Game Design by Numbers:
Instrumental Play and the Quantitative Shift in the Digital Game Industry

by

Jennifer R. Whitson

A thesis submitted to the Faculty of Graduate and Postdoctoral Affairs in partial fulfilment of the requirements for the degree of

Doctor of Philosophy

in

Sociology

Carleton University,

Ottawa, Ontario

© 2012

Jennifer R. Whitson
Abstract

This dissertation chronicles ideological, technological and economic changes in the digital game industry, focusing on how games are transforming as play becomes instrumentalized. It pays particular attention to the struggles of developers as they search for creative freedom and autonomy in a risk-averse industry. It makes original contributions to the literature on games by situating and explaining industry-wide shifts in terms of the socio-economics of game development and the rationalities that drive individual developers. It contributes to social theory more generally by explaining how transformations in play, games, and creativity are linked to much wider adaptations in the operation of capitalism and how it is justified to both workers and consumers.

I use ground-level accounts from those within the game industry to describe how new media technologies interact with socio-economic forces, detailing the adaptability of capitalist modes of production in the face of critique. I show how definitions of 'games' and 'play' are changing as they come into contact with technology, allowing games to be reformulated in powerful new ways, so games are not only tools of entertainment but also tools of governance. I argue that the collective valuation of objective quantitative data and the belief in the fallibility of individual creative autonomy has turned game design into "design by numbers".

The complementary themes of this thesis are bound together by references to the "New Spirit of Capitalism" (Boltanski and Chiapello 2007, 2005), which explains how capitalism is continually reorganizing itself, adapting the language and spirit of 1960s counterculture and emphasizing freedom in order to drive though new, more efficient, work practices and more subtle forms of exploitation. This "New Spirit" accounts for the current upheavals in the game industry. Changes to the Spirit of Capitalism have initiated tectonic shifts, reforming the geography of the game industry and creating fissures in the landscape that allow new game sectors to emerge, while others struggle to avoid being buried. In turn, innovations from the game industry, particularly the emphasis on data-driven design, shore up the weaknesses in the New Spirit of Capitalism, allowing it to operate more successfully.

keywords:
digital games; game development; game industry; Instrumentalization of Play; New Spirit of Capitalism; governance; surveillance
Chapter 1. Challenges and Change in the Digital Game Industry

This dissertation uses ground-level accounts from those within the digital games industry to chronicle ideological, technological, and economic changes in the industry, focusing on how games are transforming as play becomes instrumentalized. It pays particular attention to the struggles of developers as they search for creative freedom and autonomy in a risk-averse industry. It makes original contributions to the literature on games by situating and explaining industry-wide shifts in terms of the socio-economics of game development and the rationalities that drive individual developers. It contributes to social theory more generally by explaining how transformations in play, games, and creativity are linked to much wider adaptations in the operation of capitalism and how it is justified to both workers and consumers.

I moved to Montreal in July of 2012, and from my office window could see the offices of Funcom. They had just released The Secret World, a game they had been working on for the last ten years. A few weeks later, amidst positive user reviews, Funcom was forced to lay off over half of their four hundred employees due to “cost adjustment” initiatives (Funcom 2012). My friends at the studio were suddenly, once again, looking for jobs, and those few still employed were wracked with survivors' guilt.

In the games industry, this is not a rare occurrence. From 2009 to 2012, console studios from around the world collapsed completely, including Bizarre Creations, Team Bondi, Black Rock Studio, Hudson Entertainment, Kaos, and numerous THQ Digital Studios including Phoenix, Warrington, and Australia (Dyer 2011; Plunkett 2012). Continued allegations of unpaid overtime, work weeks that exceeded 80 hours, and
exploitative working conditions plague the industry, despite repeated efforts to improve developers' quality of life (Crossley 2011c, 2011e; Remo 2010a; Sliwinski 2012; International Game Developers Association 2004).¹ These troubles extend to full-size PC and MMO² game studios, including 38 Studios, creators of Kingdoms of Amalur, who spectacularly defaulted on a $75 million loan from the state of Rhode Island (Curtis 2012).

In contrast, the mobile and social game sectors of the industry are booming. Market analysts report that revenues for the mobile entertainment industry alone will rise from $33.2 billion to nearly $38.4 billion in 2011 (Crossley 2011f), spurring fears about the death of the AAA console industry as game industry investors, and developers along with them, move to more hospitable realms (R. Fahey 2011b, 2012).

The digital game industry has fallen. A new games industry has risen in its place. This thesis chronicles the fall of the "Core" sectors of the industry, or what I simply call "Core", situating and explaining these shifts in terms of the socio-economics of game development. Employing social theory, I explain how transformations in play, games, and creativity are linked to wider adaptations in the operation of capitalist systems. Using data gathered from developer interviews, industry conferences, news sites, blogs, and other industry publications, I show how definitions of 'games' and 'play' are changing as they come into contact with technology, allowing games to be reformulated in powerful new ways, so they are not only tools of entertainment but also tools of governance. I

¹ A 2010 survey of 2,630 game developers found that, on average, developers spent over thirteen weeks a year in crunch mode (Remo 2010b). This meant that during crunch periods, instead of working a standard 40 hour work week, developers worked, on average, over 55 hours per week. This equates to working the equivalent of about five extra eight-hour, five-day work weeks per calendar year.
² "MMO" refers to a massively multiplayer online game.
explain how play becomes instrumentalized, highlighting the struggles of developers as they search for creative freedom and autonomy. I ultimately argue that the collective valuation of objective quantitative data and the belief in the fallibility of individual creative autonomy has turned game design into what I call "design by numbers".

1.1 Industry Upheavals

Long dominant, the console sector has become a lumbering dinosaur struggling to survive, while developers on the margins (e.g. Indies) and 'outsiders' (developers of social games, mobile games and what I will discuss shortly as "gamification" services) are experiencing growth and financial success. On their own, developers' accounts of industry upheaval and change are valuable as they chronicle an important phase in the short history of digital games. Details of these upheavals and the conditions that fuel industry-wide change are necessary to understand how new forms of games, forms that are premised on commodification and surveillance, have now become ascendant. Such accounts outline an ongoing battle between business and creativity that is fought within game studios, a battle that also takes place in 21st-century workplaces more generally, from boardrooms to factory floors. The depiction of industry upheavals in this thesis describes how economic and production models change as they move further from traditional, hierarchically managed workplaces, to agile networked modes of governance, detailing what these changes mean for both employees and consumers.

3 Consoles refer to the game hardware that primarily is used for playing digital games on a TV. The Atari 2600, the Nintendo, the Xbox, Playstation 3, and the Wii, are all popular game consoles.

4 The New Spirit of Capitalism promises to end this battle, showing how business concerns can work in parallel with creative endeavours; however, I argue that in the games industry these promises are largely false.

5 These upheavals continue the trajectory of flexible capitalism and lean production which started in the 1970's, but further extend the reliance on data collection and analysis as a method to predict fickle
These upheavals can be understood in terms of major trends that are challenging and changing the digital game industry, including:

1) The increasing viability of alternative revenue streams such as advertising and microtransactions, facilitating a shift from marketing games as a retail product towards a more long-term service-based orientation;
2) Changing models of production and distribution that challenge traditional distribution chains, thus lowering the barriers to entry to game development, increasing competition, and driving down game price points;
3) The rapid rise and unanticipated popularity of free-to-play (F2P) Casual games, particularly social games such as those on Facebook, and mobile games such as those played on iPhones; and,
4) The spread of non-game applications that capitalize on the feedback mechanisms and information infrastructures made popular by F2P games, and utilize them in real-world governance projects, hereinafter referred to as "gamification".

All of these trends are intertwined with each other, cross-pollinating and rapidly hybridizing in order to offer games to players at very little cost, while simultaneously turning sites of idle play into sites of economic production. While these upheavals have direct implications for the industry, game developers, and players, I will show how their impact is much broader as innovations developed and honed within the game industry filter outwards to other fields.

This thesis is dedicated to making connections between shifts in the political economy of the game industry, the influence of technological innovations, and my own sociological analyses of developers' day-to-day work. This thesis is bound together by references to the "New Spirit of Capitalism" (Boltanski and Chiapello 2005, 2007). Boltanski and Chiapello explain how capitalism is continually reorganizing itself, emphasizing freedom in order to drive though new, more efficient, work practices and more subtle forms of exploitation. This "Spirit", outlined further in Chapter Two, is

consumer desires and increase efficiency in the workplace.
important to this thesis because it accounts for the current upheavals in the game industry. Changes to the Spirit of Capitalism have initiated tectonic shifts, reforming the geography of the game industry and creating fissures in the landscape that allow new game sectors to emerge, while others struggle to avoid being buried. In turn, innovations from the game industry, particularly the emphasis on data-driven design, address pre-existing weaknesses in the New Spirit of Capitalism, allowing it to operate more successfully.

The Cité is an important concept in *The New Spirit of Capitalism* and is a recurring topic throughout this thesis. Cités present citizens with different notions of the common good, prescriptions on how to achieve it, and definitions of what is just *versus* what is unjust. Boltanski and Chiapello argue that, in the past decades, a new Cité has formed. The Projective Cité is oriented around the network - both in terms of modes of production, but also in terms of envisioning how the world and social relations work. The Projective Cité emphasizes lean enterprises, teamwork and customer satisfaction, and the vision of leaders (not managers) who inspire and mobilize their operatives. The ideal capitalist unit is portrayed as a self-organized team that externalizes its costs onto subcontractors and deals in the production of knowledge rather than the production of industrial goods. The Projective Cité, premised on networked modes of production, assures citizens that this is the ideal configuration of the workplace and that these changes in production serve the common good. This concept will be further explained in the following chapter. Before further introducing the theoretical framework of the thesis and its underlying structure, I will first show why games are an important topic of study,
provide a brief overview of game studies, and outline the central contributions of the thesis.

1.2 Why Study Games?

As summarized by Katie Salen and Eric Zimmerman, games and play in general have many important functions. These include serving as: a release of surplus energy; an expression of general exuberance or joie-de-vivre; an expression of aggression, anxiety or sex drive; youthful practice for adult life skills; a necessary context for exploration and experimentation; a vital means of socialization; and, a tool for self-expression and diversion (2004:309). For the progenitors of game studies, Johan Huizinga (1955) and Roger Caillois (1961), the larger social significance of games lies in the homologies between their structure and social forms, for example, between: "playing house" and keeping house, games of chance and the stock market, or team sports and military endeavours.

Following the work of Clifford Geertz (1973) and Brian Sutton-Smith (1997), Sara Grimes and Andrew Feenberg emphasize that play provides an essential opportunity to "reenact, transgress, and otherwise make sense of larger systems of social order" such as power relations, social hierarchies, etc., even if this reenactment is mostly symbolic (2009:109). This relates to two arguments I make about digital games in this thesis. Firstly, the "free movement" of play is increasingly restricted in digital games, and secondly, this reenactment of power relations and social hierarchies moves from symbolic to actual as games and players are made more productive.
Digital games are as important and influential as other media such as film and television, but have historically tended to fly under the academic radar. A potential reason for this is that game practices are often conceptualized as in opposition to the "real world" and "real life"; they are seen as virtual simulations that have little impact on outside reality.\(^6\) This academic radar only 'pings' with prominent recent public arguments that digital games have a negative societal influence, causing violence, fostering addiction, and promoting a retreat from reality (see Jayson 2011; S. Cunningham, Engelstätter, and Ward 2011; Alexander 2010a; Brightman 2011a; Strauss 2011; Orland 2011c; Collins 2011).\(^7\) However, restricting digital game research to psychological media effects studies on games and violence vastly underestimates and neglects the massive social and cultural importance of games outlined above. Setting games apart from the "real world" underestimates the significant role they have in our lives.\(^8\)

The growing size and economic impact of the digital game industry is reason alone to study games and their development. Individual games such as Halo 2 have earned phenomenal amounts of money ($125 million on its first day) (Barr, Noble, and

---

\(^6\) Vili Lehdonvirta (2010) shows the preponderance of the term "real world" in game studies articles and argues that game scholarship is based on a dichotomous "real world vs. virtual world" model that elides the real effects of games and the fact that game worlds frequently flow over and into non-game spaces. Most game scholars - even the ones she directly faults - would agree with her.

\(^7\) Some may speculate that this lack of attention is due to the relative newness of the game industry (the first commercial game console, the Magnavox Odyssey, was released in 1972), or demographics of game players (the assumption that only young boys are interested in digital games) and thus are unworthy of concerted study by "serious adults". However, I would argue that the relative lack of attention paid to digital games is due to their being classified as idle play, rather than a category of media that has 'real' artistic merit, such as books or cinema. Simply put, research grants for "sitting around and playing games" are a difficult sell. Not surprisingly, searching for a link between school shootings and games is more easily funded.

\(^8\) In my own writing, I have also struggled with the term "real world". However, despite its acknowledged flaws (Lehdonvirta 2010), no appropriate substitute has been accepted in game studies terminology. Accordingly, I maintain the use of "game world" and "real world", despite their obvious flaws, and my belief that these worlds actually feed into and bleed into each other. At the very least, the terms are an improvement over the "magic circle" that places play within a bounded space, entirely separated from reality (see Consalvo 2009b).
Biddle 2007: 281) and US revenues for the industry as a whole have been growing at a double-digit rate. Revenues recently eclipsed those of domestic film box offices, reaching $12.5 billion USD in 2007 (Fullerton 2008:xix) and $15.9 billion USD in 2010 (Entertainment Software Association 2010:10). Game development budgets take on Hollywood proportions. In 2007, the average Xbox360 or Playstation 3 console game budget was in the $13-30 million range (Fullerton 2008:423), while a few short years later, development and marketing budgets for games such as Modern Warfare 2 topped $200 million USD (Nieborg 2011:216). In terms of the commodification of the culture industry, games are a heavy hitter.

We should study games not only because of their economic impact, but also because they are a massively popular leisure-time activity. 72% of American households play computer or video games (Entertainment Software Association 2010:2). Youth in the United States spend an average of 20 minutes per day playing digital games, making games the second most popular form of entertainment after television (Fullerton 2008:xix). Contrary to public misconception, the average gamer is not a gawky preteen and teenager, but a thirty-seven year-old adult. In fact, women over the age of eighteen represent a significantly greater proportion of gamers (37%) than boys seventeen or younger (13%) (Entertainment Software Association 2010:3). The average age of players increases each year, evidencing that those who grew up playing games are likely to continue to play games throughout their lives.

---

9 There are multiple reasons to be wary about statistics from the Electronic Software Association (ESA), a lobby and consumer interest group that serves the American game industry. I justify my usage of them here given that the general trends they report are echoed by numerous other sources such as the NPD, Nielsen, Gartner, and EEDAR. More generally, independently verified statistics about the game industry are difficult to find (see Kerr 2006:46). However, the lack of academic statistics and preponderance of corporate ones exemplifies the argument that games are in need of greater academic study.
Finally, we should study digital games because - despite being historically villanized as promoting antisocial, violent youth - they are now increasingly framed in terms of their positive impact on socialization, education, and health. For example, according to studies from the Electronic Software Association, more than half of parents believe that games provide more physical activity now than five years ago, while over two-thirds of parents believe that gaming provides mental stimulation and education for their children. Games are also seen as a positive social force: 57% of parents believe that gaming helps their family spend time together, while 54% of parents believe that games serve a social function, helping their children connect with friends (Entertainment Software Association 2010:5). The role of digital games in our lives will likely increase: as of 2010, in the US alone, over 90% of children ages two to seventeen were gaming (approximately 64 million) - an increase of 9 points when compared to 2009 (Radd 2011a). As this thesis will demonstrate, digital games are an increasingly important topic of study and sociological lenses, in particular, can contribute to a deeper understanding of games and their role in each of these domains (economics, play and leisure activities, and socialization).

1.3 A Brief Overview of Game Studies

This central intent of this thesis is to examine how the New Spirit of Capitalism operates in the game industry, linking it to current trends in gaming such as the collapse of Core, and the emergence of new game sectors and economic models. I do not intend to map out game studies thoroughly as a field or recount the history of game development in an authoritative manner. Other authors have done this for me (Kline, Dyer-Witheford, and de
Peuter 2003). Accordingly, rather than providing a very detailed overview of all of game studies, in briefly reviewing game studies literature, I will paint with broad strokes, focusing on those works that have a direct relation to this thesis.

While the majority of popular literature on games is written by gamers and journalists, and despite the tendency of games to fly under the academic radar as noted above, recently the field of game studies is growing and attracting increased scholarly attention. Game studies spreads across many disciplinary divides, including media studies, sociology, anthropology, psychology, human-computer interaction (HCI), engineering, computer science, and economics, to name just a few. This scholarly attention has multiple branches. The first examines the nature of digital games and play. This body of work draws upon broader scholarship on games and play to define what constitutes a game, more generally (Caillois 1961; Huizinga 1955; Avedon and Sutton-Smith 1971; Suits 1967), and a digital game,\(^{10}\) in particular (Salen and Zimmerman 2004; Juul 2005). Defining games and play promotes the categorization of forms and genres of digital games, as well as provides the groundwork for a more systematic analysis and design of digital games (Juul 2005; Consalvo and Dutton 2006; Salen and Zimmerman 2004).\(^{11}\)

For the purposes of this thesis, I draw from Bernard Suits and define a "game" as a voluntary attempt to overcome unnecessary obstacles.\(^{12}\) To be more precise:

\(^{10}\) Following Kerr (2006), I use the term ‘digital games’ to encompass PC games, console games, handheld and cell phone games, online games and virtual worlds. In the context of this thesis, it is used interchangeably with ‘video games’.

\(^{11}\) A number of textbooks for aspiring game developers help define games and play. For example, see (Crawford 1984, 2003; Fullerton 2008; Schell 2008)

\(^{12}\) Similarly, Jesper Juul defines games according to six necessary and sufficient conditions. Games are: 1) a rule-based formal system; 2) with variable and quantifiable outcomes; 3) where different outcomes are assigned different values; 4) where the player exerts effort in order to influence the outcome; 5) the
… to play a game is to achieve a specific state of affairs [prelusory goal], using only means permitted by rules [lusory means], where the rules prohibit use of more efficient in favour of less efficient means [constitutive rules], and where the rules are accepted just because they make possible such activity [lusory attitude]. (1978:41)

Games are intrinsically valued activities, with rules and goals that are voluntarily accepted by players. This does not preclude players from negotiating said rules and goals. Without intentionality on the part of players (i.e. the prelusory goal of wanting to play a game), however, the game ceases to be a game. Play must be entered voluntarily, as an end in itself. For example, if workers were forced to play a pirate game as a condition of their continued employment, their actions would no longer be considered playing a game.

As William Robinson points out, this freedom of choice is a key element of games and play. He uses Mark Twain to illustrate this point:

Mark Twain offered a similar insight into play in his book *The Adventures of Tom Sawyer*: “If [Tom] had been a great and wise philosopher, like the writer of this book, he would now have comprehended that Work consists of whatever a body is obligated to do, and that Play consists of whatever a body is not obliged to do”. (2012:32)

I draw from Salen and Zimmerman to define play (2004). They organize play behaviour into three categories. *Game play* is the formalized interaction that occurs when players follow the rules of a game and *ludic activities* are non-game behaviours, such as children tossing a ball in a circle, in which participants are "playing". Thus, game play is a subset of the larger category of ludic activities. *Being playful* extends even further, encapsulating both game play and ludic activities. It is the state of being in a playful frame of mind, injecting the spirit of play into some other action. Salen and Zimmerman define play

---

player feels emotionally attached to the outcome; and, 6) the consequences of the activity are optional and negotiable. For an extended discussion on why Suit's definition is preferable to Jesper Juul's more structuralist definition (2005:6–7), please see (W. Robinson 2012).
itself as "free movement within a more rigid structure" (2004:311). Play emerges both 
*because of* and *in opposition* to more rigid structures, such as rules.¹³

The digital games industry is relatively young. Rooted in the post-World War II 
military complex, it was only effectively commercialized in the 1970's when companies 
such as Atari and Magnavox brought consoles into homes. Academic work on the history 
of the industry often focuses on the console sector and is told from the perspective of 
network effects and externalities¹⁴ in the 'console wars' (Schilling 2003; Mateos-Garcia et 
al. 2010; Shankar and Bayus 2003; D. Williams 2002; Clements and Ohashi 2004; Afuah 
and Grimaldi 2005). These accounts of each of the seven console generations evidence a 
processing power arms race, where each new console attempts to outdo its predecessors, 
first in terms of processing power, marketed in terms of bits, then in terms of processor 
speed, graphics, bandwidth, and memory size.

The cultural history of console and PC gaming is recounted in book-length 
accounts written by journalists, including Leonard Herman (1997), J.C. Herz (1997), 
Steven Poole (2000), Steven Kent (2001), Tristan Donovan (2010), and Harold Goldberg 
(2011), to name just a few. This body of work includes historical accounts of specific 
console manufacturers, such as Nintendo (see Sheff 1993) and Microsoft (see Takahashi 
2006). In academic circles, Stephen Kline, Nick Dyer-Witheford, and Greig De Peuter 
provide an extensively detailed history of the game industry from its roots in the military,

---

¹³ For example, a play on words such as a riddle or pun exhibits *playful* behaviour, working within the 
rules of grammar to carve out a space of play, such as an unexpected punch line. As we will see in 
Chapter Seven, developers exhibit a playful attitude about their own work, playing within the 
technological constraints determined by their hardware and software tools.

¹⁴ "Network effects" describe how the value of a product or service is dependent on the number of others 
using it. Accordingly, in the game industry, accounts of network effects emphasize the struggle to 
attracted the largest market share of players, as well as attract a large stable of developers to publish 
more and more games.
through the rise of arcade gaming in the 1970's, to the growth of the console industry in the 1980's and onwards (Kline et al. 2003).

Beyond the history of digital games, one of the oldest branches of game studies explores the relationship between games and other media. There are two ‘sides’ to this research: the narratology side which seeks to link digital games to other media such as literature, theatre and film (Aarseth 1997; Murray 1997; Ryan 2004; A.R. Galloway 2006; Brenda Laurel 1991; Bolter and Grusin 1999) and the ludology side which seeks acknowledgement of the unique characteristics of games - especially their formal elements and rules (Juul 2005; Frasca 2001; Bogost 2007). Both sides assess the utility and drawbacks of applying theories and methodologies from other fields to the study of digital games.

Yet another branch of game studies analyses games in the context of learning and literacy (Gee 2007; Squire 2003), and highlights the way in which games cultivate skills and knowledges, such as those suited to the information workforce (Yee 2006b; Dibbell 2006).15 It engages in a much larger debate about how games inculcate values and behaviours, the latter of which potentially include both positive and negative behaviours, such as increased problem solving ability on the one hand, and addiction and aggression on the other (Jenkins 1999; S. B. Johnson 2005; Cover 2006). This vein of game studies has attracted the most controversy and media attention. While most often framed in the context of media effects and potentially detrimental impacts of games, there is increasing emphasis on how games might be leveraged to promote real-world change (McGonigal 2011).

15 I include the work on games for health, and ‘serious’ and ‘persuasive’ games in this category.
Another branch of game studies examines the production of digital games using a political economy lens. This work highlights the industry of digital game production, its linkage into a larger "military-entertainment" complex, software labour and development practices (Kline et al. 2003; Dyer-Witheford and de Peuter 2009), and the shift of players from consumers to co-producers that comes with the popularization of end-user content (Terranova 2000; Kücklich 2005; Humphreys 2005; Sotamaa 2007). Related work on the production and business of digital games comes from many fields, including geography (Johns 2006), sociology (Kerr 2006), political economy (Nieborg 2011), and management and organizational studies (Tschang 2005; Readman and Grantham 2006). This thesis extends and builds upon this branch of game studies.

Despite the richness and breadth of academic game research, there are gaps in the game studies literature. The majority of social science and humanities research is on players and on the content of games. Researchers rarely address the process of making these games. Questions of why they are made, who makes them, and how they are made go unanswered. The role of developers and their influence on how we play is overlooked. It is part of the ‘secret life’ of game software that is hidden from players. As designer Brenda Brathwaite argues, a historical understanding of the people behind games is even absent in game development programs:

Similar comparisons could be made to an architecture student who knew nothing of Frank Lloyd Wright, or an art student who could not identify Michelangelo but was totally aware of the majesty of the Sistine Chapel. ...

---

16 The term "end-user content" is used in the field of game development to refer to content that has been created and produced by players rather than game company employees. Examples include clothes and accessories in Second Life, mods in World of Warcraft and complete levels in Little Big World.

17 Ethnographies of game developers are rare (Banks 2009; Malaby 2009; O'Donnell 2008), but can be supplemented by a number of first-person accounts from industry insiders. For example, see (Morningstar and Farmer 1991; B. Laurel 2001; Koster 2002; Bartle 2004; Stone 1995).
However, I regularly encounter graduates of game programs who know nothing of game history. They can talk about Final Fantasy, DOOM, the Sims, Age of Empires, and WoW, and acknowledge them as foundational in some way, yet they know nothing of the key minds behind these same games. (2011c)

While it is important to study developers in terms of their influence on cultural production, the need to study the secret life of software goes even further.

This secret life is what goes on behind the scenes - the labour of countless people that is hidden within game discs and digital files and shapes how players learn, play, and behave. It includes the social practices that influence video games’ construction and operation, and the political, economic, and social conditions that are embedded in their design and implementation. Because of the significant influence of games in our lives, this secret life should be the focus of increased academic scrutiny. If this is not enough reason to study games, developers are not just interesting for their own sake, but present cases to learn about broader social trends and issues, such as how capitalist ideologies shape the production of technology and workplace organization, thus harnessing worker creativity more tightly than ever before.

The ‘secret life’ of game software should no longer be kept secret. Software in general, and games in particular, play subtle roles in governing users. Yet they are a black box. We live significant portions of our lives "inside" games, apps, and websites. Software shapes, constrains, and configures our everyday lives, from our language, to our socializing, to our employment and beyond.\(^\text{18}\) It only makes sense to study how this

---

\(^{18}\) I take a parallel approach to platform studies, which uses game code as a primary site of analysis to investigate how the hardware and software constraints of game platforms shape creative expression (Montfort and Bogost 2009; Jones and Thiruvathukal 2012; Maher 2012). In comparison, I use the discourses of game developers as a primary site of analysis to investigate how socio-economic constraints shape creative expression.
software is created, the various forces (technological, social, economic) that shape what games do, and the visionaries - as well as drudge workers - that bring games to life.

This thesis follows the political economy branch of game studies, providing industry overviews of the digital game landscape, and explaining how economic constraints, market pressures, and labour concerns influence the forms of digital play. Political economy accounts take a macro approach in their analyses, focusing on histories of the industry, statistical accounts of its growth, demographic analyses of player populations, and executive reports of profits and future corporate trajectories. This thesis diverges from political economy approaches by intertwining the macro-level analysis with the micro-level narratives from 'ground zero' of the digital games industry - developers themselves. I argue that digital games, like any other technology, are socially constructed artefacts that emerge from a complex process of negotiation between various human and non-human actors.19 Thus, digital games cannot be understood without attention to the economic systems from which they emerge and the political, social and cultural contexts in which they are produced and consumed. Accordingly, while the game industry cannot be understood as separate from its economic context, it also cannot be understood without attention to the social actors that give it shape and the cultural forms that it produces and operates within. Moreover, understanding current shifts in the game industry can tell us about wider shifts in economy and society, particularly in relation to the New Spirit of Capitalism.

19 Two key elements make games unique from other technologies. Firstly, they are voluntary. For example, unlike word processors, players do not need games to accomplish a task. They are there to be entertained. Secondly, unlike other entertainment media, games are directly interactive. Unlike film, the game depends on the player's input. Balancing these two elements (voluntary and interactive) means that developers carry a much heavier burden than both software developers and media producers, in terms of predicting what players will do and keeping players continually engaged with the system.
1.4 Thesis Overview

Broadly, this thesis is about economic shifts in the game industry, starting with an overview of the traditional modes of production in Core game sectors, and then moving towards new and emerging Casual games sectors, such as social and mobile games. I argue that shifts in the game industry, particularly the unpredicted rise and success of Casual games since 2009, can be explained by the New Spirit of Capitalism. In turn, an examination of how the New Spirit of Capitalism operates in the game industry shows how modes of capitalism have adapted in ways much different from that predicted by Boltanski and Chiapello.

1.4.1 Part I. Theorizing and Researching Game Development

Chapter Two: The New Spirit of Capitalism in the Game Industry

Chapter Two provides an overview of The New Spirit of Capitalism. I outline the arguments of Boltanski and Chiapello (2007) who, in turn, draw upon Max Weber to describe how, at different historical periods, there are different "Spirits" that moralize and legitimize capitalist endeavours. Each "Spirit" is a configuration of a plurality of Cités, which present citizens with different notions of the common good, prescriptions on how to achieve it, and definitions of what is just versus what is unjust. I outline the emergence of the Projective Cité and the decline of the Industrial Cité, showing how they apply to contemporary shifts in the game industry. I then critique various aspects of Boltanski and Chiapello's formation of the New Spirit of Capitalism, but show how these critiques may
be addressed by evolving the theory in order to provide a more nuanced account of the
game industry than that provided by Dyer-Witheford and de Peuter (2009).

Chapter Three: Games, Gamification, and Governance

Chapter Three jumps forward, in a sense, to show how the industry upheavals
documented in this thesis have impacted the wider world outside of games. I argue that
gamification is a paradigmatic example of the New Spirit of Capitalism, wherein game
spaces become sites of governance, all time is productive, and all work is play. To link
governance projects to the New Spirit of Capitalism, I draw on Foucauldian
governmentality studies, particularly Nikolas Rose's work on governing through freedom
(1999). Gamification governs through freedom, developing the subjectivities of an
idealized networked citizen who, even in their leisure time, is focused on self-

improvement. Play becomes an instrument of governance, a tool to master and reshape
one's self, rather than an end in itself.

In this chapter, I first define the concept of "gamification", showing how the
analytics practices honed by the game industry are applied to non-game online contexts. I
argue that the data collected from playing the ‘game’ is used to encourage changes in
real-world behaviour and a playful care of the self based on quantitative metrics and
automated feedback practices. Gamification measures are applied to a wide arrangement
of activities, from self-improvement projects, to education, to marketing, to financial
management. Yet, as demonstrated with the case study I analyse in the last half of the
chapter, the values these gamification processes represent remain the same, rooted in
instrumentalized play and further promoting, competition, advancement, accumulation,
and efficiency.

**Chapter Four: The Instrumentalization of Play**

If play is supposed to be inconsequential, how did we get to gamification and games as tools of governance? The following chapter explains the history of governance and games and the roots of gamification, outlining the ideological preconditions that must exist for gamification to exist. It traces changing notions of play, and the ideological shifts in how games are thought about that allows the New Spirit of Capitalism to influence leisure activities, leaving little room for the (unproductive) play of old.

I begin the chapter by relating the instrumentalization of play to larger rationalization and instrumentalization processes, noting how these processes take a specific form in the game industry. I then provide a review of how "instrumental play" has been defined by game studies scholars. My analysis draws from three notions of instrumental play: instrumental play as first introduced by T.L. Taylor (2003, 2006b), and then later reworked by Miguel Sicart (2010), and the instrumentalization and rationalization of play (aka the “ludification theory”) proposed by Sara Grimes and Andrew Feenberg (2009). I detail how play changes as it becomes rationalized, and in turn, how playful moods, game mechanics, narrative devices and the aesthetics of games are increasingly applied to everyday governance. While the preceding chapters take a largely player-centric view, the remaining chapters of the thesis focus on developers, and provide more in-depth detail about industry-wide shifts.
Chapter Five: Researching Game Development

This chapter further outlines the paucity of developer-centric research, highlighting the need to research game development in much greater depth, exposing the heterogeneity of the industry and the complex roles of developers. This call for research is often stymied by the difficulty in gaining access to what is an intensely secretive high-tech industry. Accordingly, the remainder of the chapter focuses on my methods for both data collection and data analysis, explaining how I tracked and charted industry changes over time and interpreted these changes. I make comparisons to the methodology of Boltanski and Chiapello (2007, 2005), drawing parallels to their work, but also highlighting certain dissimilarities. In particular, instead of relying on management literature, my data sources pay particular attention to the "great men" and voices of the industry who work to define and solidify the justificatory regimes of developers, defining which innovations to embrace versus which to resist.

1.4.2 Part II: The Game Development Landscape

In Part II of this thesis, I argue that in order to understand the instrumentalization of play, what this means for both developers and players, and how this relates to the New Spirit of Capitalism, we must first understand how game development works, particularly the economic influences that effectively determine what forms of games get made, how they get made, and who makes them. Accordingly, the next chapters provide an overview of the game industry. To understand the massive shifts in the game industry, we must travel to the epicentre of the industry: Core console development.
Chapter Six: Console Developers: Cogs in a broken machine

In this chapter, I further define the divide between Core and Casual game sectors, linking Core development to the Second Spirit of Capitalism, and hierarchical production models. I provide a brief overview of the console sector, reviewing how console games are made, the role of developers in making games, and the instrumental pressures that shape what forms of games are ultimately published, making brief parallels to other culture industries such as film. Primarily using economic analysis, I explain why the console industry is contracting in the face of massive upheavals. Developers are the creative force behind games - conceptualizing, designing, and coding our spaces of play. But in the larger chain of console development they are a small cog in a rationalized production cycle, occupying a subservient position in contrast to publishers and manufacturers and bargaining from an undesirable negotiating position. In this sense, Console development epitomizes the (outmoded) Industrial Cité.

Chapter Seven: Maintaining the Machine: Game developers and Core culture

This chapter provides the human counterpart to the preceding socio-economically focused chapter. Instead of presenting developers as exploited dupes, or victims of technological determinism, I highlight how they take active roles in maintaining and propagating the industry that often exploits them. While Chapter Four detailed player-centric accounts of instrumental play, this chapter starts with the work of Casey O'Donnell, showing how developers themselves - much like power gamers - embrace an
instrumental play of their own. I highlight the role of Core culture, emphasizing how developer communities of practice take an active role in resisting change. Despite this resistance, the increasing rationalization of creative production and the constraints imposed by publishers and console manufacturers are pressuring developers to explore new modes of development. While developers may not be victims of technological determinism, the forms of games they make are shaped by economic concerns. New modes of development are framed in alignment with the New Spirit of Capitalism, promoting efficiency and productivity as well as autonomy.

Chapter Eight: Blueprints for New Machines: Shifting landscapes of game development

Panning out from the Console epicentre, Chapter Eight examines how the larger industry is evolving from the landscape depicted by Aphra Kerr's 2006 industry overview in response to the pressures of console production. The chapter provides a "lay-of-the-land" of the larger game industry constellation, introducing and defining two polarized territories of game development: Core sectors, comprised of Console, PC, MMO and indie games, and Casual sectors, comprised of casual, social, and mobile games. Fuelled by the affordances of online connectivity, this chapter explores the adaptation of Core sectors in response to digital distribution, and details the emergence and rapid growth of the Casual sectors due to alternative revenue models that alleviate the economic constraints currently epitomizing Core production. I situate these shifts within the Core sectors as displacements in the Spirit of Capitalism. The New Spirit of Capitalism
innovates with critique, revitalizing traditional sectors. Ultimately, the territorial divides between Core and Casual are blurring as each side mimics and adapts successful strategies from their competitors.

1.4.3 Part III: Welcome to the Projective Cité

In order to mitigate the financial risk of Core game production, ever more constraints are placed upon developers until routes for creativity - experimentation and iteration in particular - are stifled. Facing these constraints, the lack of creative freedom, and the accompanying conditions that follow, Core developers look for escape routes, abandoning the Industrial Cité for the Projective Cité. However, as I argue in Part III, these escape routes come with constraints of their own. And, because the Projective Cité seems to address many of the critiques of the Console sector (unwieldy hierarchies, restrictive management, lack of agility), developers have no ground left to stand on in terms of resistance.

Chapter Nine: New Economies of Play: Casual, social and mobile games

Chapter Nine is a case study of social games, comparing how they address many of the artistic critiques of Core developers. I compare the traditional economic models of console development with the new revenue streams utilized by social games, highlighting the prevailing socio-economic conditions that spur revolutionary shifts towards Casual games. Hoping to escape the constraints of the Core sectors, developers have flocked to their development.
While promising developers more freedom, games from these emerging sectors are actually closely tied with the instrumentalization of play, both in terms of users' play, but also in terms of the play of developers themselves. Play and creativity are increasingly quantified and put to instrumental purposes that are predicated upon feedback and closely monitoring and channelling players' actions and developers' iterative design responses in order to reduce the financial risk inherent in game development. By determining what players spend time and money on, developers rationalize production and avoid wasting resources on other assets or mechanics. Ideally, this reduces financial risk and allows developers to experiment with new and innovative game ideas. In practice, however, I show how gameplay and game development in emerging sectors is highly scripted and constrained.

The chapter draws on work from the *New Spirit of Capitalism* to show how capital adapts and responds to criticism, fostering new work practices and more successful and subtle forms of exploitation. As game development focuses increasingly on selling an online service rather than a one-off game, the work of developers becomes increasingly rationalized, and play more closely parallels the modes of productivity detailed in Chapter Three. Creating games, much like playing them, becomes a numbers game.

**Chapter Ten: Game Design by Numbers**

Chapter Ten investigates how one particular technology, metrics, has transformed game development in terms of what game design looks like, how developers exercise their
creative autonomy, and how human subjects are conceptualized and governed. I show how the adaption of data management technologies and predictive governance projects have wide-ranging impacts on the Projective Cité that extend far beyond the games industry. Because metrics address many of the drawbacks of the original New Spirit of Capitalism, they are an ideal case study to example how capitalism rapidly adapts.

Instead of creative production remaining the domain of game designers, game development becomes directed by quantitative analytics. This reliance on numbers re-introduces the rationalization that was rejected by the Second Spirit of Capitalism. Because metrics come from the bottom-up (i.e. are gleaned from player data) and not the management hierarchy, they are less open to critique. When this is coupled with the industry-wide valuation of objective data over subjective feedback (on the part of players, developers and publishers alike), there is increasingly less space to critique this more extensive and pervasive form of rationalization. Accordingly, the play spaces that should ostensibly be free from rationalization and capitalism, exhibit a level of level of commodification and control that is unprecedented.

Chapter Eleven: End Game

Chapter Eleven ties together the key arguments of each chapter into a broad narrative of change in the digital game industry. It highlights the central takeaways for those interested in applying the lessons of the game industry more broadly, emphasizing data-driven design as a corrective to the failures of the Projective Cité, and highlighting how capitalism is strengthened in the face of critique. The chapters in this thesis offer an
explanation of the unpredicted shifts in game development, shedding light on the influence of metrics in revitalizing the industry, but also pointing out the potential negative impacts data-driven design has for creative autonomy and human subjectivity. I conclude with a few thoughts about the future of game development.

Works Cited


utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+GamasutraNews+%28Gamasutra+News%29


Gamasutra. Retrieved February 7, 2011, from
utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+GamasutraNews+%28Gamasutra+News%29


Retrieved June 2, 2010, from


