FCJ-106 Rule Making and Rule Breaking: Game Development and the Governance of Emergent Behaviour

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Discussions of 'control' in games often center on players and their myriad attempts to push back upon the systems that seek to constrain them. The fact that players resist the constraints imposed upon them is not surprising, nor is it surprising that counterplay and control are such rich topics for game studies academics. In this article, I argue that players are invited by games to bend the rules. It is in the very nature of play to find the movement between the rules, and for many players the 'fun' in play is the inherent challenge of attempting to master, defeat, or remake games' formal structures. These rationalities of play preclude blind obedience to the rules and have distinct implications for how games are governed. While there have been numerous studies of players who bend or break the rules (Consalvo, 2007; Foo and Koivisto, 2004; Dibbell, 1998; Kolko and Reid, 1998; Williams, 2006; Mnookin, 1997) and players who alter and re-make the rules in their role of co-producers (Sotamaa, 2009; Kücklich, 2005; Humphreys, 2005; Taylor, 2006b), there is little research on game development companies and their attempts to harness these rationalities of play and uphold the rules beyond the reflexive writings of game designers themselves (Curtis, 1992; Morningstar and Farmer, 1991; Koster, 2002).

The first section of this article highlights the role of control in games and puts forward both Actor-Network-Theory (ANT) and governmentality studies as tools for better understanding this control. I argue that the 'network' is an important way to conceptualise how a game is governed as well as to understand control and counterplay. I conclude by emphasizing the role of developers in game networks. In the next section, I discuss the role rules have in systems of control, and how the concept of 'play' interacts with both rules and control. I then argue that game networks can be destabilised *and* revitalised by player behaviours that are unanticipated by developers and designers, and make a case for focusing on game development processes in future research. Although players constantly engage in an ongoing act of negotiation with the game network, often re-inscribing and remaking it (Taylor, 2006a), they still operate in an environment mostly shaped by game developers and designers. With the growth of both 'emergent' and productive play in games, the work of game development increasingly includes predicting and governing human behaviour through both technical and social means. Thirdly, I draw from two case studies that employ governmentality and ANT, in order to briefly postulate potential methods for researching control in games. Finally, I emphasize how both emergent and rule-breaking behaviour in games makes control more complex and, as such, is in need of further study. Before concluding, I discuss the implications of governance and technology in games and draw analogies between games and other situations that, like games, are geared towards encouraging innovation rather than stifling it.

Games, Rules, and Control

To understand control in games, we must first understand the relationship between rules and games. The very definition of what a 'game' is introduces the tension between following the rules of the game, and the play between the rules. Jesper Juul (2005:36, emphasis added), synthesizing historical definitions of 'game', argues that games have six essential features:

> A game is a *rule-based* system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable.

Katie Salen and Eric Zimmerman (2003:80, emphasis added), taking a similar approach, define a game as 'a system in which players engage in artificial conflict, *defined by rules*, that results in a quantifiable outcome'. The emphasis placed on rules and formal structures is a commonality in all definitions of "game". Rules define the game, its limits, and constrain player behaviour accordingly (Juul, 2005:32). They describe the formal structure of the game and operate on multiple levels: operational rules are usually synonymous with written rules and are guidelines the player require in order to play, constitutive rules are the logical mathematical and formal structures that underlie the game, such as code, while implicit rules are the unwritten rules of the game and concern proper game behaviour and etiquette (Salen and Zimmerman, 2003: 130).

Rules prohibit more efficient in favour of less efficient means. As a result, the challenge of a game is to achieve the goal while working under the constraints of rules. The rules construct the possibility space of the game (i.e. what players can and cannot do) – they are "affordances" that permit certain actions while prescribing and preventing others. By accepting to play, players consent to the constraints posed by the rules. What makes "digital games" different from traditional games (e.g. card games, board games, etc.) is that the rules are embedded in the hardware and the software of the game, thus freeing players from having to enforce the rules themselves. Digital technology enables the automation of complex procedures, allowing games to be more flexible by storing and restoring different game states, and more complicated by concealing some of the mechanics from players (e.g. physics engines, statistical calculations that compute damages, etc.).

10 This is where the issue of control comes in. The automation and opacity of the complex rules and procedures that govern games are at the heart of control. Technological systems – even seemingly benign ones like digital games – provide a set of rules, or scripts, encouraging certain uses and interactions and denying others (Winner, 1986; Akrich and Latour, 1992). For many theorists (Castells, 2000; Lessig, 1999), what makes computers and software systems such as games important topics of research is that the environments they create are entirely built and dependent upon digital architecture – the coded rules that determine how the software will operate and what functions will be allowed and disallowed. Accordingly, it only makes sense for researchers interested in control in games to examine *who makes the rules*; how these digital environments are built and why they are built in the ways they are. In the following paragraphs, I outline two theoretical approaches for examining these 'rule-makers' and conceptualising control in games.

11 ANT is both a theoretical perspective and a method for research. [1] It highlights the local contexts of technological production (i.e. how new technologies such as games are made) and the ways in which technology and knowledge are transported to a variety of new local contexts across the globe. Game software, in particular, is a paradigm example of the transportation of technology, moving from the development studio to the production facility, to the retail outlet, to players' homes with ease. The application of ANT results in an innovative approach to game studies: to conceptualise each game as a network that links many diverse elements together. In order to study the construction of the network (i.e. each individual game), researchers must focus on its constituent parts, both human and non-human, and their relationships. These parts include, but are not limited to, the many humans that produce the game: developers, producers, programmers, graphic artists, playtesters, PR personnel, administrators, etc., and those that play the game, critics, lobbyists, and academics, to name a few. The network includes non-humans as well, including the technology the game is written on (e.g. discs and cartridges), the technology it is played on (e.g. consoles, cell phones, and computers), the technology that is used to produce the game (e.g. game engines, graphics software, and hardware), and the written material describing and supporting the game (e.g. game manuals, walkthroughs, and fan forums). Perhaps the most concise argument to be made for utilising an ANT approach to studying games comes from T.L. Taylor (2009: 332):

12 > In the space of interrelations lie the dynamic processes of play. Thinking about games as assemblage, wherein many varying actors and unfolding processes make up the site and action, allows us to get into the nooks where fascinating work occurs; the flows between system and player, between emergent play and developer revisions, between practices and player produced software modifications, between local (guild) communities and broader (server) cultures, between legal codes, designer intentions, and everyday use practices, between contested forms of play, between expectation and contextualization.

13 By looking at games as a 'circuit of relations' that runs between human and non-human actors we develop a deeper understanding of the complexity of games, and the technical apparatuses that structure and support our gameplay experiences.

14 A successful network is the result of managing all these actors so that they work together towards a common goal. [2] The game network is precarious due to the fact that there is no common goal for all the actors. In fact, actors often have multiple goals. Some goals may align, for example, publishers want a game that is economically lucrative while developers want a game that is well received by critics and players. Both of these goals work together to provide players with an

enjoyable game. Other times, actors' goals directly conflict with each other, for example, hardcore players often desire games that are time intensive and challenging, while more casual gamers may desire games that are easy to use and require shorter time commitments. From this viewpoint, game development is the work of understanding the interests of a variety of actors and translating those interests so that they work together or in agreement. Inevitably, some actor's goals are not met and they drop out of the network. Publishers may pull funding from a project, developers may move on to other games, or once the game enters the market, players may abandon it after a few hours of play, or not buy it at all. Simply put, the more actors there are working in some semblance of unison, the stronger the game network.

15 An example of how networks can be used to better understand games can be seen in the work of John Banks (2009). Banks' ANT influenced ethnography of the game development company, Auran, details the creation of a game network starting with Auran enrolling players into the design and testing of a new game. Banks describes how a game network can unravel if the actors fail to work in alignment. In this case, the collapse of the network and the demise of the game arose, in part, because of the difficulties of successfully managing the interface between the professional development team and the expert gamer-testers. It proved impossible to coordinate the competing forms of expertise and interests of both developers and players (Banks, 2009). Ultimately, the players felt that their advice was not followed. Their negative accounts of the process and the game itself dissuaded other potential players from buying the game and thus joining the network. Banks' account stands testimony to other developers and researchers as to the difficulty in aligning the interests of both players and game developers.

16 Following Latour, although there is no underlying hidden structure of game networks (i.e. not all game networks are constructed in the same way), there are circulating *structuring templates* that can lead to similarities between the networks (Latour, 2005: 196). [3] The templates relevant to control include, among many, the material techniques of governance that are built into software (e.g. semantic monitoring and surveillance software built into game servers) as well as intellectual technologies and quasi-standards such as codes and summaries of best practice (e.g. Terms of Service and End User Licensing Agreements that players must accept before entering online games). Through these templates 'forms' of governance are transported from site to another – both to different agents within the networks (developers, players, etc.) as well as to different networks. Thus, attention to these templates will show how certain forms of governance may be unique to some game networks, while other forms may be more widespread.

17 The study of how actors are made to work in agreement with each other has commonalities with governmentality research. Governmentality scholars such as Nikolas Rose (1999) highlight the role of technology in the emergence of new decentralised control strategies and the reconfiguration of old strategies. This has particular resonance in describing the novel control strategies that are appearing in games. First introduced by Michel Foucault (1991), the term 'governmentality' refers to the organised practices (mentalities, rationalities, and techniques) through which subjects are governed. 'Governmentality' is useful in analysing attempts to manage and shape conduct during the game production process and afterwards when games reach players. The broader work of Foucault has used to discuss conflict management in games and virtual worlds (MacKinnon, 1997), the 'work' of power gamers (Silverman and Simon, 2009), the creation of productive player populations (Kücklich, 2009), and lateral surveillance between players (Taylor, 2006b).

18 Governmentality scholars define their problem space in terms of 'the conduct of conduct'. This 'government' includes all endeavours to 'shape, guide, direct the conduct of others … And it also embraces the ways in which one might be urged and educated to bridle one's own passions, to control one's own instincts, to govern oneself' (Rose, 1999: 3). Part of the utility of governmentality approaches is the recognition that governance is conducted not just in a hierarchical top-down manner by the nation-state but by myriad other actors in many different locales, consequently broadening the scope of study to include new spaces of governance, such as games and online spaces, and new methods of governance that are subtle and less recognisable than the overt laws, policies and regulations that have been prioritised in other studies of government. Like Latour, Rose emphasizes a detailed analysis on the micro level, examining the local context and calling attention to the 'the small and contingent struggles, tensions and negotiations that give rise to something new and unexpected' (Rose, 1999: 11).

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Sal Humphreys (2008), in particular, applies a governmentality approach to describe the governance of massively multiplayer online games (MMOGs). Using ethnographic data from two large MMOGs, she describes the tactics and rationalities employed by developers and publishers that help enrol players into networked production (i.e. creating game content). Importantly, Humphreys argues that control in games is not a hierarchical top-down process and although power is held unevenly, players do have agency. The tactics of control employed by developers and publishers are met by the tactics of players. The objectives of corporate actors can often be achieved without diminishing the goals and objectives of players: 'the exercise of power is a generative process, and the players in MMOGs are often cognisant of their own position, working both with and against publishers in strategic ways that advance their own goals' (Humphreys, 2008: 151).

20 Incorporating governmentality into ANT-influenced research on games and control shifts the focus from the creation of game networks in general to the specific problem of governing these networks and the people within them in order to ensure their continued co-operation. It calls attention to the specific problems of governing these networks but also to what these specific examples can tell us about governing more generally. It directs attention to the means, actions, manners and techniques by which actors are placed under the control and guidance of others or seek to place other actors or events under their own sway. Games are 'technologies of government', described by Rose (1999: 52) in distinctly Latourian terms as:

21 > An assemblage of forms of practical knowledge, with modes of perception, practices of calculation, vocabularies, types of authority, forms of judgement, architectural forms, human capacities, non-human objects and devices, inscription techniques and so forth, traversed and transected by aspirations to achieve certain outcomes in terms of the conduct of the governed … These assemblages are heterogeneous, made up of a diversity of objects and relations linked up through connections and relays of different types.

22 While not commonly seen in this light, recognising how games are technologies of government highlights how strategies of governance take new forms in spaces created by technology. It emphasizes how techniques to constrain and control people in these spaces may be unfamiliar in comparison to the laws or norms to which we are commonly accustomed, and draws attention to the way that technical innovations change the way we interact with each other and are consequently governed.

23 Returning to the question of *who makes the rules* in games, Latour asserts that networks do not just exist by themselves but need labour to create and maintain. Each network has 'shepherds' who look for ways to define the network, to mark its boundaries and render them fixed and durable (Latour, 2005: 33). In terms of games, developers take on considerable shepherding responsibilities – initially interpreting design documents and rendering the game in code, and then maintaining this code once the games enter the market. It is developers who have the closest contact with the formal rule structures and algorithms that underlie the game network. While developers directly govern the game code, they themselves are subject to considerable governance pressures. They are configured by the technology they use (in terms of software limitations, pre-existing game engines, and platform constraints), and governed by their position within the game industry. For example, while developers have some freedom in determining how they program a game, the shape and direction of the game is dictated to them by designers as well as publishers (of course, developers are also influenced by workplace structure, organisational hierarchies, programmer culture, individual personalities, political economics, etc.).

25 The focus on developers is important because they are the nexus between coded control and people. While creating and maintaining the *technical* structure of game networks is commonly recognised as the developer's domain (and particularly, the programmer's domain), developers do considerable work to guide and constrain other *humans* in the network. This latter work is not commonly recognised nor researched. There is some acknowledgement that game technologies shape the way we behave – Lawrence Lessig (1999) argues that computer code can work to constrain behaviour and Pippin Barr (2008) highlights how players are informed of preferable conduct during games – but there is little examination of the process of designing these aspects into games, and scant focus on the people responsible for creating the code beyond the

autobiographical works written by a handful of well-known designers (Morningstar and Farmer, 1991; Bartle, 2007; Koster, 2002; Curtis, 1992).

Playing with the Rules

26 Governmentality studies and ANT together direct the researcher to look at the vehicles, tools, instruments and materials that give form to and provide stability for the game network. They focus our gaze on how the game is "held" together, despite the myriad components that compose its network and the constant pulling and pushing in different directions from actors with different purposes and goals. Holding the game network together is made more difficult by the very nature of the technology. There is no singular "original" object, even as a prototype. Rather, the game exists 'simultaneously in a multitude of copies and a plenitude of physical places (computer screens) simultaneously' (Wittel et al, 2002: 193). Once in mass production, there are millions of copies of a game – copies that may be altered and modified, shared or forgotten. Consequently, there is a struggle to define the "real" and legitimate version of the game, and to define the way it should be acquired (e.g. by purchase rather than illegal download) played (e.g. by following the game's written *and* implicit rules) and won (e.g. by avoiding cheating) (Consalvo, 2007). This struggle takes renewed fervour when deviant or anti-social behaviour takes place within in the game, as well as when issues of content ownership, intellectual property rights and taxation come into question (Burke, 2004; Humphreys, 2007; Reynolds, 2007; Whitson and Doyle, 2008).

27 The potential instability of the game network is partly attributable to the technology it is built with. Digital games, argue Salen and Zimmerman, are a fertile ground for rule-breaking because the code of the game is plastic and pliable and their automation leaves gaps for hacking into the system via cheat codes, workarounds, or more intricate code-breaking. The anonymous nature of games and the lack of face-to-face interaction additionally encourage rule breaking (Salen and Zimmerman, 2003; Williams, 2006).

28 While the technology within the game network enables behaviours deemed problematic by game developers, it is also a key element in governance. As argued by Matthew Williams (2006), governing game spaces through technological means is advantageous in that it forces errant players to renegotiate their paths and goals and imposes constraints on players that are more pervasive and immediate than other modes of regulation such as written rules. Technology is malleable and easily shaped by those actors – such as developers – that have access to its control and it is more readily adaptable than laws, norms or markets. In addition, it allows developers to prevent both criminal and deviant behaviour, instead of attempting to respond reactively. Finally, technological constraints, Williams (2006: 147) argues, are a familiar form of regulation that are less contentious to players than other modes such as written rules.

29 The utility of governing subjects through technology is nothing new (Deleuze, 1992; Jones, 2000). But what is new is how this governance links to rationalities of play and the shaping of emergent behaviours. [4] The very nature of 'games' and 'play' encourage testing, bending, and even breaking the rules. Playing a game necessitates learning the rules and testing their boundaries (e.g. how high can I jump? Who / what can I shoot? etc.), while winning requires mastery of the rules (Koster, 2005), and in some case bending (e.g. exploits) or breaking them (e.g. mods or cheats) in order to win. Players consciously decide to play *with* the rules and structure of the game (Sotamaa, 2009:82). Mastering, beating, and even subverting rules is a part of "play". For example, Salen and Zimmerman define play as 'free movement within a more rigid structure' (2003:304). This definition traces its roots back to Huizinga and Caillois who both argue that play exists within the limits of rules (Huizinga, 1938/1955; Caillois 1958/1961). Using the example of the "play" of a car's steering wheel, Salen and Zimmerman argue that play is made possible by rules and rigid structures. In other words, the play of the wheel is only made possible by the rigid structures of the steering column and axles, while gameplay is only made possible by the rigid structures of the rules. Because by nature a game has room for the movement of play, it is 'always possible for players to drive a wedge into the system, bending it and transforming it into a new shape' (Salen and Zimmerman, 2003:565). Accordingly, the study of control in games is made more complex by the fact that rules cannot prevent all undesirable behaviours. Rules cannot equate to control as they must allow for some freedom of movement. While rules are closely tied with control, this control is imperfect. This is due to the nature of rules themselves, as well as the specific contexts of rules in games. In terms of the former, Ludwig Wittgenstein, extending Hume's problem of

induction, argues that no course of action can be determined by a rule, because any course of action can be made out to accord with the rule (Wittgenstein, 1953/2003). In other words, the applicability of rules depends on how each person interprets them. Rules do not contain the rules for their own applicability, and rules for interpreting rules provide no help as they themselves can be interpreted in different ways. Wittgenstein understands rules not as formulas standing apart from their application, but as constituted by their application. Thus, rules cannot determine behaviour because there is always room for interpretation on the part of the players following rules.

30 Even in technological spaces where rules are embedded in code, there are frequent cases of ambiguity, instability, and novelty that do not fit neatly into the categories set out by formal rules. In game studies, the most common examples of this are exploits and loopholes that allow players to subvert obstacles without ever breaking the written or coded game rules. The way rules are interpreted and invoked change from context to context. This helps explain the mangle of practice, in which technology fails to behave similarly in different situations (i.e. how the game is used by players can diverge greatly from its intended use by developers, as well as differs according to the specific local contexts of players) (Steinkuehler, 2006).

31 Even if the rules of games were concise and knowable, the behaviour of those rules set into motion creates patterns and results not contained within the rules themselves (Salen and Zimmerman, 2003:160). Games are 'emergent systems' that use a limited set of rules to generate unpredictable patterns of complexity. [5] These unpredictable patterns create surprises within gameplay and contribute to a game's replayability. 'Emergent game play' is characterised by players interacting with the game environment and other players in ways not originally planned by the game designers (Smith, 2001). It is not possible for developers to predict all the ways the rules will play out. In fact, developers must work to promote some amount unpredictable behaviour:

32 > Too much structure and a game is overdetermined: there is not enough uncertainty or freedom for players. Too little structure and the game turns chaotic: there is too much uncertainty, too much freedom, and no sense of how the player's decisions should proceed from one moment to the next (Salen and Zimmerman, 2003:199).

33 Examples of emergent behaviour include using digital games to create 'machinima' – short films made using game's rendering engines – the growth of currency trading in MMOGs, and the prevalence of pay-for-sex services in virtual worlds. Governance of emergent systems is complex in that action comes from the bottom up, and as such it resists being planned, orchestrated, or controlled by a hierarchical 'higher' power (Kelly, 1994).

34 Due to the growth in end-user programming and user-created content, as well as the growth of real world economies within game spaces and the potential for real world crimes, developers take on a larger role in governing human behaviour, and in doing so, are showing how people may be governed in technological spaces more generally, not just in games. Developers face inherent difficulties in controlling emergent and rule-breaking behaviour, as well as the various pressures *not* to control them. Developers, and the larger nexus of designers, game development companies and publishers, must maintain a fine balance between freedom and control in games: encourage increased creativity and emergent behaviour in game play while at the same time increasing player regulation to ensure that this behaviour is channelled in certain directions only. Ultimately, developers are engaged in boundary work: defining how the game is to be played and the ways in which the 'real world' can intrude into game play, if at all.

35 This emphasis on boundary work, I argue, is largely a new development. Traditionally games had more constrained forms of interaction and playability and were largely stabilised after their release to the public in their 'final' form. What composed the game, its rules, its coding, how it was played, and how to win or lose generally remained stable. However, emergent game crafting and modifications are now more popular (Taylor, 2006a). This destabilizes the game, re-opening it to examination and questioning of how it works, and consequently exposing the network to modification and disruption as well as potential growth. The growth of economic opportunities in games has only exacerbated this disruption – the promise of 'real world' income to be earned entices players to enter and stay in the network, but it also gives them incentive to attempt to alter it in order to make it work more in their favour (Dibbell, 2006).

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Maintaining the fine balance between creativity and constraint, emergent play and control has become necessary for the game industry as a whole. Games that are stable and unchanging often lack replayability and are abandoned after being played through once or twice, remaining on store shelves for an average of six months. Given production costs that can reach one hundred million dollars U.S. and multi-year development schedules for mainstream games, game developers are looking for ways to extend this shelf life. Opening the game up to end-user modification and development is one way to achieve this as users can create and share new game objects, levels, challenges and strategies and in doing so, create vibrant communities to support the game (Kücklich, 2005). Opening up the black box of the game code, however, may put the game itself at risk. For example, open access to the source code of the game may enable attempts to crash game servers, erase game content, and ruin the game for other players. Furthermore, opening the game to end-user development has numerous drawbacks in terms spawning legal battles over who owns the created content and disputes over acceptable alterations to the original game (Humphreys, 2005, 2007; Kücklich, 2005; Terranova, 2000; Whitson and Doyle, 2008).

37 Constance Steinkhueler (2006) describes a 'mangle of play', where the game that is played by users is not the game that developers originally had in mind, but is rather the outcome of a 'mangle' of production and consumption, human intentions (of both developers and players), material constraints and affordances, broader social norms, cultural practices, and even chance. Developers and designers have an imagined user in mind during the design process, as well as an template for how the technology will be used (Woolgar, 1991). While it is important to consider *who* developers picture using their games, what they hope users will do with the technology, and what they hope that users will not do (Taylor, 2003a), developers cannot predict how their technology will be used, and by who. Developers, and the larger game development industry, are increasingly aware of the unpredictability of how their designs and rules will be taken up by the groups they are designing for (and attempting to regulate) (Steinkuehler, 2006).

38 The difference between other software and games, and the increasing mangle of play and unpredictability in how games are taken up and re-inscribed is especially apparent in online games that promote the creation of content. Virtual worlds such *Second Life* (Linden Lab, 2003) rely almost exclusively on users for their content. In order to participate in guilds and reach the higher levels of online games such as *World of WarCraft* (Blizzard Entertainment, 2004), players *must* download and use mods created not by game designers, but by the gaming community itself (Taylor, 2006). Users are conceptualised in a much different way. They are not sold a finished end product, but are enlisted in the actual process of design and development (Humphreys, 2005; Malaby, 2006). Players are increasingly central productive agents in game culture and thus more progressive models are needed for understanding and visualising the development process. There is a distinction between the emergent crafting that is now being encouraged (e.g. adding game content, modding, generating maps and walkthroughs, and creating fan communities and web sites), and the more conscious intent of traditional software design. There has always been a difference in design between games and other software, but there is a now a growing divergence between the emergent design of many games and more traditional games that have more constrained forms of interaction and playability.

39 While participatory design requires updated frameworks for understanding the developer / player relationship, it does not mean that developers should no longer be an object of study. In fact, it is increasingly important to look at how developers anticipate and shape the relationship between players and themselves. While developers cannot predict with complete confidence how the game is played – as the collective effort of users results in unexpected social patterns and phenomena – developers do considerable work in attempting to account for increasingly diverse social contexts of use and in doing so to govern the actions of users.

Employing ANT and Governmentality Studies in Game Research

40 Games that rely on the 'mangle of play' between developers and players are still shaped by tools, menus, commands, and windows, all consciously designed by game owners, administrators and open-source contributors and implemented by developers (Malaby, 2006). In light of the increasing role that players have in building onto and modifying this architecture, and the blurring boundaries between developer and player, developers, even more than before, have to anticipate probable contexts of use and design for these. They articulate constraints on the appropriate

contexts of a system's use, and are increasingly cognizant of the fact that they are responsible for problems (be it technological or social) that emerge with the design. Accordingly, research focusing on the role of developers is needed more than ever. Both ANT and governmentality studies suggest potential methods for revealing the role of game developers in controlling game networks.

41 Ethnography is the clearest way to examine the role of developers in holding game networks together. While few governmentality scholars utilise ethnography, it defines ANT research. This method includes participant observation, but also the gathering of further data through document collection and interviews, especially on issues that are unclear or not directly observable (Bryman and Teevan, 2005). Thomas Malaby (2009) provides a notable example of how ethnography may be employed to explore how the rationalities of game developers influence the design and governance of virtual worlds and games. Extending over a year-long period, Malaby observed the development process at Linden Lab (creators of *Second Life*), including face-to-face participant observation and interviews. His analysis incorporates details of the developers' physical work environment, their interactions with other employees, and the software tools developers used and created (including bug tracking and communication tools). Additionally, Malaby supplemented his observational data with a wiki where Linden employees could add information of their own, and spent a considerable amount of time in *Second Life* itself.

42 In relation to issues of governmentality and control, Malaby found that the developers of *Second Life* were influenced by 'technoliberal' rationalities that emphasize the importance of freedom, emergence, and individual creation along with an aversion to hierarchical authority. This, in turn, influences how the virtual world is designed, the affordances allowed to players, and the operation of control within the world:

> 43 This practice of architecture embraces an approach to control that trades the promise of total order for a different ethical position, one that attempts, imperfectly, to reject top-down decision-making in favor of embracing the indeterminate outcomes of social complexities (Malaby, 2009:8).

44 In Malaby's case study, control is largely embedded in digital architecture instead of being vested in human authorities, bureaucratic processes, and legalistic conventions. Relating to the content production tools created by developers for both other employees as well as players, this embedded control occurs on two levels: technological constraints on how other Linden employees are allowed to alter the virtual world, and technological constraints on what players are allowed to do with content production tools. Ultimately, Malaby found that developers – those who have the ability to create scripting tools and not just use them – are vested with considerable authority and control.

45 While governmentality studies help illustrate the complexity of control in games, the majority of these studies concentrate on a fragment of the game network, mainly human actors (developers, designers, publishers, and players), the promotion of economic production, and the relationship between law, language, and code. Beyond general references to code, the technological underpinnings of the game network are largely ignored. Stephano De Paoli and Aphra Kerr (2009), utilising the notion of a 'cheating assemblage', emphasize how our understanding of concepts such as cheating can be enriched by focusing on the assemblage of both human and non-human actors. Like most other work on cheating (see Consalvo, 2007), they incorporate an analysis of player actions and legal documents such as EULAs, but they take a multi-level approach that also includes a discussion of the highly sophisticated technological elements that shape practices of cheating. In doing so, De Paoli and Kerr (2009: 4) emphasize how digital architectures of control actually work. For example, they describe how the master-slave architecture used in MMOGs is utilised to prevent cheating:

> 46 [This architecture] consists of a centralized server with several clients (the players' machines) connected to it. In this set-up the communication between clients involves a client sending a request to the server, the server validating, or not, the request, and then the server sending the request to all other target clients. One of the main reasons why this architecture is preferred is because by storing large part of the game execution on the server, it is possible to keep the gaming activities under control … In addition, because the server must validate all the moves/requests made by the clients, it can also deny certain actions.

47 This multi-level approach helps overcome the game studies focus on players and player actions as well as the computer science and technical literature focus on technical solutions to control. Both

case studies (De Paoli and Kerr, 2009; Malaby, 2009) use ethnographic data and a close attention to technical detail to advance our understanding of how games are governed, and provide methodological templates for future research on control in games. Before concluding, I will now discuss some of the larger implications and complexities of studying control in games, and draw a few preliminary analogies between games and other situations that are geared towards encouraging innovation and emergent behaviour.

The Complexities Inherent to Governing Play

48 Returning once again to governmentality studies, governance projects are rooted in the creation of subjects with certain mindsets and rationalities. A large part of governance lies in the creation of metaphors and concepts for structuring how people behave. For example, neo-liberal subjects are governed through the concept of "freedom". This freedom is contingent upon subjects agreeing to the constraint of law and shouldering certain responsibilities and behaving in certain ways (Rose, 1999). As long as subjects follow the rules, they are "free" to do whatever they want. [6] Rationalities of "play" bring a new dynamic to the governance project that is different than that of "freedom", as games and play encourage subjects whose rationalities are based not on following rules, but on exploring, testing, and bending them. Moreover, the rationalities of play – in terms of operating between, above, or beyond the rules – are, in turn, leaking into the "real world" (Dibbell, 2006; Yee, 2006).

50 While certainly not the only rationality at stake in terms of rule-breaking, it is important to examine how concepts of play may inform rule-breaking in games and other technological spaces. The concepts associated with play – such as the emphasis placed on winning, the mastery and prodding of technological systems until success is achieved, and the view that digital spaces are ideal for experimenting with conflict, risk, and danger without physical consequences (Crawford, 1982; Dibbell, 2008; Turkle, 1995) – have parallels to other non-game sites (e.g. the hacking of corporate websites and the "cat and mouse" chase between the entertainment industries and illegal download sites both exhibit rationalities of play). The ways players are enrolled as co-producers of game content are often congruent to how internet users are enrolled in collaboration and user-centered design (commonly referred to in reference to 'Web 2.0'). These situations are often geared towards encouraging innovation rather than stifling it, and therefore, as in games, governance may be coloured by some ambivalence about rule breaking. In addition, there are clear parallels between digital game spaces, online virtual worlds, and to online spaces in general, in that they all are automated socio-technical environments constructed by code with implicit and explicit rules for their operation (Lianos and Douglas, 2000). Entrance to these spaces is largely contingent on agreeing to abide by the terms of service. Accordingly, there are similarities in terms of how these places may be governed.

51 While there are limits to the analogy between games and other situations, examining how governance in these contexts is similar to and different from governance in other locales promises to be theoretically fruitful. Accordingly, these parallels are why the study of games and the creation of forms of governance that attempt to curb or even harness the rationalities of play are important to fields outside of game studies.

52 In the past, governance methods have been imported into games from the real world – such as the use of written contracts to regulate players – the inadequacies of these methods are exemplified in numerous lawsuits launched by players against game companies such as Blizzard Entertainment and Linden Labs (Dibbell, 2006; Fairfield, 2007; Whitson and Doyle, 2008). Accordingly, it is likely that this exchange of methods may soon flow in the opposite direction, and that governance methods propagated in games spaces that harness the rationalities of play may be imported to other technological spaces and the 'real world'. Even if they are not imported directly from the game world, it is likely that analogous methods may develop in comparable situations in other realms. Already, in terms of regulating user created content, developers and game development companies are tasked with the feat of producing 'citizens' that are productive yet law abiding. It is not surprising that the lessons learned by developers may translate to governance projects outside of game spaces. Research must pay more attention to the governance techniques developing in games, as once this governance infrastructure is established and translated to other networks beyond games, they may be enduring and resistant to change (Jackson et al., 2007). Showing properties referred to by historians as "momentum", "trajectories",

or “path dependencies”, these infrastructures become established in our technology and social imaginings and tend to continue in particular directions, making reversals or changes to alternative approaches costly, difficult, or even impossible.

53 Governance within game networks resists simplification. It is not simply a case of profit-seeking game companies attempting to capitalise from the labour of players-as-producers. Nor is it a simply case of devious players looking to ruin the game for others, or to make a quick buck. In both cases, the actors are simply attempting to mould the network to fit their needs and desires. And in both cases, the multiple layers of rules that give the network its form are under constant revision, modification, and change. Rather than trying to force the complexities of governance to fit into a single framework of domination, future research needs to highlight the pulling and pushing of different actors and the intricate balancing act that ensures the game networks’ survival. Ultimately, this research examines the way in which people are governed in rule-based systems. This governance is inextricable with rationalities of play. As argued by Ollie Sotamaa (2009: 70) ‘this two-fold nature, on the one hand acting under the authority of the restrictive game rules and on the other hand capable of performing actions that go beyond the rules or even playing with the rules, is essential to our understanding of the player’. I extend Sotamaa’s argument even further and argue that the ways in which people learn rules as well as learn to push against and alter them has importance to the study of governance in many technological environments beyond games.

Conclusion

54 In this article, I have argued that more attention should be paid to the role of game development processes in establishing systems of governance. In particular, I have highlighted the need to focus on both game developers and the technical elements they employ in creating digital architectures control. I believe that both ANT and govermentality studies are useful tools for better conceptualising control in games, and have further argued that the ‘network’ is an important way for grasping how a game is governed as well as for more fully understanding control and counterplay. I posit that, in order to understand control in games, it is also vital to understand how the concept of ‘play’ interacts with both rules and control. A common element of play includes re-making and breaking rules. Play increasingly involves emergent behaviour, including networked production on the behalf of players. Following this, game networks can be both destabilised and revitalised by player behaviours that are unanticipated by developers and designers. Accordingly, the work of game development increasingly includes predicting and governing human behaviour through both technical and social means, and, as such, is an important avenue for further study. Finally, I have drawn some analogies between games and other situations that, similar to games, are geared towards encouraging innovation rather than stifling it, and thus are ambivalent to some forms of rule-breaking. Ultimately, I argue that a better understanding of how control operates in games is important in itself, but also has much to tell us about how systems of control may operate in other technological spaces.

Notes

[1] Because ANT has gone through numerous growth phases and transformations since the early 1980′s, when it was first articulated by scholars such as Bruno Latour (1988), Michel Callon (1986), and John Law (1986), it is necessary to clarify that this description of ANT is taken from Latour’s *Reassembling the Social* (2005). I caution readers that I am using ANT as a general analytical tool with which to conceptualise the production and maintenance of games. While a more nuanced overview of ANT is preferable, it is outside of the scope this article.

[2] Latour uses the terms “actor” and “actant” as a placeholder to denote what – human or non-human – acts or shifts actions. The source of action lies not in the actor themselves, but rather the myriad attachments in the network.

[3] One of the clearest templates is that of genre, which draws from media studies traditions to provide a means of talking about production pathways as well as the management of player expectations. A discussion of the role of genre is beyond the scope of this paper, although it is a fruitful avenue for further research.

[4] Following a governmentality approach, I use terminology such as “rationalities” similarly to how game scholars use “rhetoric”. “Rhetoric” is a discourse, narrative and argument for how the game

world works. It provides the player with implicit instructions on how they should act in the game, and points to potential methods and techniques for playing and winning the game (Bogost, 2007: Sutton-Smith, 1997). I am arguing here that mastery, testing, and bending the rules is a rhetoric that underlies gaming.

[5] Juul (2002) refers to emergence in games in order to differentiate "open" games (where simple rules combine, leading to variation in gameplay) from "closed" games (where serially introduced challenges lead to linear gameplay). While helpful for classification purposes, I take a different approach than Juul and argue that emergent behaviour takes place even in linear "closed" games. For example, the creation of player mods, cheats, and machinima occurs in linear closed games as well as open games. Additionally, while emergent behaviour is more likely in multiplayer games due to the wide range of player to player interactions, it can also take place in single player games.

[6] In some ways, there is a direct correlation between "freedom" and "play". As made clear by Roger Caillois (1961), within a game a player is 'free within the limits set by the rules' (as cited by Salen and Zimmerman, 2003: 310). Play, just like the freedom described in Rose's (1999) genealogy emerges both *because of* and *in opposition to* more rigid structures.

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