will always struggle for transformation or preservation of the field (Bourdieu, 1998).

In Chapter 4, I argued that the organization of digital work in terms of space, organizational function, and teamwork form decentralized layers of a network that are tightly controlled by the commercial production cycle. Although each layer created boundaries of inclusion and exclusion along multiple lines, including gender, the network structure has the potential to shift, modify, or remove these boundaries in productive ways. Once inside the boundary of the team, there is a potential for other social groups to invest in the effort and contribute to processes of creativity and innovation. Dynevolve does this by setting up an external testing community of its most trusted and dedicated fans. This community engages in gameplay and dialogue with the designer, and their contributions are seriously considered if not always adopted.

Practices such as external community play testing and feedback more tightly connect consumers and producers and are generally seen as beneficial in developing market insight, customer loyalty, better game design, and possible recruitment of fans

into the ranks of game producers. But only extending these practices to individuals who are already won over and who have already incorporated the logic of the game's design and gaming culture in general creates an artificial network boundary between producers and new consumers. Producers of digital games can benefit from inviting and opening additional (preferably paid) networks not based only on loyalty or devotion.

Consider the industry's attempts at developing interactive storytelling. Veteran game designer Chris Crawford (2003) writes that the field of digital games has yet to produce a respectable interactive story world. Instead the attempts fall into five categories of failure: the creation of facades of interactivity with only a few variations on what is essentially a non-interactive story; adventure games that are more puzzle solving than story telling; the development of a core plot with a branch of variations (like an algorithm); and simulators that assume narrative will arise from a pre-programmed rules.

To overcome this shortcoming, Crawford created an interactive storytelling engine that translates laws of drama into programmable laws for a game. The description is written entirely from a scientific and techno-masculine perspective. His analogies of the laws of drama are based upon the laws of physics, for example. Additionally, not once does he cite a dramaturgical, literary, or performance art source in his discussion of storytelling or interactivity. The issue with the network of digital game development is that it tends to limit itself to science and technology or a set of technological skills. Humanities is rarely given a space in game development, but the industry's drive toward what Crawford calls the "Holy Grail" of interactive storytelling screams out for an humanities- and performance arts-based additions to the network of game production. The inclusion of individuals and organizations such as the National Endowment for the Humanities' Office of Digital Humanities within the field of digital games has the potential to bring greater gender diversity and increase the diversity of the kinds of stories that get told and how they are enacted in an interactive fashion.

In Chapter 5, I examined how family socialization, the sexual division of labor in computer work and education, and the passion for games form the structures of masculinity in the habitus of game workers. The habitus also structures everyday working practices that are infused with techno-masculinity. These working practices reproduce the gender dynamic of the social and symbolic space of the field of digital game production. However, the link between techno-masculinity and digital game work is socially constructed and thus open to change because there are other ways in which to perform digital game work.

The need for working conditions to change is nowhere more apparent in regards to gender and crunch time. As other researchers have noted, the industry's reliance on overwork in the form of crunch time is driven in part by employees' willingness to take the brutal working conditions because they have a passion for games (Consalvo, 2008; Deuze, 2007; Dyer-Witheford & de Peuter, 2006). Although women with a passion for games find it just as hard as men to leave the industry despite the long hours (Consalvo, 2008), the link between technical masculinity in engineering culture and working long hours can be found in men's self identification through work. Put simply, the long working hours are seen as a masculine point of honor. In the video game industry, this often leads to burn out and high rates of turnover (Ibid.). "In this sense, control is exercised by the company not through any form of coercion or direct surveillance, but rather by developing a claim on the employee's very sense of identity" (Mumby, 1998). Dynevolve has managed to retain a good proportion of experienced game workers, some of whom have been working in the industry for close to three decades. Employees at the studio of course do not like crunch time, but they say that the studio is not as bad as other developers in this regard. However, once the developer was purchased by a large publisher, profit sharing was no longer an incentive to work long hours on salary. Bonuses are now tied to outside assessments of a game's success by journalists and critics.

In Chapter 6, I argued that the studio's culture is constructed out of a masculine symbolic space through inter-related discourses based on masculine aesthetics, hegemonic masculinity, and science and technology. It is not going to be easy to inject more diverse discourses into the culture of digital game production. But if the industry wants to change its image and social organization as a boys' club, then this area needs to be addressed. A diverse discursive environment can challenge the explicit hegemonic masculinity and overall masculinities underpinning aesthetics, mass media influences, and science and technology. This can only help to open up the range of influences in digital game production, which in turn allows the overall field to become less static in terms of its themes, representations as well as the potential to expand to other markets.

We should not begrudge those who are just entering the field of digital game production to willingly glide into the dominant modes of masculine discourse. Those who have already acquired the system of dispositions of the masculine habitus will slip into it quite comfortably, likely not even knowing that there could be any other way to talk about digital games. Other social groups' differential subjectivities in terms of gender, sexuality, and ethnicity may need to make adjustments to enter the dominant discursive positions even though it may be incompatible and detrimental to them. And because the field is so tightly reproduced, alternative discursive options are not readily available. Attempts to smuggle them in are likely greeted as suspect or "not the right ideas."

Change in this regard will not, indeed cannot, come from outside pressure because to be outside is to be automatically excluded from the *illusio* of game culture and production. Risky discursive positions are legitimized when they are articulated by members of a field who have the largest possession of cultural and symbolic capital. The situation is not helped by risk-averse publishers that possess the largest share of economic capital and are unwilling to fund projects that might attract a more diverse fan base who might then consider digital game development as a career. However, those with significant cultural capital in the industry should take risks because publishers are more

likely to have a certain amount of faith that they know what makes a good game. I would not have bet that Electronic Arts would have ever published a diverse game like *The Sims* if it were not for its faith in lead designer Will Wright's cultural capital as a pioneer in the field combined with a relatively diverse group of men and women at Maxis. At Dynevolve, I observed a weekly design meeting where the creative director asked everyone to brainstorm and come up with a list of 10 ideas for games. I don't want to go into specifics and reveal the ideas at this meeting because some might progress into a concept phase in the future. But suffice to say that the ideas discussed that day all dealt with the similar variations on well worn, masculine encoded genres and games. All save one. The idea for the novel game came from the creative director, who shares a similar position of cultural capital as Wright. One of the quickest ways to change the cultural structure of the field of digital games is for industry veterans to use their cultural and symbolic capital to aid in the development of games out of the industry's comfort zone.

Limitations and directions for future research

When dealing with a case study of a single studio, one of the limitations is that the findings should not be generalized. We should not say that Dynevolve is the game industry writ small or a perfect microcosm of all that occurs in digital game production. However, I can argue that thick description provided in case studies is important for laying the ground work of detailed understandings of complex general phenomena, particularly when more such studies are generated and subject to comparison. Similar limitations based upon the specificity of culture and country are applicable as well. Because the field of digital games is global in scope, future research should be conducted in other national and cultural contexts.

Another limitation is the length of stay in the field. Although I would have loved to observe all the processes of an entire game project, professional obligations and limited funding prevented this from occurring. This means that the dissertation has much

more to say about the beginning stages of a game project than post-production. I did sit in on meetings for a game that was near completion and interviewed individuals about crunch time and post-production, but these are not substitutes for in depth, persistent observation of the working practices that occur during the post-production phase. Future studies can be targeted toward different phases of production so that an overall picture of the production cycle of digital games is available. I have preliminary plans to make return trips during the production and post-production phases of the game project I observed that was just getting started in the summer of 2008.

Due to the agreement made with the studio to keep its name anonymous, the study didn't provide textual analysis of the games that Dynevolve has published in the past. Textual analysis would have enriched the study, particularly by linking production decisions, processes and practices with game content. Following Stuart Hall (2006), the processes of media production provide an important dimension to how dominant and preferred meanings are encoded into media texts. Future research can be devised that works toward an integration of players, texts, and production within studies of the circuit of culture.

Finally, this dissertation is about men and masculinity, and it is thus limited in what it can claim about the lives and practices of women game employees and femininity. I think it is vital that we study power as it is exerted and resisted in the field of digital game production. I have chosen to focus on men and masculinities because exertions of power and privilege often remain hidden by doxa. In organizational settings, men's dominance can be internalized by women (Forbes, 2002) or resisted, and I encourage further studies to engage in questions of gender as it structures and is expressed along the matrices of subject positions.

APPENDIX A – INFORMED CONSENT DOCUMENT

CONSENT INFORMATION

Project Title: **The digital *illusio*: Gender, work, and culture in video game production**

Research Team: **Robin Johnson, BS, MA**

Meenakshi Gigi Durham, PHD

We are writing to invite you to participate in a research study. The purpose of this research study is to develop a deeper understanding of gender as it relates to individuals who develop creative content in the video game industry and to examine the ways in which these individuals participate in and make sense of the production of digital cultural products.

We are inviting you to be in this study because you are currently working in the creation and production of video games. We obtained permission from [redacted] to conduct our study at their site. Approximately 25 people will be asked to take part in this study conducted by investigators from the University of Iowa.

If you agree to take part in this study, your involvement will last for two months (June 2008 to August 2008) during which time the researcher will observe your routines and practices while at work. Additionally, if you agree to be interviewed, your participation for this part of project will be one or two in-depth interviews each lasting approximately 1 hour in length. These interviews will be arranged so as not to interfere with your work hours. You may also be asked to participate during a follow-up visit lasting approximately two weeks in the fall or winter of 2008.

The study will be conducted using a combination of one-on-one interviews scheduled during your free time and observations of work practices at your place of employment. If you agree, the interviews will be tape recorded. I will ask you if you

agree to having the interview recorded by a tape recorder at the start of the interview. Even if you do not wish to be tape-recorded, you can still participate in the project.

The observations and interviews will be focused on the production work that you are doing or have done in the past, the culture of the workplace, and your relationship to video games in general in the past, present, and the future.

For the observation process, you will not have to alter your work routines or practices nor explain them to the researcher. The observations will be carried out with a minimum of disruption to your normal work practices.

The follow-up visit will consist of one-on-one interviews during your free time with the purpose of asking additional questions and clarifying points in previous interviews related to production work, the culture of the workplace, and your relationship to video games in general in the past, present, and the future.

We will keep the information you provide confidential, however federal regulatory agencies and the University of Iowa Institutional Review Board (a committee that reviews and approves research studies) may inspect and copy records pertaining to this research. To help protect your confidentiality, we will not identify you by name in research notes or tape-recorded conversations. Additionally, research notes and recorded material will be safely stored in locking file drawers in single, secure locations of the principle investigator's home and office. Digital files of this information, such as transcripts, will be stored in a password-protected computer owned and used solely by the principle investigator. The project supervisor will have access through the principal investigator. If we write a report about this study we will do so in such a way that you cannot be identified.

There are no known risks from being in this study, and you will not benefit personally. However we hope that others may benefit in the future from what we learn as a result of this study.

You will not have any costs for being in this research study. You will not be paid for being in this research study.

Taking part in this research study is completely voluntary. If you decide not to be in this study, or if you stop participating at any time, you won't be penalized or lose any benefits for which you otherwise qualify.

If you have any questions about the research study itself or to report a research related injury, contact Robin Johnson at 319-594-2267 or robin-johnson@uiowa.edu, or his advisor, Dr. Meenakshi Gigi Durham, at 319-335-3355 or gigi-durham@uiowa.edu. If you have questions about the rights of research subjects, please contact the Human Subjects Office, 300 College of Medicine Administration Building, The University of Iowa, Iowa City, IA 52242, (319) 335-6564, or e-mail irb@uiowa.edu. To offer input about your experiences as a research subject or to speak to someone other than the research staff, call the Human Subjects Office at the number above.

If you agree to be in the study, please tell me now or we can arrange for a time to meet again after you have had a chance to consider your participation. We will schedule the study procedures at mutually convenient times. If you do not wish to be in the study, please let me know now or at any time. Thank you very much for your consideration of the study.

APPENDIX B – INTERVIEW SCRIPT

Theme 1: Work

What kinds of tasks are you expected to complete during the initial or design phase of a game? Pre-production phase? Production phase? Testing phase?

Can you describe a typical workday during each phase?

Can you recall any typical interruptions that occur during these phases? Atypical interruptions?

What would you say are the challenges or problems that you face when you work on a game project? What are the rewarding aspects of the work you do?

How much control would you say you have over the day-to-day work you perform?

What are your thoughts about working in a team on a project?

What are your overall impressions of (producers, designers, programmers, artists, audio, and QA) who contribute to the projects that you have worked on?

How do you typically communicate with other members of a project?

What are your thoughts about your working hours? Crunch times?

Have you ever presented an idea or concept for a new game or for an innovation to a game that was in development? If so, how were your ideas received?

Can you recall any moments in which you were particularly proud of the work you did on a project or a game?

Have there been times in which you thought that the game or project you were working on didn't allow you to be as creative or skilled as you could be?

Is there anything you do in particular to celebrate or mark the completion of a project?

What do you feel are the most important characteristics of creating a good game?

In relation to the work that you do on a project, what are the most important characteristics that you contribute to the overall creation of a good game?

How do you go about communicating this importance to other members of the project?

Theme 2: Culture

How did you come to work in the video game industry? What about your current occupation?

What role would you say video games had in your life before you began working in the industry?

Prior to working here, did you play the kinds of games that you now work on?

What is your overall impression of the working environment? Do you consider your working environment to be fun or a cool place to work?

How do you keep up with trends in the industry? What about trends in your occupation?

If you belong to a professional association (such as the IDGA), why did you join? What are the benefits?

What kinds of activities (such as office parties, game tournaments, etc.) arranged by the company do you participate in?

What kinds of activities or events does the company hold for employees to mark occasions when a project is completed or a milestone has been reached?

Can you describe whom you think of as a typical consumer who plays the games you have worked on?

Do you think about potential players when you are working on a game? If so, what sort of things do you consider in relation to the players?

What kinds of movies, music, television programs, literature, and video games do you consume during your leisure time?

What do you think about the overall video game industry in regards to the number of men who work on producing video games?

Why do think men seek employment in the industry?

In what ways, if any, do you think the working environment would be different if more women were working on game production?

Theme 3: Technology

How important would you say is computer technology to your job?

What do you think in general about the technology available to you to perform your job?

What software, middleware, or hardware do you use when working? Have these changed since you began working in the industry?

How do new technologies or technological upgrades (such as new software, middleware, hardware capacity, or game engines) affect your job?

How do you go about learning how best to use these new technologies in your job?

Can you tell me about any instances when technical limitations such as available memory or processing speed (hardware specifications) have limited what you can accomplish in your work?

If you were able to overcome these limitations, how did you do so?

Has there ever been a situation where new technologies were introduced that made your job easier? What about more difficult?

What role, if any, do you think technology has in making video games better than they have been in the past?

What do you think about using technology to make game content more realistic?

APPENDIX C – INTERVIEWEES

Creative Team

- Robert: Official title of Artist, lead 3D artist for franchise project, 12 years in the industry, credited on 13 game titles, white, male, late 30s, educated at an art institute in the eastern United States
- Doug: Official title of Artist, animator for franchise project, 9 years with the company, credited on 18 game titles, white, male, late 30s to early 40s, technical degree from an art institute in the eastern United States and B.A. in economics
- Larry: Official title of Artist, lead terrain artist for franchise project, four years in the industry, credited on 3 game titles, white, male, late 20s to early 30s, A.S. in graphic design and B.A. in Media Arts and Science from Midwestern university
- Foster: Official title of Artist, lead artist for franchise project, 8 years with the company, credited on 12 games titles, white, male, 30s, educated at the Pratt Institute (2 interviews)
- David: Official title of Artist/Animator, animator for franchise project, first year at the company and new to the industry after changing career as computer engineer, no game titles, white, male, 30s, online degree in animation
- Jose: Official title of Sound Designer, sound design and composing for classic remake project, 25 years in the industry, white, male, late 40s, credited on seven of the studio's game titles, graduate degree in music and BS in computer science

- Rebecca: Official title of UI Engineer, technical artist for classic remake project, two years in the industry, white, female, mid 20s, credited on one game title, four-year degree in digital entertainment program designed for game industry
- Ron: Official title of Artist, lead prototype artist for franchise project, three years in the industry, white, male, mid 20s, credited on four game titles, BFA from art institute (2 interviews)
- Vincent: Official title of Artist, lead interface artist for franchise project, 12 years in the industry, white, male, late 30s, credited on 12 game titles, BFA from art institute
- Ira: Official title of Artist, 3D modeling and animation for franchise project, four years in the industry, white, male, mid 20s, credited on three game titles, B.S. in computer animation
- Glen: Official title of Artist, concept art for franchise project, 16 years in the industry, white, male, late 30s to early 40s, credited on 19 games titles, degrees in advertising design and animation
- James: Official title of Sound Designer, composing and sound design for franchise project, five years in the industry, white, male, late 30s to early 40s, credited on nine game titles, classically trained musician and BFA in filmmaking

Technology Team

- Martin: Official title of programmer, lead programmer for franchise project, two years at the company after being part owner of a game studio, white, male, late 30s, credited on three game titles at company, degree in computer science

- Maurice: Official title of senior programmer, programmer for classic remake project, three years in the industry, white, male, late 20s, credited on two game titles, B.A. in computer science from a Midwestern university
- Ed: Official title of graphics programmer, graphics programmer for franchise project, one year in the industry after two years as an intern for the studio, white, male, early 20s, credited on two game titles, B.S. in computer science from an eastern university and working on master's degree
- Henry: Official title of graphics programmer, heading newly created programming tool support for all game projects, eight years in the industry, white, male, late 20s, credited on seven game titles, degree in programming at university in Canada
- Marco: Official title of software engineer, sound programming for classic remake project, two years in the industry, white, male, mid 20s, credited on one game title, degree in computer programming
- Gerald: Official title of programmer, systems programmer for franchise project, two years at the studio, white and American Indian, 30s, credited with two titles at the studio, degree in computer programming

Designer-Developers

- Chris: Official title of designer-programmer, lead designer-programmer for franchise project, three years in the industry, white, male, early 20s, credited on six game titles, degree in history
- Dennis: Official title of Game Designer, lead designer for franchise expansion pack project, 11 years in the industry, white, male, 30s, credited on three titles as designer, degree in criminal justice

Producers

- Todd: Official title of Producer, producer for franchise project, 11 years in the industry, white, male, 30s, credited on six game titles, worked nine years as a game software and hardware tester
- Carl: Official title of Senior Producer, producer for franchise expansion pack project, 11 years in the industry, white, male, 30s, credited with producing 7 game titles, worked six years as QA manager and associate producer

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