Introduction

In the past decade, the game industry’s processes, platforms, and production models shifted dramatically. Access to free and low-cost tools significantly diminished the time, resources, and labor required for game development (Whitson 2012, Kerr 2017). Inexpensive digital distribution on platforms such as Steam and Google Play now allows small teams to bypass traditional gatekeepers, from console manufacturers to publishers and brick-and-mortar retail distributors. Simultaneously, to the initial surprise of many console industry insiders, mobile and casual games experienced rapid and continued growth. Together, these shifts promote new economic models premised upon platform capitalism, attention economies, and games-as-a-service, of which free-to-play (F2P) mobile games are exemplary. As part of these industrial transformations, small-scale game development teams have proliferated, fueled by utopian claims that “anyone can make games” (Anthropy 2012) and that development has effectively been “democratized.”

Challenging such claims, this article examines how new production models in the game industry introduce new forms of exclusion and gatekeeping. As developers move to mobile and online platforms, my research asks: Does developing for such platforms lead to more creative, autonomous, and economically sustainable work? And if so, how, and for whom? In particular, I set out to assess the extent to which emerging production models resolve developers’ earlier critiques of the dominant AAA console industry, which allows us to situate game development within a larger set of workplace transformations across “creative industries.” Based on
ethnographic research with a small game development team, I argue that the movement of game development from large-scale AAA production towards small team development work exemplifies key aspects of what Luc Boltanski and Eve Chiapello (2007) theorize as the “New Spirit of Capitalism” (NSC). Small-scale game development seems to promise access to autonomous and creative work, which is perceived to be lacking in the hits-driven, risk-averse AAA industry. The ability to develop games in small teams is, however, commonly underpinned by metrics and analytics, with teams engaging in what I refer to as “data-driven design.” My research reveals that data-driven design, rather than creatively liberating mobile and indie developers or expanding access to game development, can restrict creative autonomy, exacerbate the burden of risk on developers, and reinforce existing market and gender inequities.

This article links the micro-level experiences of one studio’s data practices to macro-level social theory. Efforts to theorize contemporary work and economic dynamics deploy various buzzwords, such as post-Fordism, post-industrialization, network society, liquid modernity, information society, new economy (see, for example, Gill and Pratt 2008). Each of these categories intersect with the condition of precarity, where workers are expected to trade job security in exchange for more autonomous, creative labor (Whitson, Simon, and Parker 2018). Offering a framework to conceptualize this trade off, Boltanski and Chiapello (2007, 22-4) argue that forms of capitalism and critiques of its practice coevolve alongside dominant justificatory regimes, or “Cités,” which define the “good life” and how to achieve it. They identify three “spirits” of capitalist workplace organization: first, the family-owned businesses described in Weber’s (1930) *The Protestant Ethic and the Spirit of Capitalism*; second, the Fordist factories of the twentieth century; and third, the decentralized, lean, and agile networked companies of the current period. While the second spirit prioritizes job security, efficiency, and hierarchical
advancement through meritocracy (a set of values which Boltanski and Chiapello associate with the “Industrial Cité”), firms in the third spirit, the “new spirit of capitalism” (NSC), valorize flexibility, adaptability, and less-defined occupational roles (values which they associated with the “Project-ive Cité”), qualities that are exemplified in small, autonomous teams, even if the teams are based within larger firms.

Conceptualizing recent shifts in the game industry in relation to these “spirits” helps us to contextualize developers’ critiques of the AAA sector, unpack the allure of small-team development, and explain developers’ commitment to new labor systems, even where these systems might be marked by precariousness. According to Boltanski and Chiapello, a new Spirit emerges as capitalism adapts to workers’ critiques of a previously dominant Spirit. This process gives rise to new forms of workplace organization and profit generation, which are endorsed by a new underlying value system. Each shift in Spirit justifies itself by claiming to offer new freedoms to workers and to be fairer or more just than what preceded it. For example, the shift to the bureaucratic, scientifically-managed factories of the second Spirit responded to the inefficiencies and injustices of mom-and-pop shops (e.g., nepotism, mismanagement), while rationalized mass production made capital accumulation more efficient.

Boltanski and Chiapello’s second Spirit and the “Industrial Cité” resonate with console game development. Large firms leverage specialized skillsets and contribute assets to game production pipelines that require years and millions of dollars to complete. However, the size and output of console-focused game firms fuel developers’ critiques that large studios and publishers are hits-driven, risk-averse, and heavily reliant on sequels and licensed annual sports franchises (Kerr 2017), factors which ultimately limit developers’ individual creative autonomy. This critique positions small-team, mobile development as “greener pastures.” In contrast to console
development, which has largely failed to become more agile and creative (Hodgson and Briand 2013), the ideal work unit of the NSC is portrayed as a “lean,” self-organized team that is flexible, creative, organized by projects, features few hierarchical levels, externalizes costs to subcontractors (e.g., outsourcing, third-party service providers, contract work), and focuses on providing services rather than producing industrial or retail goods.

The NSC and Projective Cité align with the contemporary mobile and indie game industries as they experiment with new revenue models and digital platforms to release games made by smaller teams, on lower budgets, and in shorter timespans. The Industrial Cité represents what many developers are struggling to leave behind: an over-dependency on formulaic console games that require expensive hardware, multi-million dollar budgets, massive teams, and years to develop. For Boltanski and Chiapello, critique plays a dual role: in direct response to critique, capitalism endogenizes, adapts, and strengthens its operations. In doing so, it reshapes itself into less-objectionable forms, thus heightening resistance to similar critiques in the future. Importantly, a critique of unstable livelihoods is more difficult to express when the value systems that justify capitalism change—when, for example, Projective Cité values of autonomy and self-determination are privileged and displace Industrial Cité values such as career stability and job security. Critique’s previous foundations and discursive tactics are unsettled in new, unfamiliar moral ground. For example, if developers collectively value the flexibility to set their own hours and regularly move to new, challenging workplaces, then a critique centred on a lack of job security will fall flat. Creative autonomy and the ability to work on “passion” projects in small teams of artists, designers, and programmers are deemed a reasonable trade-off for long-term jobs and predictable wages (Whitson, Simon and Parker 2018; McRobbie 2016).
Boltanski and Chiapello track changing discourses in management texts in the twentieth century to identify capitalism’s shifting values and Spirits. In contrast, I conducted an ethnography of game development teams in an incubator for game studios to learn what labor under the NSC looks like and whether promises of creativity and more equitable access to game development careers are realized. From 2012 to 2014, I followed nine “incubating” teams, taking part in their daily lives, including observing email and online communications; participating in team selection, meetings, training sessions, and socials; and interviewing team members. This article focuses on one studio, referred to using the pseudonym Aquarius, but their experiences were largely representative of the other studios I followed.

**Discourses and Realities of Data-driven Design**

For Aquarius, data-driven design promised to reduce the risk of a small development team “going it alone.” The “democratization” of game design enabled by free and easy-to-use development tools and digital distribution platforms removes traditional barriers to entry and gatekeepers, such as publishers and console manufacturers, leading to a creative flourishing of games and small development teams. But this optimistic narrative comes with new challenges for developers: How do you get your game in front of audiences that are saturated with choice and accustomed to endless free content? How do you find a community of loyal players and thus sustain a career making games? Data-driven design promises answers to these questions, telling developers what players want and how to design for them, thereby reducing the market risk of cultural production. Most developers now integrate elements of data-driven design in order to increase player retention, revenue, and the reach of their games. However, as I demonstrate in this section, a deeper examination of data-driven development practice reveals how financial, temporal, and human resources required for successful data integration act as new gatekeepers,
ultimately reinforcing power structures and gendered demographics that have traditionally characterized the game industry.

Revenue from mobile games is not generated from an initial purchase but rather in-game advertising and micro-transactions—tiny and repeated purchases such as spending a few dollars to acquire virtual goods, access new levels, or bypass tedious, repetitive play (Nieborg 2017). Many F2P games are predicated upon an economy of scale, namely attracting millions of players, only a small percentage of whom (i.e., two to five percent) “convert” to paying players (Kerr 2017, 175-6). These games heavily rely on data to improve the game design; to track and enhance advertising revenue; to collect data that may be commodified and sold (Nieborg 2015); and to identify, target, and cater to a small percentage of players, pejoratively referred to as “whales,” that spend above-average amounts in games. While some successful F2P developers eschew this practice (Holmes et al. 2017), widespread mobile design convention emphasizes learning more about “whales,” and about those who, with the right design incentives, might become “whales.” Data-driven design ostensibly allows developers to leverage player networks, tracking player behavior longitudinally and in near-real time to create psychological profiles from playing and purchase habits, friends lists, chat logs, and non-game activities, generating insights which developers use to predict future spending, tailor marketing messages, and influence future behavior.

As a condition of acceptance into the incubator where I conducted my research, the first cohort of teams had to make F2P mobile games, which require extensive use of third-party data analytics software and services. Aquarius worked with approximately ten analytics providers across three categories:
• **Platform analytics** tools (e.g., iTunes, Google Play Track, AppAnnie) help developers learn about their players, tracking how many people install a game, how it is reviewed and ranked in comparison to other games, and player demographics.

• **Player analytics** tools (e.g., Flurry, Unity Analytics) collect in-depth player data, including new versus returning players, frequency and duration of play, location, device, and in-game behavior (e.g., difficult challenges, levels attained, types of in-game purchases).

• **Advertising and user acquisition** tools (e.g., Chartboost, Vungle, Facebook API) allow developers to increase advertising effectiveness, tracking the placement and performance of ads for their own game as well as income generated from in-game ads (e.g., impressions, click-thru-rate).

Rather than enabling small agile teams, Aquarius’ experience working with data-driven design suggests that the human, temporal, and financial resources necessary to implement analytics favor large firms with deep financial pockets and extensive technological skills, replicating many of the adverse conditions associated with AAA development.

**Human Resources**

Analytics tools promise to offload and outsource labor, yet they demand considerable technical and business proficiency to implement, integrate, and interpret. These skills create new literacies of exclusion. Data proficiencies commonly require post-secondary degrees in computer engineering and data science, fields that are masculinized, have fewer female graduates, are sex segregated, and command higher salaries than other developer roles (see Graft 2014; Hesmondhalgh and Baker 2015; Misa 2010). While three of Aquarius’ five members were engineers, integrating tools’ software development kits with the Application Programming
Interfaces of digital platforms took weeks from a months-long development schedule, and it required extensive technical knowledge to debug software errors. For example, every iOS update resulted in software incompatibilities and crashes, requiring time to first debug the problem and then salvage corrupted data. Aquarius also required a full-time expert to analyze the data. Her salary would normally be out-of-reach for Aquarius, but the incubator, operating on its own economy of scale, hired a data analyst to share between teams. This analyst spent countless hours cleaning otherwise impenetrable data streams, combining them into actionable information.

Temporal Resources

The time to implement analytics is a resource not equally available to all development teams. In order to make data “actionable”, numerous data streams must first be collected, cleaned, combined, and then “mined for insight”. Only then can design changes be implemented and the game updated. Yet updates must be completed nearly immediately following release, or a team risks a precipitous drop in game downloads. It is in this “live” stage of a game when the team entered perpetual crunch mode, working overtime to update the game in hopes of attracting enough players before disappearing from app stores’ front pages.

Financial Resources

Developer salaries and analytic software license fees notwithstanding, due to their smaller scope, shorter development schedules, and the relative ease of publishing to app stores, mobile games can be produced more cheaply than both physical console games and “full-size” desktop games (Kerr 2017). However, this creates discoverability issues as hundreds of mobile games are released daily, and million-dollar budgets are now required for marketing. To initially attract players and earn a space on app stores’ front pages—as well as to start generating data to drive improvements—developers must heavily advertise their game, effectively purchasing their first
Advertising costs fluctuate according to the platform, holiday-season proximity, type of game, and players’ perceived loyalty and spending habits. For example, Chartboost (2018) reports that, on average, it costs $0.21 to “acquire” a Bulgarian music-game player versus $5.46 for an American casino gamer. As such figures suggest, a small number of large studios with multimillion dollar marketing budgets earn the majority of global game revenue, effectively suffocating small teams with fewer resources (Kerr 2017, 176). In this context, a mix of familiar and novel exploitative relationships form: publishers re-establish their power through allocating marketing dollars in exchange for revenue share, while platforms become the new gatekeepers by selecting the products that are featured on their front pages. This mirrors traditional console development relationships. However, what is new is that platforms and publishers now only sign on once development is nearly complete, with publishers assuming a decreasing share of risk.

**Critiquing Data-driven Design**

Data-driven design can be seen as an adaptation within the NSC that promises to reduce the risk of new cultural production models. However, I contend that data-driven design *exacerbates* rather than *alleviates* developers’ risk, and that small-team development is far from democratized because risk is unequally distributed. Such critiques may fail to spur change, however, as *Projective* values in the NSC suppress and temper social critique of precarity and inequality via promises of individual liberation and authenticity. To strengthen critique by rooting it in NSC’s own value system, this section concludes with evidence that in practice data-driven design is often at odds with *Projective* values, namely by *decreasing* rather than *increasing* creative autonomy.

**Inequality**

The ability to integrate, interpret, and act upon analytics is not equally shared. Once traditional
barriers to participation in the games industry disappeared, new literacies for exclusion arose to take their place. These literacies of exclusion are predicated upon the commercial mentalities driving analytics systems and the masculinized business and engineering skills required to implement them. Access to financial resources are limited to those who are already privileged and in a position to leverage personal contacts and business acumen to access “boys’ club” insider funding networks. Aquarius’ success is attributable to accessing incubator resources, such as business training, software licenses, and a skilled data analyst, as well as social networks populated by high-profile designers, funders, and platform “insiders.” Small teams that are not accepted into incubators lack these resources, especially if they are unable to travel to development hubs and conferences. The valorization of small teams within the NSC obscures the fact that only those able to tap into resources from larger, more powerful, organizations are successful.

The NSC’s prioritization of creative work over job security leads to further inequalities as developers individualize risk, sacrificing material and psychological security. The emphasis on “passion” and the promise of future rewards perpetuates long, un(der)paid working hours, hustling for portfolio work, unpredictable long-term income, and the collapsing distinction between work and non-work activities, directly connecting to media studies work interrogating “aspirational” and “venture” labour, respectively (Duffy 2016; Neff 2012). The ability to shoulder these risks is unequally distributed, falling along gendered lines (Consalvo 2008; Harvey and Fisher 2015). The NSC’s entrepreneurial mindset favors young, well-educated, able-bodied, mobile men who have other means of financial support to draw upon and are able to work long hours because they are without dependents or familial obligations (McGuigan 2010). The masculinized skillsets demanded by data-driven design further privilege and smooth access
for men, as evidenced by the demographics of incubator participants in my study: predominantly childless men in their mid-twenties and thirties, with post-secondary degrees and personal savings, which reduce the risk of starting their own studio.

Distributing Risk
Data-driven design did not effectively reduce Aquarius’ risk. The team was in crunch mode for months to implement the changes suggested by analytics reports, and yet their game was initially unable to earn back the $100,000 CAD development costs. Tens of thousands of people played their game, but only tens of dollars trickled in, effectively earning the team pennies for each hour of work and amassing just a few thousand dollars in the game’s highest-charting weeks. This indicates that analytics do not always reveal what players want, or how to make profitable games. And yet, six years on, Aquarius is thriving. Why?

Beyond personal and professional savings, small studios stay afloat through other, largely unacknowledged means, including grants, investment, contract work, and loans. It was here that Aquarius leveraged big-data discourses and literacies, populating successful pitches to investors, publishers, government arts funds, and development contracts with data-laden graphs and projections, proving they were intrepid entrepreneurs. In one developer’s words, “Even if your game completely flops, investors like to hear that you are responsible and have data.” By strategically deploying data analytics discourse, Aquarius displayed the markers and values of a sound creative industry investment, evidencing technological sophistication and the prioritization of financial growth alongside cultural or aesthetic values. Such positioning helps powerful funding bodies rationalize and streamline their selection process: data and entrepreneurial literacies are flagged as desirable traits, becoming selection criteria used to more quickly filter through the thousands of studios now vying for visibility and funding, further amplifying bias.
towards teams demonstrating masculinized skillsets of business development and engineering.

Funders recognize the inherent unpredictability of the game market, and so proof of past profitability is not as important as assurances that developers are business-savvy and thus less-risky investments.

*Creativity*

If small-team development is neither “democratized” nor less risky, why do developers continue to flock to data-driven design and digital platforms? Boltanski and Chiapello’s framework offers an explanation as well as suggestions for making critique more effective within this situation.

Critiques rooted in the collective social good—such as preventing discrimination and inequality—struggle to gain traction because individual, rather than collective, values drive the *Projective Cité*. Critiques that focus upon the difficulty of entering the market and earning a stable living may also fall flat, because developers’ passion for their work and inherent belief that the system rewards individual merit and hustle helps them overlook their working conditions. To revive social critique in this climate, we must root it in the value systems, ontology, and epistemology of the *Projective Cité* (i.e., flexibility, creative work, autonomy, etc.). The most effective line of critique is to demonstrate that data-driven design makes development *less* rather than *more* creative.

The learning curve associated with monetization loops, implementing analytics, and optimizing advertising within compressed development schedules meant that Aquarius had less time to experiment creatively. Instead of receiving design direction from a risk-averse AAA corporate hierarchy or a marketing focus group, Aquarius’ directives were “crowdsourced” and based on seemingly incontrovertible data about what players wanted. Dollars spent, ads clicked, and minutes clocked on devices are discrete variables, easily quantified and tracked in
comparison to elements that are not amenable to measurement, such as artistic merit and social affordances. Such statistics act as proxies for fun and pleasure, drive decision-making, and overrule designers’ own intuition and ideas, as numbers are perceived to be more convincing (Porter 1996). Designing F2P games intensifies these tendencies, as advertising revenue is directly linked to increasing players’ time-on-device. This incentivises designers to target “whales” and design for more compulsive play, applying “psychological hacks” that would otherwise be regarded as manipulative (Holmes et al. 2017). Ultimately, Aquarius’ reliance on data-driven design led to what is referred to as the “hill-climbing problem,” wherein analytics reports counselled incremental improvements—changing tutorial level designs or button designs, for example—rather than more radical redesigns or developing a new game entirely. Despite the incubator’s support, the team lacked the time to react fast enough, as well as the financial resources to run iterative design loops the ten, twenty, or even thirty times necessary to see large-scale improvement. Ultimately, they felt demotivated by analytics work, which seemed uncreative in contrast to their other development tasks. Aquarius’ on-the-ground experiences with data-driven design demonstrates that developers’ work may be even less autonomous and creative than AAA development.

**Conclusion**

The “democratization” of game design tools means that, yes, “everyone” can now make and publish games, but very few developers can sustain long-term careers at it. For small teams, data-driven design does not measurably improve working conditions, nor do its revenue streams increase financial stability or creative work. Following Aquarius and other studios empirically allows us to compare the rhetoric of data-driven design to its day-to-day application, to poke holes in claims about big data, and to show developers that the “good life” of the NSC is not
necessarily achievable using analytics tools and production models: small-team mobile development work is risky, riddled with inequalities, and arguably no more creative than AAA.

Rather than democratize development, analytics create new resource barriers and literacies that restrict who is able to collect, analyze, and make data actionable, limiting which studios enter the mobile sector. Financial opportunities in the game industry continue to be socially distributed according to one’s position in human networks of funders and industry contacts. But even for the privileged few, development work remains precarious. The only parties that reliably profit are the third-party analytics providers and distribution platforms that benefit from thousands of aspiring developers who provide endless free content and labor.

Due to its historical linkages to play, passion, and hobbyist work, the emerging work practices and technologies detailed here have largely avoided broader academic critique and ethical scrutiny. These concerns reflect broader cultural and economic shifts, labour practices, politics, and organizing in creative industries more generally. However, I argue that the games industry is not simply an example of late capitalism par excellence but rather a forerunner—a canary in the coal mine of creative work. Gameswork sits at the intersection of technologization and entrepreneurship, becoming a proving ground for early data practices, individualized modes of work, and justificatory discourses for precarity that filter through to other realms, including creative industries and beyond.

I argue that new literacies of exclusion and the curated representation of big data outcomes as success theatre are not restricted to games but are representative of broader shifts in labor that are increasingly shaped by Projective values and entrepreneurial techno-logics. As David Beer (2018) notes, third-party analytics companies act as influential yet understudied intermediaries, establishing social imaginaries of what big data can do—if not now, then in the
future. Most analytics scholarship in media studies is rhetorically-focused: analyzing marketing material, media accounts, and self-published industry reports to track and mine big data imaginaries. But it is only by moving beyond discursive methods that we expose the empty promises of data-driven salvation, providing developers with resources to critique and reject production models that are no more creative, and more precarious, than what preceded them.

It is here that this article seeks to make an intervention. Moving beyond Boltanski and Chiapello’s (2007) own methodologies, I argue that socio-technical groundwork, not discourse, is central to advancing critiques of capital that are not so easily cycled into the current valorization of autonomous, creative work. Collective desire to pursue creative work continually justifies precarity, inequalities, and risk, promoting individualization and weakening social critique. One step for researchers interested in promoting more sustainable and equitable cultural production is to continually challenge the commonly accepted link between individualization and creativity. Creativity is not the domain of lone auteurs and teams who ‘bootstrap’ themselves into success but is generated through a reliance on largely unacknowledged social supports. Empirically demonstrating how the strengthening and equalization of social supports contributes to, rather than stifles, long-term creative careers assists in reviving social critiques that have been hollowed-out by the NSC. To prevent game developers from accepting rhetoric-fueled aspirations, we must further arm them with evidence that new production models, such as data-driven mobile development, are neither less risky nor more creative. And we must evidence alternatives, rooted in collective social good, that both acknowledge and provide the “good life” developers seek. Doing so requires frames of analysis that focus on teams rather than individuals, and on collectivities rather than games, including community support structures, cultural intermediaries, unions, and collaborative workspaces that buttress rather than exploit developers’
desire for creative work (see, for example, Whitson, Simon and Parker 2018; de Peuter, Cohen, and Saraco 2017).

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Bibliography


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Endnotes

1. As argued elsewhere (Whitson 2012), analytics are not new to games and have been used for decades by console and PC developers to refine gameplay, particularly in multiplayer games. What is new here is mobile’s emphasis on monetization and a/b testing, which draws heavily from web design and advertising.