

The Resilience Engine
Generating Personhood, Place and Power in Virtual Worlds, 2008-2010

by

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ABSTRACT

This document builds a model, the Resilience Engine, of how a given sociotechnical innovation contributes to the resilience of its society, where the failure points of that process might be, and what outcomes, resilient or entropic, can be generated by the uptake of a particular innovation. Closed systems, which tend towards stagnation and collapse, are distinguished from open systems, which through ongoing encounters with external novelty, tend towards enduring resilience. Heterotopia, a space bounded from the dominant order in which novelty is generated and defended, is put forth as the locus of innovation for systemic resilience, defined as the capacity to adapt to environmental changes. The generative aspect of the Resilience Engine lies in a dialectic between a heterotopia and the dominant system across a membrane which permits interaction while maintaining the autonomy of the new space. With a model of how innovation, taken up by agents seeking power outside the dominant order, leads to resilience, and of what generates failures of the Resilience Engine as well as successes, the model is tested against cases drawn from two key virtual worlds of the mid-2000s. The cases presented largely validate the model, but generate a crucial surprise. Within those worlds, 2008-2010 saw an abrupt cultural transformation as the dialectic stage of the Resilience Engine's operation generated victories for the dominant order over promising emergent attributes of virtual heterotopia. At least one emergent practice has been assimilated, generating systemic resilience, that of the conference backchannel. A surprise, however, comes from extensive evidence that one element never problematized in thinking about innovation, the discontent agent, was largely absent from virtual worlds. Rather, what users sought was not greater agency but the comfort of submission over the burdens of self-governance. Thus, aside from minor cases, the outcome of the operation of the Resilience Engine within the virtual worlds studied was

the colonization of the heterotopic space for the metropolis along with attempts by agents both external and internal to generate maximum order. Pursuant to the Resilience Engine model, this outcome is a recipe for entropic collapse and for preventing new heterotopias from arising under the current dominant means of production.

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Table 1

Glossary of Terms and Acronyms

action bar	A HUD element containing clickable buttons to initiate specific actions in an MMO, such as spells and combat moves.
Al Andalus	An SL community physically recreating medieval Andalusia, intended to be a space of cross-cultural dialog between Islamic and non-Islamic SL Residents. Often abbreviated AA.
Azeroth	The fictional setting of WoW.
BDSM	Bondage, Dominance and Sado-Masochism, a catchall term for practices, both sexual and non-sexual, involving individual power exchange
bot	A player-character operated by player-written software. Distinguished from Non-Player Character: a character operated by the game software rather than another player.
Cataclysm	The WoW expansion released in December 2010, used here to mark the end of the operation of the Resilience Engine in virtual worlds.
CDS	Confederation of Democratic Simulators, a territorially defined community in SL with an elected government.
Chancellor	The executive of the CDS government, appointed by the RA.
class	In MMOs, a fixed choice of combat style, e.g., mage, warrior.
concurrency	The number of users on a particular server at any one time. For single-server platforms such as SL, this amounts to the total number of users at any time.
DBM	Deadly Boss Mods, a comprehensive set of modifications to the WoW hud for high-end raiding play
DPS	Damage Per Second, a measure of character weapon damage in MMOs, often used as a shorthand for characters which focus on damage-dealing over the two other key roles, tanking and healing
dungeon	a temporally and physically sequestered game environment within an MMO for about 5 players, typically an introduction to the experience of raiding
faceroolling	MMO gameplay so easy one can play, hyperbolically, merely by rolling one's face across the keyboard.
grid	A generic term for the space of a social virtual world, e.g., the Second Life grid.
griefing	Harassment of other users, either through speech, performative acts or abuse of platform affordances. Distinct from trolling, which is speech intended to provoke an extreme emotional response.

grind	Performing routine tasks over and over in an MMO in order to level up.
guild	An institutional grouping of MMO players, enabled and constrained by software into particular, generally pyramidal, social structures.
HUD	From “heads-up display,” a military aircraft user interface. The HUD is the informational and interactive overlay upon the vista of the virtual environment.
IM	Instant Messaging, real-time text-based chat.
instance	An exception to the “massively multiplayer” nature of MMOs, situations in which content is generated for a particular group of players at a time, and not generally accessible. Dungeons are instanced.
keyboard turning	Using keyboard hotkeys to move one’s avatar instead of the mouse. Typically a practice of less highly platform-literate users, it provided for a slower OODA loop.
KTM	KLH Threat Meter, a modification of the WoW HUD to publicly display performance-related statistics and player rankings.
land baron	An “owner,” effectively a lessor, of a large number of sims in SL then subleased to tenants.
leet	From “elite,” the opposite of noob
LFG	“Looking For Group” a public call for forming an ad-hoc dungeon group, replaced by dungeon-finder software applications
LL	Linden Lab, corporate creators and owner of SL
LSL	Linden Scripting Language, the custom software language enabling users to give objects the ability to do things within the virtual environment.
mainland	A contiguous part of the SL grid in which tenants leased land directly from LL rather than as subtenants to an intermediary on a “private island”
min-maxing	Statistical optimization of a character based on principles of comparative advantage.
MMO	Conventional foreshortening of MMORPG, or Massively Multiplayer Online Roleplaying Game
MMORPG	Massively Multiplayer Online Roleplaying Game: an online persistent multiplayer environment with gamelike elements
modding	User modification (whether encouraged or not by the developers) of elements of virtual-world software, typically those of the UI.
MUD	Multi-User Dungeon or Domain: a generic category of text-based predecessors to MMOs.
nerfing	An act by designers to make some element within an MMO less powerful or challenging, in some users’ estimation.
noob	A new user without platform literacy, often “clueless noob,” as opposed to a beginner with some genre literacy, sometimes expressed as “newb”

in contrast. One aspect of noobery is that noobs often don't know they lack literacy and thus unwittingly violate cultural norms: far too many journalists and academic researchers are noobs. See "pwn."

NPC	Non-Player Character: a character operated by the game software rather than another player. Distinguished from "bot," a player-character operated by player-written software.
nymwars	Conflicts between advocates of pseudonymity and enforcers of corporate "real names" policies in 2010-2011.
on rails	A largely scripted gameplay experience allowing little user agency.
OODA	An iterative information-processing cycle: Observe, Orient, Decide, Act, developed by USAF Col. John Boyd and popularized/bastardized in business literature.
patch	a significant update to software, in the MMO context often including new features with a substantial affect on relations among players, the software, and the developers.
private island	In contrast to the SL mainland, a sim rented from SL in its entirety, often then parceled and subleased to multiple tenants.
PvE server	Player vs. Environment: an environment in which players are generally constrained from non-consensual combat. By far the most common play style and environment.
PvP server	Player vs. Player: an environment in which players are generally free to engage in nonconsensual combat with each other. Contrast PvE and RP. PvP-preferring players average under 10% of the total in most MMOs.
pwn	Pronounced "pone," derived from "own," in the sense of "dominate" or "defeat." In PvP the leet pwn noobs.
RA	The Resident Assembly, the elected legislature of the CDS.
raid	Elite group gameplay in an MMO for 12-40 players in an isolated space requiring high literacy and valuable tools.
race	In fantasy MMOs, the category of mythological species, e.g., elves and orcs.
Resident	In 2008-2010, LL's term for SL users.
rez	To make or become manifest in the virtual environment: one can rez an object, due to overstrained servers wait for the environment to rez, or log in and thus have one's avatar enter into the environment.
RL	Real Life, in contrast to Second Life, a commonly-drawn distinction and terminology in the 2008-2010 period.
RLV	Restrained Life Viewer, an open-source UI for SL enabling BDSM practices.
RP	Roleplay: acting "in character" within an MMO. RP'ers tend to be about 5% of the total playerbase.

RTFM	“Read The Fucking Manual,” an assertion of tacit knowledge against noobs. Ironic, as the highly-platform-literate believe such knowledge comes from iterated OODA loops of practice rather than from manuals.
sandbox	A more freeform virtual environment, in contrast to one “on rails,” or substantially constrained into a designed experience. The term is relative, rather than absolute.
sim	For “simulator,” a virtual 65,536 square of land in Second Life. Not to be confused with the generic name for characters in The Sims series of games.
scripting	Programming objects to do things in a virtual environment.
SL	The virtual world of Second Life ™
tanking	One of the three functional roles of raiding groups, tanking involves a heavily-armored player securing the attention of enemy NPCs so DPS players can attack safely
third-party viewer	Open-source, user created UI, particularly for SL.
trolling	Commentary designed to provoke an extreme reaction in others. Distinct from grieving, which is performative and disruptive, rather than provocative per se.
UI	User Interface, also HUD, the “overlay” of information and tools over the virtual environment.
VDI	Virtual Democracy, Inc., the nonprofit corporate owners of AI Andalus.
viewer	the SL term for UI
Viewer 2	SL’s attempted overhaul of its UI for a social media era, released in March 2010. Generally regarded as a failure, as a majority of users switched to third-party viewers.
virtual world	An online persistent multi-person environment, generally without gamelike elements, in contradistinction to an MMO
WASD	The keyboard keys used for avatar movement, in distinction from the arrow keys or the mouse.
Wasp Clause	The provision of the CDS/AA merger agreement allowing for termination by either party on the anniversary of its enactment, named after the AA resident who proposed it.
WoW	The MMO World of Warcraft

PREFACE

Origins

Two “whoa!” moments ten years apart led to this work. The first came while watching the robotic Pathfinder land on Mars, the second when colleagues threw a party simultaneously in a NASA blimp hangar and in the virtual world of Second Life (SL). Both involved new kinds of people collaborating in new, computer mediated, environments, and both raised the prospect of a new kind of culture with its own emergent politics (if you define politics as a means of allocating scarce resources, including social status). In 1997, television coverage of the Pathfinder landing showed a NASA team far different from the “steely-eyed missile men” of Apollo: rather, I saw a fairly diverse team of young geeks: *there were people like me running spacecraft on Mars!* That Fourth of July I walked three miles to the mall to buy all the books on Mars and space exploration I could carry, and my first 56kbps modem, to get real-time access to the data coming back from Mars. That walk was the beginning of a long journey into space exploration advocacy organizations, Washington policy summits, and the chance to work with people who’d walked on the Moon.

At the turn of the century, I thought we had a real chance to build a permanent human presence in space and on Mars over the span of my future working years. I was drawn to the prospect not only because I’d grown up during the Apollo era with astronaut dreams, but because I feared we were living in the “end of history:” an era in which a single power with a singular ideology – call it entertainment capitalism – ruled the world unchecked by dissent or divergence, without a space for using our new computer technologies to create and test better ways of governing ourselves than representative systems originally built around the communications technologies of the horse-drawn carriage and messenger bag.

But by 2004, I came to believe that the spacefaring future I'd been working for wouldn't happen in my lifetime, as an indirect consequence of the post-9/11 security climate and war-era Federal deficits. I moved on to other things. Yet, I still kept in touch with old friends and colleagues, and in April 2007 I had a second "whoa" moment. Colleagues of mine threw a party to celebrate "Yuri's Night," the anniversary of Yuri Gagarin's first human flight into space. The global network of anniversary parties had been running for several years, but that year brought something new: one of the parties was held live in the giant blimp hangar at NASA's Ames Research Center in Silicon Valley, and in this thing called Second Life. This was around the peak of the SL hype cycle, and I'd been reading about it, but hadn't had any interest in talking with strangers on the internet. But that night I realized that SL could be a place like Mars, a place of sociotechnical innovation that might yield some fresh new utopias. I jumped in, and spent a few to a dozen or more hours nearly every day for four years in a range of communities in Second Life from space museums to jazz clubs to an imagining of Minoan Crete, or in World of Warcraft's (WoW) land of Azeroth, looking for and helping to build those brave new cultural worlds. While I spent a good bit of time – dozens to hundreds of hours each – in virtually every game and social virtual world to rise and fall between 2007 and 2011, SL and WoW over two years in the middle of that period best illustrate my search for something new.

Yet, as with space exploration, virtual worlds too failed to realize their utopian potential, but in different ways. We didn't get a permanent human presence on Mars for a "complicated" mix of reasons: there wasn't one prime cause, but a number of largely separate ones, including the failure of three robotic Mars missions in little over a month in late 1999, economic recession, and the budgetary priorities of a United States government fighting two wars. SL didn't become the "metaverse," our primary way of

interacting with the internet, through digital bodies in digital space. Nor did new, progressive forms of social organization emerge around its technologies of virtuality. Rather, it and its more game-like peers, particularly WoW, became popular (SL having about 1.5 million regular users and WoW up to 12 million in the period I studied) in part by offering simple and old forms of power relations between people, drawn from feudalism, mid-20th Century corporate structures, and the practices of bondage, dominance and sadomasochism (BDSM). The reasons for that outcome aren't complicated, not a stack of distinct forces at work, but rather "complex:" something new and unexpected arising from the interplay of technology designers, users, and the technologies of virtuality themselves: it was an outcome of emergent complexity.

This work grew out of my efforts, first in searching for utopias under construction in virtual worlds, and then in trying to understand why I found cultural systems so different from my expectations. To make sense of my four years of full-time life in the digital field, I had to develop a model to explain why I thought I'd find utopian efforts in the first place, and then to explain why they didn't emerge, but rather generated reactionary forms. That model I call the Resilience Engine, described and illustrated below: a tool that can help explain how some sorts of sociotechnical innovations have the potential to lead to new, more resilient, social forms and why some don't; and just where and why failures to achieve that potential might occur. It's not a model of how innovation happens. Rather, it's a model of what innovation does.

Argument

Implicit in my desire to search for new systems of user self-organizing within virtual worlds ("governance systems" – as distinct from external governance mechanisms such as the software Terms of Use or copyright legislation) were a set of notions about the likelihood of finding such systems, and of their potential utility beyond

their immediate context in social or game spaces. These notions grew from viewing the governance mechanisms of the nation-state as a suite of sociotechnical innovations developed in response to the affordances and constraints of communications and decisionmaking in a pre-industrial era, modified but not best suited to a world of ubiquitous, instantaneous information exchange. With the creation of new spaces explicitly framed as sites of economic, social and political experimentation, apparently free of path dependency from legacy systems operating on physical territory, I expected to see innovations better fit to the current sociotechnical order than those established and dominant.

“Better fit,” however, implies more than deliverance from legacy systems, by implicitly invoking an evolutionary metaphor. The sociotechnical environment in which we govern ourselves, be it with respect to our hobbies, our economic resources, or our divergent values and goals, has changed from that which gave rise to our institutions. Representative government, pyramidal organizations, the territorial nation-state as the locus of crucial exercises of power, are all technological systems designed to accommodate information flows at the speed of the horse, or at best the railroad, problems of fidelity in information reproduction, and an environment of information scarcity. (Anderson, 1983; Scott, 1999) In response to this environmental change, corporate and military structures have been shifting from pyramidal to network models (Castells, 2000; Benkler, 2007), yet formal governance technologies have changed little. (cf. Noveck, 2010) The danger of mis-fit between system and environment is that the system may simply fail to respond to the environment in ways that ensure its survival, that it may collapse. (Tainter, 1990; Diamond, 2004; Hodder, 2012) As the previous citations describe, the phenomenon of social collapse is highly contested in cause and nature. This work will argue from Tainter and Hodder, among others, that sociotechnical

systems do collapse, regardless of the nature of subsequent assemblages that may include various pieces of those systems. It is useful to speak of empires falling, of economies and industries falling, of states failing. Many of the works cited in Part One argue that (a) it is meaningful to analyze sociotechnical systems in the same manner as biological or geophysical systems, subject to the same processes and possessing similar functional elements (Page (2011, pp. 80-81) observes that both “creative” systems, including economies and “idea systems,” evolve as biological systems do, but are also subject to changes by agents – in short, they can *change themselves*); and (b) that there are known mechanisms for enabling systems to adapt to environmental change so as to stave off collapse. This work calls those mechanisms “resilient,” and acknowledges three end states of a system’s encounter with that which is external to it: resilient, or altering to respond to environmental change in ways that increase its chances of survival; entropic, or unchanging in a matter leading to collapse due to a misfit with a new environment; or cadre change, which while changing superficial aspects of the system, render it neither necessarily more nor less able to respond to environmental change.

While Page (2011, pp. 149-150) uses the term “robustness” for “the ability of a system to maintain functionality in the face of some change or disturbance,” a term that he claims “expands on” the notion of resilience, which he defines as specifically the ability of a system to “respond to and recover from trauma.” Summarizing the literature on resilience, Zolli (2012, pp. 6-7) notes that different fields, including engineering, psychology, ecology, and business, use the term differently, and puts forth his own definition, which focuses on the capacity of a system (biological, cultural or sociotechnical) to “maintain its core purpose and integrity” in a changed environment. Boyd (discussed in Osinga, 2007 and at length in Chapter One below) defines the

desired outcome of systemic change as permitting the system (or its constituent individuals) to comprehend and shape the world, rather than solely being shaped by it, though he uses no particular label for that outcome. I use “resilience” herein to acknowledge the breadth of application of the term across disciplines and to invoke the core image of being able to bend rather than break when confronted with environmental stressors.

Returning to my original questions, then, what I was looking for in the period of my ethnographic fieldwork in virtual worlds was evidence of emergent processes within those worlds capable of being taken up by the dominant global system (here usually called entertainment capitalism) so as to make it more resilient and less entropic. What I found confounded my expectations, and those of business and academic analysts of virtual worlds in the era which ended during my fieldwork. Andrew Feenberg poses the question, “Can we conceive an industrial society based on democratic participation in which individual freedom is not market freedom...?” (Feenberg 1001, 5). My research strongly suggests that the answer is simply “no.” I argue here that systems of user self-organizing within virtual worlds which developed in the virtual worlds launched around 2003-2005, peaking in popularity and attention around 2006, and entering a significant decline in 2010, almost entirely shunned civic, democratic forms in favor of those built on hierarchies of personal power: simple feudal, corporate or BDSM forms.

To explain this outcome, contrary to the expectations of techno-utopians and many business analysts, I set out a model, the Resilience Engine, for how sociotechnical innovations produce, or fail to produce, a set of outcomes I call “resilient,” which include civic, democratic institutions. Applying the model to a set of cases drawn from the virtual worlds of Second Life and World of Warcraft between 2008 and 2010, I demonstrate how the model explains a range of outcomes, resilient (able to endure and respond to

environmental change), entropic (tending towards collapse in the face of environmental change), and neutral (cadre change at the top of an unchanged system). In concluding, applying the model to the subsequent generation of computer-mediated social platforms, which I argue were intentionally engineered to prevent resilient outcomes in order to ensure the continued dominance of the current power order, the suggested outcome is an entropic one, pointing toward systemic collapse of that order.

Primarily, this work is designed to explain an unexpected outcome: the utter failure of successful innovation for democratic self-governance in a generation of platforms highly touted, and in some cases explicitly intended, to generate such outcomes. In order to do that, I have attempted to make explicit a process of innovation for social change which theorists from a broad range of fields have grappled with but have either failed to make explicit key assumptions or made assumptions that have proven inapplicable in the current case. In applying the model to my historical case, I argue that it points towards an acceleration of the dominant entertainment capitalist order's consolidation of power in a way that renders the system especially vulnerable to entropic collapse.

The Resilience Engine

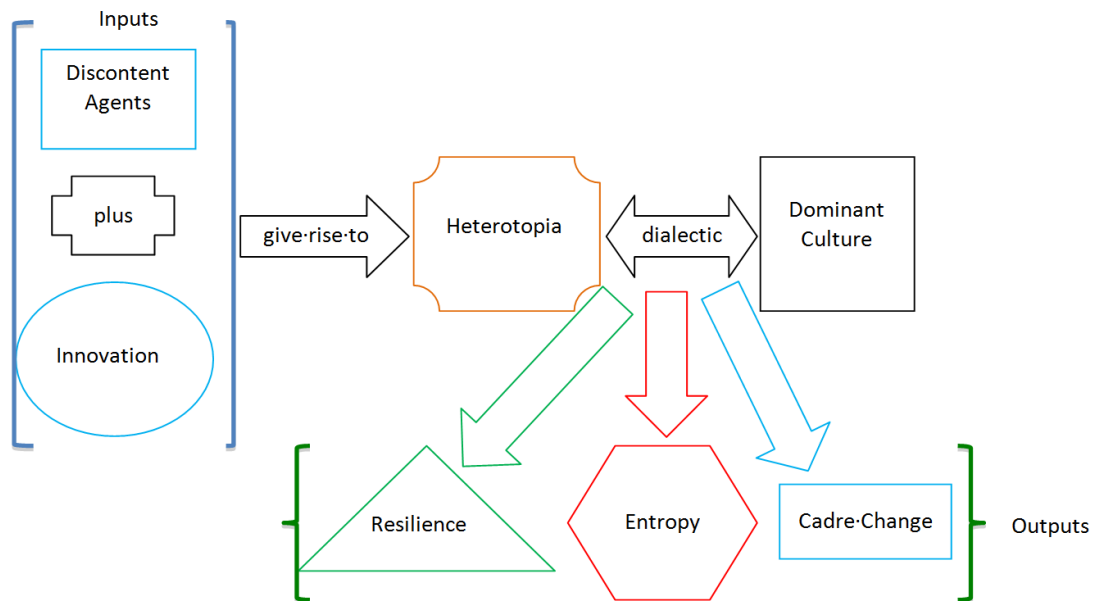


Figure 1: The Resilience Engine model.

The Resilience Engine takes as its feedstock two elements: (1) an innovation, which I define as some sociotechnical bundle that includes material invention, along with designers' expected ways of using it, enabling legislation or the lack of prohibition of developing it, and (2) a large enough number of people who see in that innovation a prospect for gaining agency which they believe the current dominant order cannot provide. The most familiar name for these people is "pioneers," a controversial and freighted word, and "large enough" is a perilously slippery concept, but the two provide a place to start.

Feed an innovation and some pioneers into a Resilience Engine, and it generates a special kind of place, bounded off from the dominant culture. Games scholars call the permeable boundary around it a "magic circle;" some scholars of

complex adaptive systems call it a “membrane.” Michel Foucault called the space within it “heterotopia,” (Foucault 1967) a term he invented that has just the characteristics we need here. That heterotopia is a space in which two key things happen: inside the “magic circle,” our pioneers work with new technology in a new environment. They develop new systems for managing what they build, and learn new ways of doing, shaped by their goals, by the characteristics of the innovation itself, and by their environment. But they also interact across the membrane with the dominant culture, which may try to suppress, crush or negotiate with the newly-empowered pioneers. If the timing and the terms of interaction are just right, the dominant culture learns, changes and grows, what I call a “resilient” outcome. Two other outcomes are possible: cadre change, in which the leaders of the heterotopia simply usurp leadership of the dominant culture (as with the rise of the robber barons, and of dot-com billionaires); or suppression of the heterotopia by the dominant culture, an outcome I call “entropic.” So, the Resilience Engine can explain failures as well as success, and points to the sorts of sociotechnical inputs that are unlikely to get the Engine started in the first place. This is what the model of the Resilience Engine attempts: to define the production of elements of systemic resilience – ideology and tacit knowledge – as the outcome of a particular set of spatial practices, themselves necessarily shaped by the particular sociotechnical innovation from which they arise.

This work develops and explains the Resilience Engine, in contrast to other models of sociotechnical change, and then applies it to two virtual worlds during 2008-2010 to see if they could have started the Engine, whether they could or did generate heterotopias, and whether the outcome was resilience or stagnation. As we’ve seen, it’s got some radical outcomes – not stagnation, but regression – to explain. Part One develops the Resilience Engine model by drawing from sources in a range of disciplines

and eras, and contrasts it to the sort of linear model of progress dominant through most of the 20th Century. After that, it makes the case for applying the Resilience Engine model to virtual worlds and offers some glosses on the model from the field of games studies. Part Two then applies each component of the Engine - innovation, pioneers, heterotopia, dialectic across a membrane, and possible outcomes of stagnation, cadre change, or resilience - to stuff, people and their interactions in SL and WoW in the years that one cycle of the Resilience Engine ran from start to conclusion, 2008 to 2010. A brief conclusion argues that the cycle won't run again with computer-networked social tools, and may not run at all, as capitalist industries master the ability to design out heterotopic potential entirely.

PART ONE: THE RESILIENCE ENGINE

Part One builds a model, the Resilience Engine, of how a given sociotechnical innovation does or doesn't contribute to the resilience of its society, where the failure points of that process might be, and what resilient outcomes entail.

Chapter One makes the case for a cyclical view of the process of turning innovation into systemic resilience, in contrast to linear models which dominated 20th century thinking. Drawing from a disparate group of theorists working before and after the middle of the century, a case is made for distinguishing closed systems, driven by linear processes of development which tend towards stagnation and collapse, from open systems, which through ongoing encounters with external novelty tend towards enduring resilience.

Chapter Two wrestles with concepts of place and spatiality in which innovations and agents interact with each other and with the dominant order. The notion of heterotopia, a space bounded from the dominant order, but in no ways a *tablua rasa*, in which novelty is generated and defended, is put forth as the locus of innovation for systemic resilience.

The generative aspect of the Resilience Engine lies in a dialectic between heterotopia and dominant system across a membrane which permits interaction while maintaining the autonomy of the new space. Chapter Three analyzes the nature of the membrane and the dialectic process which constitutes the operation of the Resilience Engine, along with the potential outcomes of that process.

Chapter 1

MODELS OF INNOVATION AND AGENCY

Some notion of innovation as a social good has been present in American discourse for over a century. Two general models of how innovation produces social good, and what that good is, competed during the 20th Century. One, a linear model, held that “progress,” with the right inputs, would continue along a linear slope indefinitely. Another model was cyclical, stressing a dialectic between those powerful within a system and those seeking power outside it, each successful cycle generating improvements, but without an assumption of steady continuity. While out of favor for much of the century, towards its end the cyclical model reappeared in several key analytical works. At the core of this model is the notion that a particular process begins when sociotechnical innovations are taken up by persons seeking greater agency than the dominant order permits them. This chapter begins to synthesize a more complete cyclical model from the works of a range of theorists, and then turns to focus on the role of materiality in systems, particularly software and games.

Section 1: Contesting the Innovation Frontier: Competing Models of Innovation

The frontier of the American West has been used as a metaphor for sociotechnical innovation for over a century. Historian Frederick Jackson Turner’s initial concept of frontier settlement as a cyclical process was lost in later meta-narratives of linear progress, but restored in postmodern scholarship in a wide range of fields, from business innovation studies to archaeology and military strategy. The cyclical and linear models are crucially different, with linear models representing closed systems which

tend towards entropic collapse, while the cyclical models, based on continual engagement with external novelty, tend towards resilience.

a. Frederick Jackson Turner and the Cyclical Frontier

In a series of essays between 1893 and 1914, historian Frederick Jackson Turner articulated one of the most powerful aspects of America's self-conception, which would be reinterpreted, advocated and attacked over the following century, never losing its grip on the American imagination. Turner argued that "the peculiarity of American institutions" was due to their serial reinvention along a spatio-temporal line of expanding settlement. Rather than a linear model of progress, Turner saw cycles of a "return to primitive conditions" followed by innovation, maturity, stagnation and further westward expansion, starting the cycle anew. (Turner, 1994 [1893], p.32) Turner argued that confrontation with wilderness (itself something of a uniquely American construction: see Nash, 2001) and with the alien cultures of Native Americans drove socio-political innovation, both for good and ill in his estimation. But, with the breakup of the frontier line evidenced in the 1890 U.S. Census, that process, at the national if not the individual level, had come to an end. The United States, as evidenced by the immense concentrations of economic and political power forming in the hands of railroad tycoons and industrial trusts, would henceforth tend to revert to, in his term, "aristocracy."

While Turner largely foregoes analysis of the mechanism which enabled this exodus, describing it only as "the availability of free land," thus ignoring both the people from whom the land was taken and the legislative and military underpinnings of that taking (preposterous in retrospect but widely believed at the time), he describes a specific concept of the American continental frontier process. For Turner, the frontier was made of persons and their encounter with novel place, which generated new tacit

knowledge supporting economic and political autonomy. As the metropolis reached out to assimilate this new order, the locals would organize in its defense, learning democratic skills and processes and asserting them against the establishment. While they would eventually be absorbed, the process of confrontation would revitalize the metropolis directly through incorporating new political actors and indirectly through incorporating new tacit knowledge appropriate to the management of the newly acquired territories. In "Pioneer Ideals and the Midwestern University" Turner outlines this cycle at length, describing its downturn phase as the individual's realization that "the forces of capital and complex productive processes" were dominating over local power and understanding, and in response "the defenses of the pioneer democrat began to shift from free land to legislation." (Turner, 1994 [1910], p.108)

Turner acknowledges an era coming to a close, with the rise of forces un-conducive to resilient democracy. Given his concept of the frontier process, the national conquest of dense, settled populations in the Pacific and Latin America advocated by Turner's contemporaries could not be an engine for democratic dynamism, but would further stifle egalitarian democracy by granting more power to political and economic institutions at the expense of the individual. He also recognizes that by 1910 the primary source of wealth and power had shifted from agricultural land to industrial technology, which, unlike farmland in his time, tended to concentrate in a few hands. His counterweight is the public university, where a free public education acts as free land did, putting economic and political power back in individual hands. Within science and technology, frontier-like innovation can still take place, giving individuals the means to act against the institutional consolidation of political and economic power. Research – in free-of-charge public universities with merit-based admissions – has replaced agricultural cultivation as the foundation of gaining power over nature, but the process

remains unchanged as the source of democratic power against natural social tendencies to political and economic aristocracy.

b. Vannevar Bush and the Frontiers of State Power

Turner's radical, populist, cyclical model was lost in an imperial age which came more and more to believe in linear models of progress and of history generally. Writing to the U.S. President just at the end of the Second World War, Vannevar Bush, Director of the Office of Scientific Research and Development, strongly echoed Turnerian themes, with a subtle but essential shift in emphasis, describing a frontier midway between the imperialist version dominant earlier in the century and Turner's focus on yeoman democracy. In the transmittal letter for his report, "Science the Endless Frontier," the shift is evident: while claiming that science "offers a largely unexplored hinterland for the pioneer who has the tools for his task," that task is sketched in the style of Hamiltonian and Rooseveltian democracy rather than Turner's Jeffersonianism: "The rewards of such exploration for the Nation and the individual are great. Scientific progress is one essential key to our security as a nation, to our better health, to more jobs, to a higher standard of living, and to our cultural progress." (Bush, 1945) Gone is any notion that the pioneer stands in contradistinction, if not opposition, to the remote and impersonal organs of state and economic power.

One must be careful not to overstate the distinction between Bush and Turner, however. For its time, "Science the Endless Frontier" presents several bold challenges to state control of knowledge production, and indeed had as one of its aims a partial undoing of the militarization of science during the war. Turner was quite conscious of being an historian for his era, writing during the severe economic crisis that marked the end of the Gilded Age, with its massive and unpopular concentration of economic and

political power in a few institutions with limited democratic accountability. (Faragher, 1994, p. 7) Similarly, Bush's report was written at a moment of equally fundamental transformation of American power relations, particularly with regard to the mechanisms of scientific and technical innovation at the close of the Second World War. 1945 was no time for Jeffersonian visions of the state: Bush's challenge was to delineate the roles of the state and of universities in the "frontier" innovation process. In that context, Bush was as much of an advocate of a Turner-like model as was practicable. Bush explicitly states that "the American tradition" is that "new frontiers shall be made accessible for development by all American citizens." (1945, Chapter 1) Turner was naïve in his concept of "free land," downplaying the role of policy, legislation and the Army in "freeing" it from its occupants; Bush is more cognizant of the state infrastructure underpinning even the Jeffersonian state, let alone the one he worked for at the end of the Second World War.

However, the Bush model poses key questions for the analysis of subsequent socio-technical change. Turner argued that the continued development of a robust democracy, fundamentally participatory, required a meritocratically-educated citizenry with access to the means of production, no longer land but laboratories, in order to forestall the aggregation of economic and political power in remote and stagnant institutions. The Bush model deserves examination in greater depth to clarify whether it in fact sought the same ends, and whether, regardless of its intentions, it was capable of producing Turnerian effects. The subsequent half-century of socio-technical innovation saw both models in use: understanding their intended and actual effects is critical for evaluating their roles, supporters, adversaries, successes and shortcomings at the dawn of the internet age, when both models would vie for power, and the Turnerian one would inspire the platforms studied here.

Bush argues that the growing centrality of science to the state, while manifested in the growth of Federal scientific agencies between 1900 and 1939, now requires national policy – but one without the “rigid controls” of wartime and with a return to “freedom of inquiry and...healthy competitive scientific spirit.” (1945, Chapter 1) He acknowledges the role of the university, and in particular the need for meritocratic education, calling universities “the centers of basic research,” arguing that if they are to meet “the rapidly increasing demands of industry and Government for new scientific knowledge,” and to make up for a “deficit” of scientists and technologists due to the wartime draft, then they should receive public funding, and talented students should receive scholarships. (1945, Chapter 3) This formulation reverses Turner’s terms: the university is not to empower the citizen to resist the centralization of power, but to “meet the demands” of just such centralized powers. While it is essential for basic research to remain largely autonomous from outside direction of agendas, it is the responsibility of the government to promote science and scientific talent, as they are vital to “health, jobs and national security.” Yet, it is greatly important that research universities provide “an atmosphere which is relatively free from the adverse pressure of convention, prejudice, or commercial necessity,” as “new knowledge is certain to arouse opposition because of its tendency to challenge current beliefs or practice.”

In his final chapter, Bush declares that “the Federal Government should accept new responsibilities for promoting the creation of new scientific knowledge and the development of scientific talent in our youth.” (1945, Chapter 6) This conclusion follows from a model which assumes the unity of citizen, industry and state, with military needs and values not predominant, but equivalent with jobs and health as fundamental goals for state action. It assumes without analysis the drive to do basic research, linked rhetorically but not in logical detail to the drive to settle the Western frontier. The

motivations alluded to are curiosity and competition – presumably for status – within the scientific community. These motives differ greatly from those Turner ascribes: personal autonomy of wealth and power. They also serve different ends: in Turner’s case, democratic revitalization and local socio-political innovation versus Bush’s service to the unity of state, industry and Federal government.

c. The Return of Cycles: Spar’s Model of Innovation

Turner and Bush both argue that scientific research had replaced Westward expansion as a driver of American innovation, a claim evaluated for its consequences below. Turner’s model of the frontier was cyclical, yet he never addressed how or whether that cycle would manifest in scientific and technological innovation. Bush’s model appears linear: better inputs generate better outputs ad infinitum. The question then becomes, which model, if either, represented the actual sociotechnical practice of innovation from Turner’s time to the present. In addressing that question, Harvard political scientist Deborah Spar found, in fact, a cyclical process much like Turner’s model.

Spar analyzed a range of what she describes as communications technologies: transatlantic shipping, telegraphy, radio, satellite TV, cryptography and the web browser, concluding that sociotechnical systems move through four distinct phases: innovation, commercialization, creative anarchy, and rules, to be succeeded by another innovation beginning the cycle anew. (Spar, 2001, p. 11) She begins with the Turnerian observation that “once the technological frontier has moved past a certain point, power – and profits – seem to shift away from those who break the rules and back to those who make them.” (2001, p. 8) She envisions disruptive technological change as creating a “political gap,” by enabling entrepreneurial businesses to enter an unregulated field, an act which is

inherently political, as the “pioneers” play a key role in shaping the rules by which they will later be regulated – at their own request, in order to legally and legitimately consolidate their gains.

Her first phase, “innovation,” looks much like Bush’s basic science: enthusiasts develop and appreciate a new technology prior to its demonstrating commercial utility. Little regulation of what they have developed is needed or provided, as the technology has yet to have discernible impact. In the second phase, “commercialization,” one sees “the characters usually associated with the frontier: the pioneers, the pirates, the marshals and the outlaws.” (2001, p. 12) As the innovation generates extraordinary profits, it draws both speculators and pirates, who can operate almost at will, as the rules to suppress them are yet to be developed. The pace of commercial innovation outstrips that of regulatory development, leaving “the marshals” at a disadvantage or in substantial irrelevance. However, in phase three, “creative anarchy,” problems with the social impact of the technology arise “with varying ferocity and after different gaps of time.” (2001, p. 13) Spar sees the problematic areas as typically those of property rights, coordination and competition. Newly dominant market participants want their returns ensured, and not subject to the depredations of pirates; likewise they want to limit the entry of new players into “their” market. The problem of coordination is one of technical standards, in order to ensure interoperability and broad markets, but entrepreneurship tends to exacerbate the problem of divergent standards. The drive to standardization gives rise to its own problem, a tendency towards monopoly, with attendant political and social problems generating a countervailing force back to anarchy and the suppression of innovation. In the fourth phase, “rules,” the former entrepreneurs now dominant in the market begin to lobby for what they had explicitly opposed before, state regulation, in order to prevent anarchy and enable the legitimate consolidation of their gains.

Sometimes the state will step in early, and sometimes user or citizen groups will drive for rules, but Spar claims that in most cases (though she presents examples of early state intervention, usually stifling innovation to the advantage of the already powerful and influential), it is the dominant firms themselves who seek regulation.

Spar's lengthy analysis of the sociotechnical evolution of telegraphy is particularly telling, as it overlaps with the era of Turner's observation. Spar notes the radically transformational impact of the telegraph, following on Samuel Morse's being laughed out of Congress on presenting the device in 1838, extending to the effective birth of international news and enabling the rise of the distributed, non-local business enterprise. For the first twenty years, there "were no rules in the industry, only a heady sense of potential and the whiff of impending riches." However it was the eventual imposition of comprehensive regulation "that allowed telegraphy to slip beyond its initial chaos and become a vital part of modern commerce." (2001, p. 63) This regulation was the result of popular outrage over the market-dominant firm Western Union's business practices, in the context of the rapid transformation of America from a land of yeoman farmers to a realm of unimaginably powerful enterprises, be they railroads or Wall Street financial firms, whose rise was dependent upon the telegraph. Western Union successfully fought regulation until 1910, by which time the telephone was emerging as the new disruptive technology. Spar observes that the monopoly power of Western Union was neither desired nor sought by the technological pioneers nor the early entrepreneurs, but emerged as a means of self-governance through a unity of standards, rates and codes which was necessary to a technology becoming a backbone of social, economic and political life.

Spar's theory stands in a sense as a fusion of Turner's and Bush's perspectives. With Turner, she acknowledges the creative sociotechnical power of "frontier stage"

technologies, both in technical innovation and in governance or regulation. She documents the process by which innovation in communications technologies repeatedly transformed the world from the foundation of transatlantic trade onwards, enabling great wealth, new forms of enterprise and of governance. She acknowledges the value of the eras in which the risk-taking individual, innovator or entrepreneur, free of established patterns, gives rise to new local order in response to a novel environment, in terms no less appreciative than Turner's. However, where Turner, writing in an era of massive transfer of political and economic power from the autonomous individual to the telegraph-networked enterprise and state, views the closing of the frontier in primarily negative terms, Spar aligns with Bush in valuing the socio-political stability of the era of regulation of mature industries, viewing it as a negotiated solution among citizens, users, dominant firms and the state to the problems of management of wealth, power and technology. Spar's analysis, however, as the case of the telegraph demonstrates, is predicated on an implicit premise of a constant supply of "new frontiers" as an engine of innovation. Nowhere, unfortunately, does Spar address the importance of an incipient new cycle to the normative value she places on the consolidation phases, any more than Bush provides a formulation of the linkage between innovation and benefits to state, industry and citizen.

Turner's leap from his description of the workings of the cycle of frontier settlement to his assumption that a free technical education could serve as a similar engine of democratic revitalization is an astonishing one, more astonishing than its parallel in the rhetoric of subsequent scholars and politicians for his clarity in describing the workings of the frontier mechanism. Turner sketches out his reasoning: industry has replaced agriculture as the source of wealth and power, therefore access to the tools for creating industry must replace "free land" in order for his cycle of resistance to

“aristocracy,” the natural tendency of the American polity, to continue. The linear model, however, loses specificity as to the mechanism by which sociotechnical innovation takes place: Bush assumes as given that technological innovation will happen with sufficient training and funding; and, if left largely to the invisible hands of individual research agendas, social good, defined unproblematically as that which is good for the state, industry and the people, will result. All this takes place within the established order, emphatically not, per Turner, in conflict with it. Spar sides with Turner on this point: sociotechnical innovation requires action “outside” the space of the dominant order: her “commercialization” stage is one in which people, drawn by the prospect of economic power, develop new tacit knowledge in interaction with a technology-in-use for which old concepts of business organization, of industrial self-regulation and of legislation fail as an optimal fit. In none of her examples does transformative innovation take place within a dominant industry or as the product of early state support: her key example of the telegraph begins with its inventor “being laughed out of Congress” on offering it up as a public good. This concept of the “outside” is essential to her model; it is also essential to that of the Resilience Engine developed here.

What both Bush and Spar add, however, is an updating of Turner’s model to take account of exactly that which he opposed: the dominance of a strong centralized state built on industrial wealth and power. Turner could describe a dialectic in which local communities could actually challenge the weak economic and political institutions of 19th Century America: a global superpower stood in quite different relationship to its own citizens fifty, and a hundred, years on.

That transformed power environment is the context in which this work’s analysis of one particular early 21st Century technology is grounded. The story of virtual worlds is that of a cycle playing out on “internet time,” over a few years, rather than decades for

the telegraph and several centuries for Western expansion. However, more elements will need to be added to Turner's and Spar's concepts to provide a comprehensive understanding of the sociotechnical evolution of virtual worlds.

d. Thermodynamics and Decision Loops: Boyd's Discourse on Winning and Losing

Another cyclical theory of innovation offers up an explanation for the need for the "step outside" missing from the linear model. In his briefing set "A Discourse on Winning and Losing," (as interpreted by Osinga, (2007), since Boyd's materials are largely non-public), United States Air Force Colonel John Boyd provided a model for the transformation of complex adaptive systems which parallels Spar's and Turner's in structure, but adds greater theoretical and explanatory depth. In particular, it accounts for the need to step outside the dominant system in order to transform it.

Boyd begins with the premise that a basic human goal is "to improve our capacity for independent action." (Osinga, 2007, p. 132) Our drive to cooperate or compete is spurred by this need: we will agree to constraints on some aspects of our ability to act alone in order to cooperate to develop a larger sphere of independent action. A collective which does so thrives; one which will not or cannot meet members' key aspirations for autonomy will alienate them, driving them out of the collective, either to exist as weak, atomistic individuals or to join a more responsive collective. In order to know what actions to take in service of our goals, we need a mental model of reality-as-we-perceive it, and the ability to adjust that model in the face of changing circumstances through a dialectic process of induction and deduction. This element of the drive for autonomy and agency, while key to most all cyclical models of innovation, will be challenged in Chapter Six below, in the case of virtual worlds from 2008-2010, not for its role as a necessary element, but as an unquestioned axiom.

Boyd then turns from the psychological to the systemic by drawing on Jean Piaget's (1971) *Structuralism*, a broad synthesis of systems-theory approaches across a range of disciplines from linguistics to mathematics to anthropology. Boyd argues for systems generally as having emergent properties which cannot be assigned to any of a system's individual components. For him, as for the systems theorists analyzed by Piaget, biological, physical and sociotechnical systems are fundamentally of a common kind, and can be analyzed with a common set of tools. Following Bertalanffy (1968), he distinguishes between analysis and systems thinking as key tools: analysis breaks a thing into parts to understand it (which he calls "destructive deduction"), while systems thinking, or "constructive induction," "means putting it into the context of the larger whole." (Osinga 2007, p. 71) For Boyd, strategic thinking lay in the combination of both methods.

To this acknowledgement of the crucial and unique role of systems, Boyd added the cybernetic notion of feedback, necessitating circular notions of causality similar to those implicit in Turner and Spar. Via Bertalanffy, Boyd adds to the concept of feedback an interpretation of the Second Law of Thermodynamics (which states that the entropy (essentially, energy not available for work) of a closed system never decreases because such systems naturally tend towards the state of maximum entropy), for a point critical to understanding innovation processes. Osinga argues (2007, p. 73) that Boyd drew from Bertalanffy the notion that, while the Second Law holds true for "closed systems," "open" systems such as living beings stand outside the Second Law as they "need to feed on a continual flux of matter and energy from their environment to stay alive." (This accords with contemporary scientific understandings of thermodynamics: see, e.g., Chaisson, 2011) Open systems thus "maintain themselves far from [thermodynamic] equilibrium" (or condition of maximum entropy) to the extent that they are characterized by continual

flow and change. Thus the entropy (and per Boyd, uncertainty) “generated by an inward-oriented system talking to itself can be offset by going outside and creating a new system,” a process Boyd calls a “Dialectic Engine” generating improved capacity for independent action on the part of a group’s members. (Osinga, 2007, pp. 138-139) This engine is not just one of organizational vitality, but is itself the engine of resilience: the generating of “mismatches” between mental models and environment and our attempts at resolving them are what we call science and technology, and their practice is essential to our continued ability to thrive. (2007, p. 104)

This formulation goes beyond acknowledging the systemic benefits of serendipitous encounters with the external to suggest the intentional creation of external systems, or “frontiers.” Where Turner described extant external systems, and Spar and Bush simply posited their reliable emergence, Boyd’s concept of strategy includes engineering novelty as a tool of ensuring resilience.

Osinga adds that “the internal regulatory mechanisms of a system must be as diverse as the environment in which it is trying to deal.” Absent a variety of mechanisms, the system is constrained in the variety of responses it can wield, thus becoming predictable and strategically exploitable. The process of developing internal regulatory mechanisms in response to diverse external stimuli is, per Bertalanffy, “learning,” a key concept in Section 6 below. This process of developing internal regulatory systems in response to external stimuli necessitates the maintenance of a boundary. Differences across the boundary – what Boyd calls “mismatches” – are essential for the process of building resilience. He further notes that mismatches “are what sustain and nourish the enterprise of science, engineering, and technology” which “permit us to continually rematch our mental/physical orientation with that changing world so that we can continue to thrive and grow in it.” (Boyd, *The Conceptual Spiral*, quoted in Osinga (2007, p. 104))

Science and technology enable us to adapt by “changing our orientation to match with a changing world that we in fact help shape.” (2007, p. 226) This formulation provides what Turner and Spar failed to: an explicit theoretical conception of the mechanism by which innovation generates resilience. Boyd also posits a mechanism of systemic collapse, or failure of resilience: “if we don’t communicate with the outside world – to gain information for knowledge and understanding as well as matter and energy for sustenance – we die out to become non-discerning and uninteresting part of that world.” (Boyd, *Patterns of Conflict*, quoted in Osinga (2007, p. 83))

Military strategy for Boyd is a game in which one seeks to minimize an adversary’s ability to interact with its external environment while “sustaining or improving” one’s own. (Boyd, *Strategic Game of ? and ?*, quoted in Osinga (2007, p. 209). The framework for executing such a strategy was the one element of Boyd’s work which became widely known and popularized (and oversimplified, per Osinga (2007, pp. 5-6) particularly in business schools): the OODA loop. In its simplified form, the OODA loop is a cyclical process of decisionmaking (or interaction across the membrane with an external agent): Observation, Orientation, Decision, and Action.

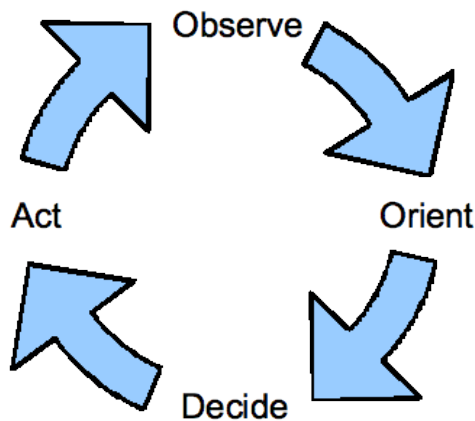


Figure 2. Simplified OODA loop.

While he first formulated it as a model of air-to-air fighter combat, Boyd expanded the OODA loop into a generalized model of (how to maintain one's own) systemic resilience and (how to inflict) collapse.

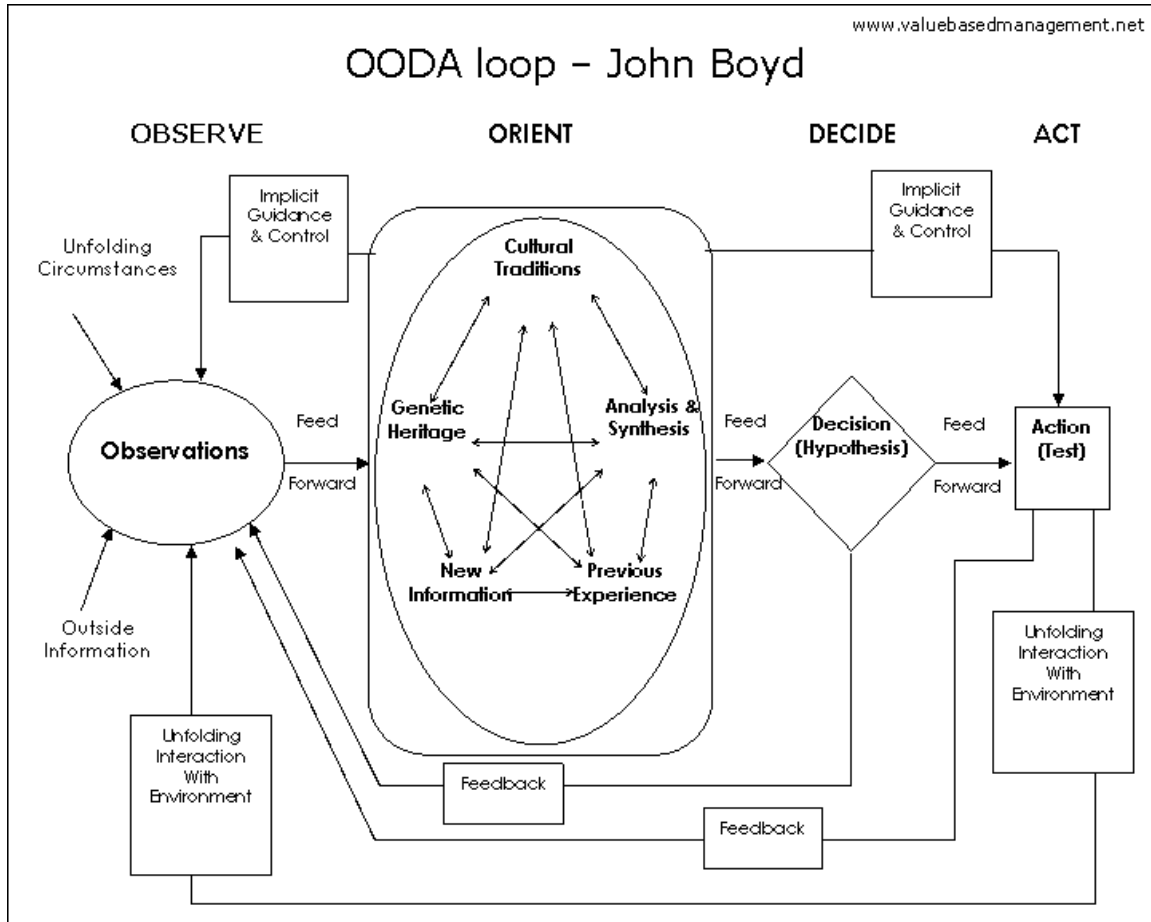


Figure 3. Boyd's OODA loop.

Systemic collapse, he argues, comes from a rapidly changing environment which forces excessive compression of the OODA cycle, or an inability to understand and react to an unexpected environment. (2007, p. 141) Victory, correspondingly, comes from resilience, or the ability to perform the OODA cycle quickly and accurately in response to a dynamic environment.

Boyd thus provides four key elements of a synthesized model of sociotechnical transformation: he explains what generates the impulse to innovate (perceived

mismatches between mental model and observed reality), why a space outside the bounds of the dominant system is necessary (it generates more opportunities to observe mismatches and generates external novelty, the only sustainable source of transformation), and why a dialectic of conflict is inevitable (persons seek to maximize autonomy; their power to do so comes from superior mental models developed in direct interaction with a novel reality; those models, generated outside the dominant system, are incompatible with it); and why transformation of the established order is a desirable outcome for all concerned (a large system accustomed to being overhauled in response to novel external stimuli is exceptionally robust, and thus better able to meet persons' needs for autonomy, while when that system fails, external sources of autonomy are available).

Where Turner describes one case (Western emigration and settlement) and theorizes an analogy to a second (a free technical education), and Spar tests a descriptive, rather than explanatory, model against a broad range of cases, Boyd theorizes the mechanisms by which their shared insights operate. Boyd's work is grounded in concepts drawn from a vast range of contemporary scientific observations and postmodern theories, asserting as its core that only through dialectic with the external can an organism or organization prevent its own stagnation and collapse, let alone satisfy the needs of its components.

Section 2: Stuff and Systems: Playing with Materiality and Emergence

This section takes us from global and abstract systems towards the concrete in two ways: through analytical schemata grounded in the specificity of things, whether those things are physical or software objects; and by arguing that games, particularly computer-mediated games, provide specific instances of the sorts of closed and open

systems described more generally in Section 1. The study of computer game-like systems is not merely an exercise in modeling global systems, but provides insight into the nature and evolution of those systems via a dialectic of mutual influencing.

a. The Persistence of Thingness: Hodder's Archaeological Entanglement

Progressing from Turner to Spar to Boyd, we can synthesize an almost-complete model of a Resilience Engine, one which describes a mechanism for translating sociotechnical innovation into systemic resilience and highlights points of potential failure. However, the model at this stage is not quite complete, nor is the link to the internet and virtual worlds yet clear. A few more pieces need to be added, and several of those come from new work in Object-Oriented Ontology and closely related theories.

Ian Hodder, an archaeologist, develops a theory of change similar to our key contributors above in his new (2012) work: his archaeological perspective adds critical counterbalances to a range of theories of the relations between persons, things, and environments. Hodder challenges the constructs of Actor-Network Theory (see, e.g., Callon, 1986; Latour, 2005) for over-emphasizing a pre-existing intermingling of persons and things (in other words, assuming, rather than theorizing, the emergence of an actor-network) and thereby losing sight of the continuity of affordances and constraints of things across environments. This critique is particularly appropriate coming out of archaeology, a discipline grounded in constructed artifacts and natural environments enduring and interacting over millennia. While a long-scale temporal approach might be discounted in an analysis of sociotechnical development taking place over "internet time," it is that very change of temporal scales, or duration of OODA loops, which demands a continued grounding in the specificity of things on the internet, even as their social context changes by the month. Hodder argues that "the material objectness of

things tends to trap humans into specific forms of co-dependency.” (2012, p. 95)

Anthropological work on virtual worlds has a tendency to dwell in the metaphors of spatiality and culture while failing to give adequate weight to the specific affordances and constraints of hardware and software. Hodder holds that the technological is co-constructed along with the social, while nonetheless retaining a constant “thingness” across users and across time. Much of what this work will do involves simultaneously accepting and problematizing the distinction or lack of distinction between the virtual and the real: Hodder cautions us to return constantly to “thingness,” a concern fundamental in the internet context to the works of Lessig (2006) and Post (2009), among others, who begin with platform engineering as the foundation of internet culture.

Hodder holds that “the source of transformation and constraint in human society” lies in the dependencies (a term of art for him) between humans and things, and it is in specific, contingent, webs of dependencies in which societies form, evolve and collapse. (2012, p. 97) He argues that these webs are shaped by the different temporalities of humans and things: for an archaeologist, things of note may last dozens of human lifetimes. In the case of virtual worlds, the different scales of technological and social change contributed critically to particular contingent outcomes. While this can be theorized per Boyd as the quintessence of his notion of dueling OODA loops, with users tending to have tighter cycles than platform developers (perhaps as a result of the institutional, corporate-bureaucratic nature of the commercial design process, or of the greater number of users running simultaneous loops), again Hodder’s return to the thing offers an important counter to theories in which social processes are the predominant focus of attention.

Hodder’s entanglements are “open, partial and indeterminate,” (2012, p. 159), and these elements in his analysis provide the material for cultural change, taking

Boyd's focus on the essential distinction between closed and open systems to a civilizational perspective. Citing work in complex adaptive systems, particularly that of van der Leeuw, he lauds the field's focus on instability and disequilibrium as the generators of evolution, citing van der Leeuw and McGlade (1997) in terms nearly identical to that of Boyd on the "lack of fit," what Boyd calls "mismatches," as the driver of productive change. Hodder sees these mis-fit elements as "catalysts," elements whose emergent properties (again, stressing temporality and sequentiality as crucial factors) disrupt systemic coherence. It is in these moments of catalysis that a contingency comes into being, which may allow disruptive change, a punctured equilibrium, that drives evolution. He observes that spatiality is often crucial to the "untying of entanglements" necessary for a fundamental restructuring of systems: "it is in marginal peripheral areas where the entanglement is less dense, less regulated, less scrutinized that it can more easily be undone so that change occurs." (2012, p. 166) This stress on the spatiality of novelty reflects Turner, and will become a critical element in the Resilience Engine, particularly as applied to the complex question of the spatiality of virtual worlds in Part Two below.

Hodder grapples with the question of directionality of change, struggling with the paradox of a clear lack of teleology in systemic choices, but an equally un-arguable trend towards greater systemic complexity (questions addressed from a physical-science perspective in Chaisson 2011). While not directly at issue here, his analysis of the directionality of systemic/civilizational change, drawing from van der Leeuw's notions of irreversibility within complex adaptive systems and the notion of path dependency, provide a framework for the key paradox of my observations in virtual worlds during a period of transformation: systems should tend towards greater complexity, yet in my fieldwork I observed the near-universality of the opposite: an overwhelming flight from

complexity to the simple clarity of premodern dominance hierarchies, as developed in Section 15 below. This suggests a tension between systemic affordances, or the capacities of things, and the desires of their users, a point implicit in Hodder's critique of ANT.

While acknowledging prominent critics of Diamond's (2005) popular perspective on societal collapse, he notes that post-"collapse" assemblages "are usually situated within entanglements that are quite different from their earlier versions." Thus, while 1893 obviously did not mark the "end" of the history of the American West, or even the end of the dialectic of cultural and environmental confrontation key to Turner's understanding of the frontier, later "entanglements" were internal to the metropolis, not taking place along the membrane separating inside from outside. It is this focus on action across the membrane that unites Turner, Boyd and Spar, and drives their selection as the key works giving rise to the model of innovation developed below. While Hodder's focus on the grand scope of the cycle of innovation offers essential correctives to more static or short-term views, the three theorists highlighted here bring an attention to the compression of sequentiality and temporality of "internet time" essential to understanding how the period from 2008 to 2010 could witness such a sharp change in practices of spatiality, sociality and selfhood. It is essential to note that the same sequentiality is observed across millennia by Hodder, across centuries by Turner, decades by Spar and a few seconds of dogfighting by Boyd. All these scales will be in play in analyzing the sociotechnical dialectic between elements within virtual worlds and the dominant order between 2008 and 2010. I argue that the interplay of similar processes across these scales (though none as short as the core examples of Boyd) must be understood as crucially entangled in the production of social innovation and counter-innovation in virtual worlds in the middle of the last decade: the migration of

populations from Europe to the global periphery across a millennium is as constructive of our outcomes as software development processes of the middle of the last decade, along with vastly transformative cultural changes which ran their course in virtual worlds over little more than a year.

b. State machines or resilience engines: controversies in games studies

Thirty pages into a work on videogame-like technologies, one might reasonably ask where the games are. Boellstorff (2010, p. 23) cautions us that assuming that games studies (not to be confused with game theory, the study of mathematical models of the interaction of assumed rational actors) is essential to an understanding of virtual worlds is a serious error, treating emergent sociality, intimacy, and political economy as instead aspects of entertainment. This is wrong, he goes on to say, in no small part because of our long-standing associations of games and play with the childish and trivial. While certainly true, this view loses the distinction between “ a game” and “merely a game:” it establishes that a games-studies perspective is not sufficient; it does not convince that games studies is not useful. While I hold that the field of games studies has not produced a systems theory with the broad explanatory power of the work of the theorists discussed in Section 1 (Ian Bogost’s Unit Operations, discussed in the next subsection, comes close, but does not address issues of resilience or a dialectic between dominant and emergent systems), the fact remains that games studies not only does have a useful contribution to make, but has either framed the discussion or muddied the waters such that a number of theorists and concepts simply must be addressed, for their partial contributions and damaging misconceptions alike.

There is a reason why this attempt to assemble a model of innovation and resilience looks to video games, or game-like spaces, or platforms, for case studies. Jul

(2005, p. 5) observes that there are two basic forms of games: emergence and progression. Emergence, he argues, is the classic game form, in which “a game is specified as a small number of rules that combine and yield large numbers of game variations for which the players must design strategies to handle.” The other form, progression, is a product of the computer game era and the adventure game genre in particular, in which player steps are pre-defined to reach a given goal. This form, he says, cedes a great deal of power to designers, particularly those with storytelling ambitions. Even though Juul in this era was representative of a formalist, reductionist school of games analysis, he acknowledges (2005, p. 6) that games work on three interacting levels: that of the rule set, the player’s relations to the game, and the relationship between playing the game and the rest of the world. It is no coincidence that this third element echoes the notion of dialectic between an innovation community and the broader society present in Turner, Spar and Boyd: games studies’ most useful contribution, perhaps, is its analysis of the role of bounded spatiality in the evolution of complex systems, which will be the focus of our analysis in Chapter Two.

Despite Juul’s view of emergence as the classic game form, he also holds that games are a “state machine,” which responds differently to the same input at different times, contains input and output functions, and definitions of what state and what input will lead to what following state (2005, p. 60) This of course describes a cybernetic feedback mechanism of the sort Boyd assigned to closed systems, those that tend to maximum entropy. This tendency to entropy underlies Koster’s (2004) theory of fun, which holds that the act of playing a game is one of learning a system, and once that system is learned (e.g., as a child discovers the optimal strategy for tic-tac-toe), the game becomes boring and the player moves on – a specific example of Boyd’s process of learning through reconciling mismatches between observed systems and one’s

internal mental model of them. Juul argues that only closed state machines are truly games, that open systems are more accurately categorized as “play,” a different sort of thing. (Juul 2005, p. 44) Such an extreme view was common among games theorists of the middle of the last decade, as competing schools argued for the dominance of either narrative or process in a manner reminiscent of that of the old beer commercial debate between “tastes great” and “less filling.” Contemporary views tend to be more moderate, in recognition of the irreducible and emergent nature of gameplay, as argued here.

Two works out of the humanities, rather than the more computational end of the games studies, confront the closed/open distinction in a manner useful both for understanding the distinction between entropic and resilient systems generally, and the difference between virtual worlds and classic games specifically. Carse begins his 1986 work with a bold statement of the distinction: a finite game, he says, is played for the purpose of winning, an infinite game for the purpose of continuing the play. (1986, p. 3) Juul’s “state machine,” and similar models by influential theoreticians, particularly Salen and Zimmerman in a core textbook of games studies (Salen & Zimmerman, 2004), acknowledge only the former. As many theoreticians and designers of video games were trained in computer science, built around a cybernetic model of systems, they may have tended towards seeing all games as closed state machines, and thus to be blindsided by the emergent complexity of “infinite games.” This is one of the core morals of the stories told in Part Two, and so the distinction bears analysis here.

Carse’s work tends toward aphorisms: his insights are so clear that they can be expressed pithily, yet several generations of players and designers have failed to draw the sharp distinctions between the rules of closed and open systems which he presents. One way to view the dialectic at the heart of the Resilience Engine model is as a clash (knowing or unknowing) between users of finite and infinite rule sets. Models of

innovation generally are attempts to construct an infinite game; systemic collapse is the termination of a finite game.

Carse's definition of a finite game builds upon the notion that it has a terminal win state. Given this, players optimize their actions towards the sole legitimate goal of winning: anything "not done in the interest of winning is not part of the game." (1986, p. 13) In Part Two, this optimization will present itself in complex social consequences in World of Warcraft (WoW) attendant to players' focus on maximizing Damage Per Second (DPS) and developers' attempts to counter pure instrumentality in play via social engineering (see Section 11 below). Arguably, the failure of democratic self governance in Second Life (SL) is a manifestation of a similar finite-games instrumental behavior on the part of users (as developed in Section 13 below). Carse discusses finite play in language directly tracking, though not citing, Boyd's work on dogfighting (perhaps the ultimate example of finite play!) and the OODA loop: surprise, he says, causes finite play to end, as it occurs when the Master Player, who already knows what moves are yet to be made, develops a decisive advantage over the unprepared player who does not yet know what moves are to be made. By contrast, "infinite players" play in the expectation of being surprised, and once surprise is no longer possible, play ceases. This is of course close to Koster's (2005) formulation: where Koster uses the term "learning" as the motivation for continuing to play a game, Carse draws a distinction between "training," designed to repeat finite, bounded lessons of a fixed past into the future, while "education" "leads toward a continuing self-discovery" and, critically, transformation rather than reiteration (1986, pp. 22-23). One of the themes of Part Three below is that of the (d)evolution of virtual worlds from infinite spaces of education into finite spaces of training – in particular, training for the sorts of behaviors essential to participation in an entertainment-capitalist political economy.

Suits, an advocate of what he calls “closed games,” or state engines with finite, explicit rules and clear conclusions, contrastingly defines “open games” as systems of “reciprocally enabling moves whose purpose is the continued operation of the system,” in which the state of affairs players seek to “achieve” is not a victory condition but “the ball’s being in play.” (Suits 2005, p. 124) That state necessarily involves suspension of the Second Law of Thermodynamics (in its formulation for closed systems, or what Chaisson (2011) calls “thermostatics,” not in claiming that the Second Law is breakable or inapplicable), hence the “open” aspect. Crucially, he observes that arguments over a disputed move often arise, and are irreconcilable, since one player may be appealing tacitly to a rule of the open game while the other similarly invokes a tacit rule of the closed game, again a general principle manifesting specifically in many of the case studies in Part Two. He notes that “societies which place a high value on success through domination” prefer closed games, while those which value cooperation tend towards open games. I argue here that the period from 2008 to 2010 saw a transformation, manifest in changes within two virtual worlds but evidentiary of the dominant global system, from open to closed games, to the expression of an unmet need to be dominated, to the potential end of the infinite game of transforming innovation into systemic resilience.

c. Stuff and Software: Bogost’s Unit Operations

Where Juul sees rules and narrative in opposition and only rules as “real,” Ian Bogost (2006) views both as equally legitimate manifestations of a common phenomenon, “unit operations.” The unit operations model attempts to reconcile what Hodder calls “thingness” and Bogost calls “units” with the distinction between closed and open systems drawn by Juul (whose work Bogost engages with directly and at length)

and Suits. Unit operations do not articulate rules but rather clarify the nature of and connections between units, a notion somewhat closer to Hodder's embeddedness than ANT's networks. This approach seeks to provide a contingent description (and not a fixed definition) both of units and of the functional relations between them. This general sentiment, though not Bogost's specific methodology, underlies Part Two of this work, which attempts to analyze a range of emergent phenomena and practices while remaining close to the "thingness" of software objects.

Bogost argues that any medium, artistic or computational, is a system composed of "interlocking units of expressive meaning," the work of that system being "unit operations." (2006, p. ix) Unit operations stand in contradistinction to systems which are "deterministic, "progressive," "sequential" and "static," "singular and absolute holisms" (2006, pp. 3-4) - in short, Carse's "finite games." Systems of units, he holds, "derive meaning from the interrelations of their components," while the other sort of system regulates meaning for its components, seeking to engender stability, linearity, universalism and permanence (i.e., entropy). Social systems of units regulate themselves through communication, by (quoting sociologist Niklas Luhmann) "creating and maintaining a difference from their environment and [using] their boundaries to regulate this difference." (2008, p. 6) Echoing Carse, he holds that complex systems are "arbitrary," characterized by exploration or interpretation rather than discovery of an extant universal order via quantification, measurement and control. Complex systems "must struggle to maintain their openness, to avoid collapsing into totalizing systems," (2006, p. 7) which I argue in Parts Two and Three is exactly what happened in virtual worlds between 2008 and 2010.

As the logical structures of software design (and perhaps also its teaching methodologies and attendant values) "have begun to remap themselves onto the

material world they were intended to represent,” (2006, p. 40) software systems such as videogames frame our experience of the world while offering models or interpretations of it with which we can engage. The study of unit operations can go beyond an analysis of how those small systems enable and constrain our understanding of the world to a critical interrogation of our relations with systems at the global level, as “the material world and the software world mutually inform one another.” (2006, p. 41) That duality is a good statement of this work’s purpose: both to interrogate the transformation of particular social software systems over a brief period of time and to simultaneously interrogate the dialectic of influence between those systems and the dominant means of production in that era.

Chapter One Summary

Two models of the process by which innovation is translated into social good have vied for dominance over the past century. For much of the 20th Century, a linear model prevailed, one in which social actors coordinated their efforts to progress towards common goals. This is a closed system, subject to maximizing entropy per the Second Law of Thermodynamics. Within games studies, it has been characterized as “closed” or “finite,” with predictable and linear causality and clearly defined “victory conditions” or “win states.”

Another model, presented towards the end of the 19th Century as the “frontier thesis,” was widely misinterpreted through the lens of the linear model for most of the 20th Century until the resurgence of cyclical models at the century’s end. These models, arising in a broad range of disciplines, are “infinite,” “open” and outside the scope of the Second Law of Thermodynamics. Through mediated encounters with external forces, the dominant system adapts, becomes more able to confront novelty without confusion

or collapse, and continuously either serendipitously encounters or intentionally generates novelty as the engine of its continued resilience.

This dualism, beyond its general application, has been manifested in the study of games, particularly computer-mediated games. These systems similarly can be closed or open, finite or infinite, procedural or emergent. Such games are both products and producers of the global systems in which they are embedded. Studying them enables us to gain insights into the nature and evolution of global systems not merely through the analysis of smaller models, but through analyzing the process of co-production of games systems and the dominant global order.

The process of turning sociotechnical innovation into systemic resilience is itself an “infinite game,” and subject to the entropic tendencies of open systems to collapse into closed ones. Part Two of this work will argue that exactly this collapse occurred in virtual worlds between 2008 and 2010, and that the collapse was both evidentiary of and a product of a closing of the globally dominant entertainment-capitalist order at the same time. Part Three will survey a subsequent generation of closed computer-mediated games and their position in a closed social order evidencing the sort of increasing entropy which signals the potential for systemic collapse.

Before then, Chapters Two and Three will outline the elements and processes of a Resilience Engine, a model of the transformation of sociotechnical innovation into systemic resilience synthesized from the insights of the theorists above. Chapter Two will examine innovation, agency and place; Chapter Three will focus on the dialectic process constituting the work of the Resilience Engine and its possible outcomes.

Chapter 2

HETEROTOPIA: POWER, PLACE AND KNOWLEDGE

Where Chapter One sketched a range of models of the process by which sociotechnical innovations may generate systemic resilience, this chapter will begin a close analysis of elements of a new model, the Resilience Engine. We will briefly examine the Engine's inputs, innovation and agency, and then turn to a detailed analysis of the new social spaces the Engine generates, here identified by Foucault's term, heterotopias.

Section 3: Innovation and Agency as Inputs

The workings of the Resilience Engine begin with two inputs: (1) a sociotechnical innovation and (2) some critical number of persons seeking agency. Every model of innovation assumes a certain sort of actor, the persons who take up a potential generator of counter-hegemonic power and use it to enhance their own agency. Where the following subsections will problematize counter-hegemonic place, this section introduces a potential problem of counter-hegemonic persons.

a. Not Too Much Vision: a Window of Uptake

Going back to Turner, we can derive characteristics of the input into a Resilience Engine from his two cases, "free land" and a free technological college education. (Turner 1893, 1910) The first input element is an innovation: assemblage of sociotechnical stuff: laws, organizations, structures, vehicles and so on into a coherent package. That the input is fundamentally sociotechnical matters: Turner loses sight of the technological components of "free land," from the rifle to the Conestoga wagon, while Spar focuses overmuch on gadgets per se and not the context in which they are embedded from the lab bench or legislature, long before uptake into her

“commercialization” process. Perhaps obviously, the innovation must be *new*: new in the sense of not having been taken up broadly by either the dominant powers or by those seeking alternatives. While arising within the context of the dominant order (e.g., Congress, a system of continental-scale industrial power), the innovation generates power outside the dominant order. In America from the arrival of European settlers up to the generation prior to Turner’s writing, while the dominant means of production was land-based (agriculture, ranching, mining), a financial/mercantile elite steadily rose to dominance. Much of 19th Century United States politics was oriented around the question of whether the nation’s political economy would remain grounded in land or in industry and finance, between a Jeffersonian, participatory-democratic, yeoman-farmer model and a Hamiltonian, representative-democratic or frankly “aristocratic” in Turner’s sense of the term, financial/commercial model. Turner writes at the point where Hamilton’s victory has become clear: the dominant means of production has become financial/industrial. This is what leads Turner to make the otherwise preposterous analogy between farmland and schooling: given a new dominant means of production, a new innovation input is necessary to generate a resilient output.

The second element is a big enough pool of users drawn to the innovation by its potential to deliver power to those not already holding it under the dominant means of production; otherwise it would simply reinforce the status quo. Note that there are no objective tests for what constitutes a “big enough” user group or whether an innovation actually can empower the group, such that a neutral observer could examine a gadget, or even the sociotechnical system in which the gadget is embedded, and conclude that it either does or does not have counter-hegemonic potential. Winner (1980) posits the possibility of a contrary position, that some technologies are “inherently political,” and within that category, some inherently democratic and some inherently authoritarian.

Winner may be too quick to assume particular and unique actor-networks or embeddedness for particular technologies, losing Hodder's long view of the repurposing of artifacts: his conclusion that "nuclear power" is inherently authoritarian may refer to "nuclear power developed by a superpower in the context of a nuclear weapons-based Cold War," and thus inherently authoritarian for Americans in 1980, versus *actually* authoritarian across all probable contexts, though he claims the contrary.

The lack of a (convincing) objective standard for evaluating the potential of a gadget in the lab for eventually generating socially resilient outcomes means that the stress is on *perception* of that potential being shared broadly enough to generate a critical mass of users. Perception is critically context-dependent, and the issue of context is essential to the workings of a Resilience Engine. What our theorists grope towards is a crucial early bifurcation of perception: the innovation must be seen by those outside the dominant order as offering power while simultaneously being perceived as trivial by those within the dominant order. Without a bit of vision of revolutionary potential, the technology will languish on the lab bench; with too much vision of revolutionary potential, the technology will be co-opted or suppressed by the dominant order, as in Spar's case of the marginalizing of peer-to-peer, or ham, radio once large corporations recognized the power of one-to-many broadcast. (Spar, 2001)

In summary, to serve as an input for the engine, an innovation (a) need not be strictly or even primarily a gadget, but rather a sociotechnical complex from the beginning; (b) it must be capable of generating socio-political power; (c) it must in fact be new, and not already in general use; and (d) it must be seen by actors outside the dominant order, and not by actors within the dominant order, as having the potential to deliver its power to them.

b. The Agency Assumption and the Problem of Voluntary Constraint

Despite the mutual shaping and close linkage between agency, tacit knowledge and place, one distinctive feature of agency remains to be addressed. All the models of innovation presented in Section 1 assume an innovation, or at least a state change, in order to begin whatever process the model seeks to explain. Treating the initial new socio-technical complex as an axiom isn't problematic, as what all the models describe is the response to change, rather than the origins of the initiating change. Using novelty as an axiom is part of what separates these models from theories of scientific or technological innovation, which focus on the *creation* of novelty, rather than its social impact. However, they all share another assumption, one supported by evidence across millennia of political action, but which, shockingly, proved invalid in my study of virtual worlds. Just as neoclassical economics assumes an agent who is a rational actor seeking to maximize resources, theories of democratic change in particular, and sociotechnical change more generally, assume an agent which seeks to maximize autonomy: Boyd, at least, is explicit about this point. (Osinga 2011, p. 132)

The autonomy-maximizing agent is the axiomatic actor in most theories of the American frontier, of which Turner is representative; of innovation, represented here by Spar; and of the bulk of Enlightenment and subsequent political theory, whether glorified or, as in Leninism and Maoism, problematized. Within the context of innovation models, absent the agent with needs for autonomy (or status) unmet within the current order, there is no process of change: the engine is as stalled as much as if it is denied an initial innovation: the two essential ingredients in all these models are a particular change and an agent seeking to employ the change to maximize autonomy outside the dominant order.

While obviously innovations have been put to use throughout history to restrain others, from the slave collar to the CCTV camera, there are precious few examples, or theorizing, of innovations used to narrow the scope of one's own agency. There are, however, two areas in which self-constraint is practiced and theorized: games and BDSM (bondage, dominance and sadomasochism) practice. Although one of the most commonly cited definitions of "game" is designer Sid Meier's "series of meaningful choices," games theorists from Huizinga's pioneering 1938 work through Suits (2005) have stressed the centrality of voluntary constraint to the nature of "game." Constraint is often but by no means entirely spatio-temporal (as developed further in this chapter): first-year law classes mull over the distinction between a punch to the nose on the street, in the boxing ring, on the hockey rink and on the baseball diamond, (see, e.g., Lastowka 2010, Chapter 6, especially pp. 101-103) which speak to voluntary restrictions on one's legal remedies within the context of some "games" but not others. Theorists including Juul (2005) argue that games constrain via voluntarily chosen rule sets. Why people choose these constraints takes us quickly into murky territory: there is yet to be a solid and convincing theory of fun with elements both necessary and sufficient to explain games while distinguishing them from play – or in other terms, accounting for both the thermodynamically-closed systems of finite games with constrained rules and the thermodynamically-open systems of unconstrained play common to humans and other animals (whether the virtual worlds of WoW and SL are closed or open, games or play, was once a hotly contested popular question; surprisingly, it has little bearing on the analysis in Part Two, precisely because both were complex systems far removed from simple definitional cases like Chess or Calvinball).

Extensive analysis of the cultural, psychological and sociotechnical linkages between games and BDSM practice is beyond the scope of the theoretical section of this work, but will be explored in context in Part Two.

Section 4: Introducing Heterotopia

The Resilience Engine requires, beyond its cyclical mechanism, a clearer concept of Boyd's "outside," equivalent to Spar's commercialization phase. What the Engine generates is heterotopia, for which Foucault provides defining principles. That the generating of heterotopia is essential to the workings of the Resilience Engine is demonstrated through the counterexample of the "space frontier." Still missing, however, is clarity as to what "frontier space" is, and whether the metonymic slide from physical to abstract space is justifiable.

a. An Incomplete Model Engine

We are beginning to develop a model of the process of transforming sociotechnical innovation into systemic resilience, building on a range of cyclical, as opposed to linear, theories of system processes. The Resilience Engine operates on some particular sociotechnical innovation, taken as given for this model, as described in Section 3 above. Its working is fueled in the first instance by persons who seek power and autonomy ("agency") which the dominant order cannot provide. These actors employ sociotechnical innovations, bringing them into widespread use and gaining the power and autonomy they seek in the process. However, interaction with their new environment invalidates old schemas and forces the development of new tacit knowledge, as will be explored in Section 6 below. The established order seeks to control the emergent persons and processes, forcing the pioneers to organize for their

collective defense and influence over the establishment. Through this dialectic, the pioneers are absorbed into the mainstream, bringing some of their tacit knowledge and political practices with them, making the established order more resilient. The process repeats with either a new generation or a new sociotechnical innovation (again assumed rather than theorized: Part Three below will question assumptions that a new cycle will necessarily begin and explore the consequences of a failure to do so), and this repetition makes for a resilient system by forcing it regularly into dialectic with novelty.

What previous models of innovation, with the notable but incomplete exception of Boyd's (Section 1(d) above), have lacked is a theoretical, rather than purely descriptive, rendering of the middle processes, between sociotechnical innovation and systemic change. Turner's description of them prior to the Gilded Age was profoundly influential but entirely specific, and his work fails to clearly justify his metonymic slide from frontier-as-place to frontier-as-industry; Spar covers a broad range of historical cases, but only draws the most general labeling of phases from them. This section will establish a framework which identifies necessary and sufficient elements for generating systemic change, which accounts for both the success cases and failures described by Turner, Spar and Boyd.

The key to generating such a framework comes from the most problematic element of the long-lived notion of a sociotechnical frontier, a metonymy which all too few have challenged: that between frontier-of-place and frontier-of-practice. It is quite unclear that "frontier" means the same thing and works the same way in both cases. This work melds notions of the frontier *pace* Boyd, as a syncretic space positioned in opposition to, if not always in conflict with, metropolitan space on the one hand, and the "commercialization" phase of Spar's innovation cycle on the other. However, a fundamental problem emerges when the frontier space metaphor is applied uncritically

to the realm of scientific-technical innovation generally and the case of virtual worlds between 2008 and 2010 specifically. In Turner's 1910 work, he fails to apply his own 1893 analysis to his proposal of free public tertiary education in the sciences and engineering as a replacement engine of democratic revitalization; subsequent users of the "science frontier" metaphor never engage with it at all. Yet something happens when the materiality of place is removed from the process of innovation. Henri Lefebvre, who uses the term "space" rather than "place," describes the "presumption of an identity" between "mental space" and "real" space as creating an abyss, in which can be found the neocapitalist use of language, an ideology to conceal its use, and "at best a technological utopia, a sort of computer simulation of the future, or of the possible, within the framework of the real, the framework of the existing mode of production." (Lefebvre 1974 [1991], pp. 6-10) This sleight-of-hand, this unseen substitution of "real" place for "mental" place, is one of the acts of creation of internet culture (and the literary genre which generated it, cyberpunk) and a powerful factor in explaining particular challenges in applying the innovation cycle to the sociotechnical frontier of virtual worlds in their 2008-2010 arc. It is also the most consequential element for extrapolating the nature of political transformation in internet culture past that period and into the immediate future, as I do in Part Three. Thus, an analysis of what becomes of a mental "place outside" in the absence of physical place becomes essential. In order to focus on these two elements – the metonymic slide and the abstraction of place – as well as to identify what specifically should be examined in any given case to test the applicability of the Resilience Engine model, one more conceptual structure needs to be added: that of heterotopia.

b. The Principles of Heterotopia

A 1967 speech by Michel Foucault, not published until 1984, introduced a concept essential to the subsequent postmodern study of place (or space, in French usage: this work will use the term of choice of particular authors in discussing their work, but use “place” in the context of this analysis). This speech, one assumes unknown to Colonel Boyd, is an astonishing parallel to his work. Foucault begins with the 19th Century conception of history, one of cycles, which “found its essential mythological resources in the second principle of thermodynamics [sic].” (Foucault 1974 [1967]) By contrast, he says, the contemporary era is that not of historical time but of space, marked by a simultaneity of that which previously had been temporally ordered. Premodern space was sanctified, structured and immobile: there was that which was holy, that which was forbidden, and a clearly delineated place for each. Some of those oppositions “have not yet dared to break down,” because they are “still nurtured by the hidden presence of the sacred:” between private and public, work and leisure, family and social, cultural and useful. While much of modern space has been desanctified, it is not a void into which we can place anything we want: space is “a set of relations that delineates sites which are irreducible to one another and absolutely not superimposable on one another.”

Foucault focuses on those sites which stand in relation to all other sites “in such a way as to suspect, neutralize, or invert the set of relations that they happen to designate, mirror, or reflect.” These are of two sorts: utopias, which have no real place and are “fundamentally unreal spaces,” and heterotopias. The latter are real places in every culture which are “a kind of effectively enacted utopia in which the real sites... are simultaneously represented, contested, and inverted.” His essay undertakes their systematic description by means of six principles. The first is that there are two main

categories: one, the disappearing primitive spaces of the sacred and profane, and, two, their modern replacements: heterotopias of deviation, in which those whose behavior is outside the norm are placed. The second principle is that, over time, a single heterotopic site may serve different cultural purposes with different social meanings. The third is that heterotopias can contain within them, in a real place, several different and incompatible spaces, as the garden, “which contains the totality of the world.” Fourth, heterotopias function at peak when they mark “an absolute break” with traditional time, as do museums at one extreme and festivals at the other. Fifth, heterotopias “always presuppose a system of opening and closing that both isolates them and makes them penetrable. In general, the heterotopic site is not freely accessible like a public place.” Finally, heterotopias have a function with respect to the rest of a culture’s space that varies between two extremes. One is to create “a space of illusion” that exposes every real space as even more illusory,” his unexplained example being the brothel. The other is the “heterotopia of compensation,” a place more orderly and meticulous than the metropolis. Here his example is the Puritan colonies of the American frontier, “perfect other places,” though he does not elaborate.

c. Virtual Worlds as Heterotopias

While the specific analysis of virtual worlds case studies will be confined to Part Two, this is an appropriate place to substantiate a claim that virtual worlds from 2008 to 2010 fit within the model of the Resilience Engine. That synchronous, online, 3D spaces, both game-based and social, were a sociotechnical innovation broadly seen as having socially transformative potential has been quickly sketched; similarly that they were taken up by a critical mass of users is likewise clear, with user counts in the range of a million per platform, or in the case of WoW, an order of magnitude higher. That those

users interacted with the innovative technology to develop some sort of actual place outside the dominant order, however briefly, does need to be established in some detail. Part Two will examine the nature of those places; this subsection will make the claim for virtual worlds generally as heterotopias.

The most straightforward way of substantiating this assertion is to test it against Foucault's six categories. For his first, he argues that all societies generate heterotopias, but while primitive societies tended to "heterotopias of crisis," or places dedicated to particular life transitions, modern societies generate "heterotopias of deviation," "in which individuals whose behavior is deviant in relation to the required mean or norm are placed." MMOs and social virtual worlds were significantly different from each other culturally despite technological similarities, for a range of complex reasons including demographic specialization tied to path dependency (in the 1980s, videogames were marketed almost extensively to boys; over time they tended to require significant platform literacy, impeding diversification, and thus came to be seen as a boyish pastime for immature adult males), or the particular, contingent, evolutionary, divergence of game and social world technologies from a common, though not sole ancestor (MMOs, or game worlds, descended from the original MUD via tabletop gaming and single-player videogames; social worlds descended also from the MUD via TinyMUD, a version with the game-like elements stripped out and the ability added for users, rather than solely designers, to create places within them (Bartle, 2003)). Thus, for this purpose, they need to be analyzed separately. Players of MMOs, along with computer gamers generally, were stigmatized through this period as obese, socially stunted men, as failures to integrate into expected life paths. (see, e.g., Parker, 2006) Following the multiple shootings at Columbine High School in 1999, the popular press stigmatized gamers as potentially dangerously violent in addition to socially isolated (e.g., Grossman and

deGaetano, 1999), despite an FBI investigation debunking linkages between video game playing and violence (O'Toole, 2001). The archetypal "parents' basement" was a cultural trope for a heterotopia of deviance for gamers; all the more so the places of the games they played, which were even implicated as places of terrorist plots (O'Brien, 2007; Shachtman 2008). Social virtual worlds were tied in the popular imagination to "flying penises" and sexual and social deviants, after an incident analyzed in Section 14 (c) below. That these spaces were cast as heterotopias of deviance seems beyond argument.

Foucault's second principle holds that any heterotopia may have different cultural functions over time. This entire work is essentially an argument that virtual worlds shifted in their cultural usage from a potential utopian alternative to the dominant order in the years prior to 2008 into a training ground for that order after 2010, in a shift opposite to Foucault's example of the cemetery, which moved from the heart of the city in the era of broad belief in the resurrection of the body to a space outside the city in the age of fear of disease and decay.

The third principle holds that a heterotopia is capable of "juxtaposing in a single real place several sites that are in themselves incompatible." This was literally true in the case of SL: many of the examples in Part Two involve the clash of incompatible but occasionally overlapping spaces, between cultures with radically disparate values, which, like Foucault's microcosmic garden, were contained in a common place. For MMOs, a key spatial distinction lay in the experience of raiders versus explorers of the world-space, perhaps the most documented phenomenon of virtual worlds (e.g., Castronova and Fairfield, 2007; Reeves and Read, 2009; Chen, 2011) For raiders, generally regarded as a social elite, their experience of an MMO took place inside dungeons which were literally inaccessible to non-elite players lacking the progression

level or gear quality to enter. With the wide belief that “the game begins at level cap,” playing was conceptually divided into the leveling experience, taking place in the shared, persistent world, and endgame play within “instanced” dungeons – closed spaces generated for a single group at a time.

The fourth principle links heterotopias to heterochronies, or breaks with traditional time. Foucault’s examples are the library or museum on one end of the temporal scale and the festival on the other. Part Two will document how the designers of SL, inspired by the heterochronic heterotopia of the Burning Man festival, failed to understand the interplay between the temporal break of a festival and patterns of usage of persistent space, leading to repeated misunderstandings between designers and users and a failure of the designers to comprehend or value users operating on a longer time scale than the designers had in mind when creating spaces of interaction. An analysis of heterochrony in World of Warcraft would be a valuable project, but one well beyond the scope of this work. Let it suffice to say that time within the narrative of the gameworld compressed generations into days, looped back on itself over the course of added expansions, and was often experienced by users within a state of “flow” in which a sense of external time was lost to immersion within the spatio-temporal scope of the gameworld.

Foucault’s fifth principle is another critical one for this work: it holds that heterotopias “always presuppose” a system which “both isolates them and makes them penetrable,” which I call a membrane and in the frontier context has been called a “borderlands.” (Anzaldúa, 1987) In games studies, it is often called the “magic circle,” (Castronova, 2005; Zimmerman, 2012) focus of a long-running debate over the degree of permeability which can be attributed to it. To get in, Foucault says, may require certain permissions or the making of certain gestures: or in our cases, creating an account and

correctly entering passwords. Another mechanism by which a membrane is established is the tacit knowledge required to function within the virtual space, as discussed in Section 6 on tacit knowledge generally, and through Chapter 4 in specific cases in the virtual worlds at issue.

Finally, Foucault holds that heterotopias have a dialectic relationship to the dominant space, either in creating a space of illusion that reflects the dominant space “as still more illusory,” or to create a “heterotopia of compensation,” an attempt to create a more orderly and consciously-designed alternative to a messy reality. He chooses the brothel as an example of the former, the meticulously-regulated Jesuit colonies of South America for the latter. At a superficial level, SL functioned as the former, WoW as the latter. SL, equivalent to the brothel in becoming a successful haven for non-traditional sexual expression, as analyzed in Section 15 below, and as manipulated by code and economics into a parody of consumerism, as documented in Sections 11 and 16, certainly can be said to reflect back on the space of entertainment capitalism as simulacra. Similarly, some of the appeal of WoW, I argue in Section 11, is in its simplification of the sociotechnical order into a parody of feudalism, a social structure ordered by software code as well as custom to provide clear hierarchies (of character level, damage output, gear quality) and lines of authority (player guilds being almost impossible to order on any basis other than the corporate-feudal pyramidal hierarchy). Yet this is only a shallow observation: SL may also be seen as a more-ordered world founded in the abolition of bodily entropy, a world in which everyone may be young, healthy, and attractive, and where the scarcity of life’s essentials have been abolished: no one need labor for food or health care. Similarly, WoW’s focus on repetitive tasks as essential to social advancement has been read as a parody of the capitalist order, a bizarre Taylorization of fun (e.g., Rettberg, 2008) This alternate reading suggests that

the line between utopia and parody lies in the mind of the beholder, without going so far as to suggest that one person's Jesuit colony may be another's brothel.

In summary, both game and social virtual worlds strongly exemplify the traits of Foucault's heterotopia. If, as I argue, the Resilience Engine acts by generating heterotopias, the model may be tested against the case of virtual worlds. This argument is sharpened by comparison to a claimed "frontier" of linear models of systems of innovation, the "space frontier" examined next.

d. A Failed Counter-Example: the Space Frontier

The Introduction to this work argued that personhood, place and power are key elements of analysis of sociotechnical transformation. Turner's early analysis ascribes the power of the Western frontier as an engine of ongoing democratic innovation to the prominence of all three: the assertion of individuality against a creeping mass society, a strange environment as the crucible of transformation, and the wielding of participatory-democratic power in order to maintain new gains and a new culture. A counter-example may help test this thesis. Perhaps no sociotechnical field has been more closely associated with the frontier meta-narrative than outer space, though typically through a shallow reading of Turner and a larger dose of the Bush version. I argue that a reading of Turner informed by postmodern cyclical theories of innovation generates a robust model, once the heterotopic elements of personhood, place and power are taken into consideration. That claim may be tested against the space frontier.

That the analogy to the frontier of the American West has been a primary conceptual framing is beyond doubt, from President John F. Kennedy's repeated invoking of the term through *Star Trek's* "Space, the final frontier," in the years (1966-1969) leading up to the moon landing. A key policy document from 1986 is entitled

Pioneering the Space Frontier, and elaborates extensively on the analogy. (National Commission on Space, 1986) While the meaning and value of the frontier as historical legacy and cultural metaphor for space exploration has been highly contested (McCurdy, 1997; Limerick, 2000), the debate over the cultural meaning of the Western frontier and its consequences for space exploration is beyond the scope of this work. What is at issue here is its aptness as an explanatory model of sociotechnical development in this field.

Space exploration never was the transformative technology that its advocates claimed. It has been a frontier arguably in the linear-progressive sense that Turner himself critiqued and that underlies the meta-narrative of sociotechnical progress which can be attributed to Bush and Kennedy. It completely fails, however, to meet the cyclical factors of a Turner-Spar model. That there was technical innovation by a group of enthusiasts motivated by a mix of patriotism, dreams of personal benefit and primarily sheer love of the technology is unquestionable, at least prior to 1970, after which innovation has largely stagnated. Given the heroic efforts required to develop crewed spaceflight technology, the first element of Spar's cycle, innovation, was present.

At the second, critical stage, however, space exploration fails to follow the innovation model: there was no commercialization. This is the stage at which technological innovation is turned towards large-scale sociotechnical change; it is also the heterotopic zone. In this stage a successful innovation must promise not only vast economic rewards, but, I argue, distinct individual transformational benefits in the realms of personhood, place and power. Space exploration was entirely a governmental effort. In Spar's case studies, early governmental control of the technology domesticates it prior to any transformative effect, while the optimal role for government is negotiating what Bijker and Pinch (1984) would call "closure:" an end to uncertainty surrounding the

meaning, use and role of the technology. Explicit in Spar's formulation and implicit in Turner's is that "the dual visions of anarchy and wealth" offered by commercialization of an innovation are what drives the rush of pioneers, who then bring the new technologies into the largely unregulated social realm, driving transformation. (Spar, 2001, p. 13) For Turner, this is *the* meaning of the frontier. In the case of space exploration, there was no commercialization and no rush to the frontier: it remained the site of infrequent actions by the government without the transformative effects of the telegraph or radio (I discount the claims that the "Whole Earth photo" had a comparable effect (Brand, undated)).

Space exploration as practiced from 1960 to date created no heterotopia, offered no transformation of personhood, place or power. There has never been an official plan for extraterrestrial settlement, in no small part because of the lack of human-habitable place. The extent and manner to which space stations, including the Russian *Mir* and the International Space Station, constitute place is an interesting question; it is clear that to the extent they do, it is for innovators alone, and not for the gold-rush hordes of an active commercial-stage frontier. Personhood and power were framed in the context of the government astronaut, in the early days America's paladins in the Cold War, epitomizing the establishmentarian values of the "Right Stuff" – the perfect antithesis of heterotopic power and personhood.

There has been, however, an explicit argument for heterotopic space exploration, directly informed by a sophisticated reading of Turner. Robert Zubrin, founder of the space exploration advocacy group The Mars Society, argued in a 1994 essay for Mars as heterotopia. The essay begins with an evocation of Turner delivering his 1893 paper. Zubrin argues that Turner's conclusion that the frontier had closed may have been premature then, but was proving true a century later, and that without a new frontier, "progressive humanistic culture" is fading. The key to a frontier is that it be remote

enough to allow for the free development of a new society, and that everywhere on Earth, “the cops are too close.” Mars, however, has both the cultural distance and the potential wealth to create a new society driven by an engine which destroys aristocracy and institutional stagnation, and promotes democracy, diversity, and individual dignity. (Zubrin, 1994) Zubrin argues that little or no technological innovation would be needed to begin the frontier cycle. However, he has been an opponent of commercialization, arguing repeatedly (e.g., Zubrin, 1996) for the initial settlement of Mars as a governmental initiative to enhance national prestige) While otherwise reading his Turner closely, he missed the point that the “gold rush” era of frontier expansion is driven by individual, commercial interests.

By contrast, a case can be made that the Mars rovers of the early 21st Century enabled the creation of a scientific heterotopia built from the space of human/robotic exploration and field science on Mars. Clancey (2012) argues that the sociotechnical assemblage of a rover, its scientific payloads and its earthbound team of scientists and engineers created a significantly different culture from that of mainstream field science. In particular, it created in opposition to the solitude of geological fieldwork and a culture of individual achievement in scientific research and publication, a new synthesis of field and laboratory, of data collection and analysis, and a new interdisciplinary, communal approach to the practice of science. Like true heterotopic spaces, that of the Jet Propulsion Laboratory + Mars synthesis was heterochronic: running on Mars time with a day 20 minutes longer than Earth’s, scientists worked in windowless rooms so that their only temporal cues came from the rover on Mars rather than their senses on Earth.

The argument for remote spaces of communal scientific research as heterotopia is neither new nor unique to robotic Mars fieldwork: that claim is a theme of much of novelist Kim Stanley Robinson’s work, particularly *Antarctica* (1997) and his Mars trilogy

(1992, 1993, 1996). Robinson argues for scientific communities as a model for a socialist utopia – quite literally the Republic of Science (Polyani, 1967). Yet, at a global level, Polyani’s communist norms have been steadily usurped by those of profit and property from the dominant culture. The Antarctic case cannot be adequately analyzed in brief: suffice it to say that the Antarctic Treaty created a space apart, but insured an impenetrable membrane in the service of geopolitical interests: the whole point of the Cold War Antarctic order was to ensure that the continent did *not* become a site of interchange with the dominant system. (see, e.g., Berkman, 2009; Scully, 2009)

These cases of the arguably current and argued potential of space exploration to generate heterotopias, either via Zubrin’s Turnerian vision or Robinson’s academic community, underscore the failures of the Kennedy-esque linear model of innovation. The existence of a well-documented case of innovation leading to resilience through emergent technosocial processes in a heterotopic space of robotically-assisted Mars exploration provides support for an alternative model, and fits well within the framework of the Resilience Engine we’ll build below.

e. The Metonymic Slide in Place

Turner describes the frontier as the place of encounter with the alien, a notion often lost in contemporary readings which focus on his general tone, that of a white settler in the 1890s with a tendency to regard that which is not white culture as invisible. His later works, more admired by historians for their move away from inscribing a hard break in Western history (e.g. Limerick, 1987, pp. 20-24, and the book’s subtitle, “The Unbroken Past of the American West,” a pointed contrast to Turner’s cyclical theory), while perhaps moving more into the mainstream of academic history, lose their focus on the particularity of the frontier encounter with alien ecologies and cultures as essential

and transformative. Where Turner's disciples were given more to the meta-narrative of linear progress (e.g. Webb, 1951), the essence of his 1893 concept was re-articulated as dissidence, part of the New American History of the 1980s, by Gloria Anzaldúa in particular, who re-conceived the frontier as "borderlands//*la frontera*," a syncretic, unbounded space of cultural and biological synthesis apart from the metropolitan cultures of the American East, Latin America and China, among others. (Anzaldúa, 1987) Anzaldúa's *la frontera* is as fundamentally heterotopic with respect to culture as Turner's cyclical frontier was to participatory democracy. This vision of the 19th Century American West as a heterotopic complex adaptive system (though no historian used those terms) contributed to the revitalization of the discipline of Western American history; unfortunately, as noted above, it dropped out of Turner's other line of academic descent, into theories of innovation and progress.

This work has described a model of an engine for generating heterotopias, which, Foucault reminds us, are, unlike utopias, "real places." Yet, they are simultaneously bundles of cultural stuff, readily subject to the sort of metonymic substitution that renders "space" an entirely abstract term – hence this work's preference for "place." That said, that rhetorical shift, while needing to be problematized and examined in depth, does in fact seem to work: there arguably were heterotopic spaces of Spar's communications technologies, outside the regulatory order, outside the space of sociotechnical "closure," (Pinch and Bijker, 1984) which would certainly qualify as "outside" in Boyd's analysis of the role of the Second Law of Thermodynamics in closed and open systems.

Turner, Spar and Boyd agree on some of the elements of this "outside:" it must be (a) some sort of cogent space, in the set theory more than the geography sense; (b) meaningfully separate from the dominant system; (c) in which new tacit knowledge

emerges from the interaction of persons seeking agency with the novel elements of the space. There is no assumed *tabula rasa*, no attempt, contra Limerick, to imagine a decisive break with historical culture: the engine works dialectically, by the shattering of imported power and knowledge through confrontation with the new space, giving rise to new power and knowledge which challenge the dominant order. But it is essential to note, particularly for this analysis, that what is initially imported from that dominant order is not only knowledge and power, but *place itself*.

The current case of virtual worlds cannot be understood without a deep exploration of the meaning of place/space in current usage. The problem of the metonymic slide from place to space has been noted. Some attention must go to the issues arising in the slide from physical place to computer-generated place: this will be addressed in Part Two. The critical issue, however, is what Lefebvre calls “conceived space.” Through importation at least as much as imposition, what will be shown in the case study is that one particular conception of place, that of the dominant order, defined as consumer-capitalist, was prematurely inscribed (in Boyd’s terms, the dominant order was so far inside the OODA loop of potential separatists that they never even perceived an alternative), overwriting the norms of the dominant system of production onto what “should,” normatively and per the model of the Resilience Engine, be a lived experience of heterotopic place.

This analysis focuses on a few elements imported into the conceived space of virtual worlds, particularly those related to self-governance. Certain other elements, not central to my argument, may also play a crucial role in determining whether any given cycle of the Resilience Engine runs to completion. Spar identifies the failure mechanism of premature governmental regulation, but the case of virtual worlds specifically and computer-mediated social media tools more generally raises another prospect: failure

through premature financial expectations. Per Spar, the allure of heterotopias of innovation includes the prospect of extraordinary riches. What Spar does not clearly articulate, but theorists of the membrane do, is the need to maintain a boundary which excludes dominant economic as well as political powers: premature entry by investment bankers may be as deadly to the heterotopia as premature entry by government regulators, both being equivalent agents of the dominant power elite. While development of this point could be a significant gloss on Spar's business-focused schema, this work will look not at the actions of external agents intruding into the heterotopia of virtual worlds, a matter well covered in other works (e.g. Lastowka, 2010 and a large body of legal literature), but rather on how heterotopic agents themselves, largely unconsciously, and indeed contrary to their own stated intentions, imported the values of the dominant order themselves, even those they rejected, to their own undoing.

Before that claim is advanced, however, we need a clearer understanding of what "place" means for the Resilience Engine. Thus, Section 5 provides an exploration of the most slippery, and simultaneously the most important, element, that of place.

Section 5: Postmodern Problems of Heterotopic Place

The metonymy between "frontier as land" and "frontier as innovation" needs close examination. Some definitions are advanced; high modernist place evaluated, postmodern place contrasted. One key difference lies in the nature of power in the construction of "place," from external imposition to internalization, from panopticon to participatory panopticon. Dire consequences for the creation and sustenance of hypertopia are inferred.

a. Just What is “Place,” Anyway?

In Foucault’s (1967) essay in which he introduces the concept of heterotopia, he uses “place” “space” and “site” freely, with a reiteration of “real place” as essential. “Sites” are components of “space:” in the current era, he says, “space takes for us the form of relations among sites,” which clearly are specific: this hospital, that cemetery. Heterotopias are “real places” which “are something like counter-sites,” but these are “places... outside of all places, even though it may be possible to indicate their location in reality.” It would seem that he, at least in this essay, draws no distinction between “space” and “place.”

Despite the problematic of drawing on writers about “space,” this work will use “place,” to minimize here, and highlight elsewhere, the metonymic slide from “somewhere one can go” to “a bounded set of concrete or abstract things,” e.g., “the space of possibilities.” While Soja (1994, p. 40, n.18) claims in a footnote that the attempt to draw a distinction “reduces the meaningfulness” of both terms, I remain unconvinced. The other essential work here, Henri Lefebvre’s (1974) *The Production of Space*, uses “space” consistently and throughout, so in presenting the important elements of his work for current purposes, “space” it will be. It is Lefebvre, even more than Foucault, Soja (1994, p. 32) claims, who most clearly elucidates the connections among space, knowledge and power, and thus deserves an extended attempt at rendering his exceptionally dense work honestly clear and applicable to the present case.

In essaying the development of a “science of space,” Lefebvre claims that it, in the Western context, represents the political use of knowledge; implies an ideology designed to conceal its use such that, for its users, knowledge and its ideology are not merely synonymous but indistinguishable; and crucially, and at best embodies a

“computer simulation of the future” or of the possible within the framework of the “real,” that of the dominant mode of production. (Lefebvre, 1974, pp. 8-9) The “knowledge” at issue is *savoir*, associated with power, and in potential opposition to *connaissance*, which I argue in Section 6 corresponds to tacit knowledge. Each change in the dominant mode of production and/or power (largely synonymous for the Marxist Lefebvre) necessarily generates a change in space, “which is organized subsequently,” as in the reconfiguring of medieval cities into linear, controllable modern spaces. (1974, p. 47) This is the starting mechanism of the Resilience Engine: the beginning of the establishment of a new space, upon and from the old and not purely *de novo*, embodying the values and logics of a newly emergent mode of production, in distinction, if not opposition, to the dominant mode. New social relationships call for a new space. (1974, p. 59) As the social relations of production are enacted in space, the old relations tend to dissolve as new ones are generated, which accentuate their differences from their predecessors, what Lefebvre calls “differential space,” and which can be equated with Foucault’s heterotopia. This means that the new space is no blank slate, which would be impossible absent humans with no history or culture whatsoever, but rather a place, shaped by the dominant order but outside it, such that change can occur within it without immediate suppression or absorption.

Lefebvre’s science of space is built from a series of trialectics: between space perceived, conceived and lived; with each linked to spatial practice, representations of space and representational space, respectively. All social action is spatialized, since it is enacted by the body, and the social and the spatial mutually construct each other. Thus, spatial practice includes both the enacting of a form of production/power and the product of that enacting, something which can be perceived and interpreted by the senses.

Representational space is that which is conceived by agents of the dominant order and

imposed upon actual space: it is the ideological corpus of the dominant ideology and its regulatory mechanism, manifest as symbols of power, control and surveillance. *Spaces of representation*, by contrast, are the dominated spaces, lived-in spaces of those subject to the power structures, which can become sites of the generation of counter-spaces through their marginality and greater openness to creative expression.

Lefebvre's follower and interpreter Edward Soja (1994) describes a third trialectic within academia: that of historicity, spatiality and sociality, citing extensively Gloria Anzaldúa, the postmodernist reinterpreter of the frontier. Soja argues that one of Lefebvre's goals was to reassert the parity of the spatial, denigrated by the Left of his era in favor of a Marxism stressing linear (as opposed to cyclical) historicity. Both emphasize the centrality of the co-construction of the spatial and social in particular: Soja claims (somewhat astonishingly) that while much scholarly attention had been paid to how the social created the spatial, little thought had been given to ways in which spatial geography and practice shape the historical and social (1994, p. 77) This is what the Resilience Engine attempts: to define systemic resilience – an increased ability to adapt to changes in the system's environment – as the outcome of a particular set of spatial practices, themselves necessarily shaped by the particular sociotechnical innovation from which they arise.

Space is emphatically not, for Lefebvre, that stuff which was the subject of modern epistemology from Descartes through Kant and of mathematics and set theory, what he calls "mental space," or any sort of abstract realm or collective of things: he furiously condemns the analogizing by which the mental subsumed the social and physical in conceptualizing space, a charge he levels at Foucault in particular. (1974, pp. 3-7) Space is also not an empty box to put any sort of thing one wants into: any space is the product of past actions implicating the then-dominant order, and "permits fresh

actions to occur, while suggesting others and prohibiting yet others.” (1974, p. 73) Both points will prove significant in Part Two: as discussed in Section 7, “cyberspace” was used in early internet theorizing both as a metonym for computer mediated communications, or the set of actions involving networked computers, and to refer to specific sites of enacted spatiality, which Lefebvre and Foucault would recognize as sites for which their works were applicable. Distinguishing these two will be necessary. Lefebvre’s point that there cannot be a space without inscribed elements of the dominant social order will prove essential to understanding the events of 2008 to 2010 within virtual worlds. Again, it bears noting that the *presence* of elements of the dominant order – values, habits, concepts, practices – does not equal the *absolute rule* of those elements: Lefebvre describes spaces in which those dominant elements can change: it is specifically the mechanism of change, of the transformation of the dominant to the new, that is the working of the Resilience Engine upon heterotopic space.

Place for this work then is not epistemological space, empty space or mere geography, but always as Lefebvre often has it, “(social) space,” an ongoing co-construction of power relations and environment, encompassing the perceived, conceived and lived.

b. High Modernist Legibility as Engine Failure

Arguably, at least since the advent of agriculture, humans have been reshaping their natural and social environment to impose particular concepts of personhood, place and power onto that which had arisen spontaneously. Several theorists argue, though, that how the modern European nation-state did so, here with respect to place, was categorically different in intent and extent. Both Scott (1998) and Lefebvre (1974) describe a process in which the bureaucratic state reconfigures persons and place to be,

in Scott's term, "legible," indeed readable as their own ledger, for a state with increased demands for revenue collection and internal pacification. While neither confronts the continuity of the practices of state power directly to provide a satisfactory answer to the question of how the practices of the post-Westphalian European nation-state differed in kind, rather than degree, from those of dynastic Egypt or imperial Rome, Lefebvre cautions that "transitions between modes of production," in the European case from late agricultural feudalism to early industrial nationalism, generate "fresh spaces" according to new logics of understanding and producing space. (Lefebvre, 1974, p.47)

Accepting that the modern state produced space, in Lefebvre's phrasing, in a manner unique to its dominant mode of production, industrialism, what sort of personhood, place and power did it produce? Scott argues that the modern state actively crushed tacit knowledge (*mētis* for him, or *connaissance* in my usage) in its ideological drive for codification and rationalization, driven by the needs of a sociotechnical system operating on a vastly larger scale than its feudal predecessor. As Spar discussed, the affordances and constraints of 18th and 19th Century communications technologies and their social infrastructure determine state (as Lefebvre says, both state-capitalist and state-socialist) action in reshaping personhood, place and power (as well as time: the co-construction of communications technologies, particularly the railroad, telegraph and newspaper, state power and modernist time are well theorized (see especially Anderson (1983)), and relevant to the concepts of heterochrony and the OODA loop discussed above. Scott argues that the various activities of the modern state, from mapping to urban reconstruction to the imposition of surnames, was a form of "internal colonization" by which land and people were made legible (to those in power) for the convenience of the state. This colonization was what Lefebvre would describe as the inscription of the logics of the new dominant power over the old, of the nation-state over feudalism, of the

bureaucrat over the peasants and urban masses. Scott studies the “failures” of the state enterprise of legibility: not those instances where the state failed to make its social spaces legible, but those where its success in doing so led to catastrophe. Scott describes failures akin to those of the final stage of operations of the Resilience Engine, in which the triumph of the dominant order leads to assimilation of new practices and tacit knowledge, rather than their destruction, or in the postmodern case, effacement. Scott’s analysis of state failures closely parallels Boyd’s: in both cases, failure to learn from the “outside” (here, the inside after internal colonization) leads to entropic collapse.

Scott (1999) highlights the role of ideology in the conflict between the modernist state’s vision of order and the previously emergent complexities of pre-modernity, as exemplified by the grid street plan imposed on cities over the tangled paths of the villages they grew from. This process is one of imposing “legibility” – the ability of those without local, tacit knowledge to comprehend, and subordinate, the local. Illegibility, he holds, is “a reliable resource for political autonomy.” (1999, p. 54) What lies outside Scott’s analysis, unfortunately, is a clear expression that such illegibility is a limiting factor as well: the local can expand only slowly, if at all, as the development of local literacy is slow, while easily legible spaces have no such boundary to growth (explaining why many New York cabbies get lost in Greenwich Village but not in the gridded rest of Manhattan). While the boundary of legibility can act as a check on the intrusion of power, it also checks the inclusion of allies and the accumulation of power sufficient to offer a real counterbalance to the efforts of the modernist state. Illegibility then, not only provides a defensive obstacle to the OODA loop of the dominant but simultaneously impairs the speed of one’s own OODA process (which may not be significant in many cases of asymmetric warfare or ghetto/*favela* resistance, where strategies may turn on

the impatience of the dominant order; when quick reactions shape the decision space, as in the virtual worlds case, such a temporal self-limiting may be suicidal).

Given the rapid population explosion and urbanization of modernity, this distinction in the rate of ability to function meaningfully within space alone could have doomed the premodern and “illegible.” Similar arguments were made, and continue to be made, with respect to virtual worlds: Chapter 4 addresses problems of legibility in limiting the ability of potential actors to enter into the heterotopic spaces of virtual worlds, while Section 16 documents a similar process of rendering legible, as the 2008-2010 generation of platforms, whose interface and emergent customs were difficult to learn, gave way to mobile platforms with “intuitive” gesture-based interfaces and with little if any emergent culture to learn. Scott describes such environments as fostering “a less skilled, less innovative, less resourceful population.” (1999, p. 349) Part Three argues that the current generation of platforms does just that, by design, and as the result of the output of the Resilience Engine cycle which ran to completion by 2010.

Scott argues that a unifying factor for a range of modernist endeavors by the state is an ideology of progress – not just of progress generally, but of a specific sort. He sees at work a notion of a linear march to utopia led by the state itself, which is implicit in the Bush vision, per Section 1 above, as well as being that of the rival concept that Turner critiqued as early as the 1910’s. In analyzing failures of this ideology in practice, Scott teases out a common theme, that of the denigration of local knowledge derived from deep engagement with the environment, what he calls *mētis*, in favor of simple, abstract, totalizing schemas. It is this failure to understand and appreciate both the specific and the provisional that accounts for failures such as the modernist design of Brasilia, he argues. He describes a tension between customs and regulatory code: customs are “living, negotiated tissues of practice,” local, particular and adaptable, while

“code would in effect freeze a living process.” (1999, pp. 34-35) Part Two below will document this tension in virtual worlds, not between custom and regulatory code, but rather software code, which in those spaces performed a similar canalizing and limiting function.

Part Three will argue that the output of the cycle of the Resilience Engine in virtual worlds from 2008 to 2010 was a new generation of sociotechnical entertainment systems whose efforts to impose legibility on a global userbase have at least as great a potential to lead to systemic collapse as the excesses of modernist state action.

c. The Invisibility of Neocapitalist Spatial Practices

Where Scott sees the modernist state as imposing legibility as its means of conquest, Lefebvre argues that the neocapitalist order does something quite different: it renders its spatial workings invisible. The effect is not to pave over alternative spatial structures as the nation-state did, but to render thinking about alternatives impossible. Parts Two and Three below will analyze how, and how well, this effacement worked in virtual worlds and a subsequent generation of sociotechnical entertainment systems. Lefebvre begins where Scott has us, arguing that in modernism the place of social space was usurped by abstracting forces operating via the written word and mass media, which had a profound reductionist effect on lived experience. Scott writes of the transformation of nature into natural resources, the abolition of species diversity in favor of standardized monocultures, and of those same forces transforming urban space: both he and Lefebvre see the reductionist logic of scientism operating via bureaucracy. Neocapitalism, Lefebvre goes on to argue, has exceeded state power in its interpenetration of every level of space from the local to the global. This interpenetration turns everything into “abstract space,” a carrier for the dominant power system. Within

abstract space, users “spontaneously” turn themselves, their bodies and their lived experience into abstractions, alienating themselves from their own tacit knowledge and who “cannot conceive of adopting a critical stance towards it.” (1974, p. 93) In Boyd’s terms, the ability even to conceive of an “outside” to the current structure, let alone to occupy it, has been lost. If Lefebvre’s interpretation is universally true, then there is no possibility of a heterotopia arising, and by our analysis, neocapitalism is an entirely closed system, inevitably, by the operation of the Second Law of Thermodynamics, destined to collapse. Yet Lefebvre himself describes mechanisms of spatial social change, suggesting that the power he ascribes to neocapitalism is not in fact absolute – a thesis tested in this work.

Lefebvre argues that the social construction of space generally is elided by two complementary illusions, that of transparency and opacity. (1974, p. 27-30) While his explanation is abstruse, it is remarkably applicable to the case of virtual worlds and their predecessors. The illusion of transparency, he claims, comes from a belief in the pure intelligibility of the word, spoken and primarily written. Writing thus destroys the obscure and ends misunderstandings, as Scott describes, which are the source of conflict. This idealization of the word was prominent in the early days of many new communications technologies, from the telegraph to the telephone to radio and computer mediated communications. (Spar, 2001) While some early-stage naïveté had largely dissipated by the time at issue in this study, an explicitly ideological version of this view, precisely what Lefebvre would call an agenda conflating revolution and transparency, underlay the dramatic transformations within virtual worlds between 2008 and 2010, as Part Two will show.

The illusion of opacity stems from the view that there is no depth, that surfaces and “object-ness” are all there is, an approach epitomized by the sculptor who believes

his art lies in uncovering the object-form present within the raw material. While opacity may seem like an unlikely tacit or explicit view in the context of computer-generated graphical spaces, critical analysis of subaltern presentation and treatment in games and game spaces was often met with the response from the dominant gamer culture (privileged young white American men), “it’s only a game.” This response can be read as an assertion of opacity: that there was no meaning to be found beyond the simplest level of entertainment, and thus social criticism was irrelevant, as there was nothing to criticize. (Zeller, 2006; Manstan et al., 2012) The assertion of opacity becomes explicit in the actions of griefers (spoilsports, in pre-electronic games analysis, e.g., Suits, 2005, 57) discussed in Section 14 below, as an attempt to disrupt or shut down heterotopic activity in the name of those holding social power and threatened by the rise of a heterotopic cadre. Not just correlation, but mutual causation, underlay the rise to hegemony of the paired assertion of transparency and opacity as a counter to heterotopic power between 2008 and 2010 with respect to virtual worlds. This factor alone, this paired, mutually causative, set of ideological axioms, accounts for much of the dramatic cultural turn, the crushing rather than assimilation of heterotopia, which seemed so baffling during my fieldwork.

Taken together, Lefebvre says, these two forces account for “the silence of the users,” a “startlingly strong – and worldwide – trend,” (1974, p. 51) and a fundamental observation of the present work. He claims that social space as a whole has been “usurped” by place with a privileged status based on the dominance of the written word and broadcast media, together an “awesome reductionistic force” which triumphs over tacit knowledge and lived experience. (1974, p. 52) Neocapitalism, he says, has produced abstract space, perhaps prefiguring de Certeau’s (1984) focus on spaces of industrial travel.

De Certeau's question is the obverse of mine: in *The Practice of Everyday Life* he investigates "the ways in which users – commonly assumed to be passive – and guided by established rules – operate." (1984, p. xi). De Certeau argues that, beyond an analysis of the content of mass media in particular, there is a need to focus on what the users (not consumers) of it do with what they receive, a "hidden making," hidden because the growing hegemony of systems of entertainment-capitalist production no longer leave "any *place*" (italics in the original) in which users can indicate what they make or do with the products of the dominant system of production. (1984, p. xii)

However, while de Certeau focuses on the subversive, on "poaching," a term famously adopted by Jenkins (1992) for digital fan culture, including that of video game users, what this work is faced with theorizing is the, one might say, uberversive, the appropriation of products of the dominant culture in order to reconfigure them for expressions of dominant values and relations more extreme than that intended by the designers. De Certeau (1984, p. xvii) claims that "the tactics of consumption...lend a political dimension to everyday practices." When he speaks of "tactics," however, he intends behaviors outside of heterotopia, or a *propre*, in his term, a space which can be isolated from its environment by a "borderline," whose members can be sustained by their connection with the power of their own place (1984, pp. xix-xx) He claims *metis* as kind of his tactics. This all makes sense in our terms if one sees the *propre* as an alternate realm of sovereignty, a coequal space (in the case of television production, say the realm of advertising or copyright law, as opposed to the realm of fandom, which he would regard as insufficiently protected by a borderline). "Tactics," thus for him are the behaviors of the powerless with respect to the property and spaces of the powerful. His work, though, is grounded in the assumption that the goal of those behaviors is to accumulate scraps of agency in places and ways neglected by the powerful, an

assumption made by all the theorists presented here. He is not alone in missing the prospect of a reactionary, rather than subversive, approach by the powerless (despite a similar question confounding 20th Century Marxists faced with a reactionary peasantry), which I argue was common among users of virtual worlds in the period of our analysis, and which this work is designed to theorize.

De Certeau is also vague on the distinction between his “users” and “consumers:” what percentage of the total user base actually engages in appropriation and repurposing versus that which uses a technology in accord with the instruction manual or the implicit, inscribed goals of its creators. This question plagues social media studies generally: many academics greatly overestimate the percentage of critical users of computer-mediated social tools. The concept of “digital natives,” of a generation all mastering, both in the sense of having a deep understanding and in that of wresting control, of social media, while perhaps a logical construct of scholars working with a sample population of MIT or USC undergraduates, bears little resemblance to the classroom experiences of most of us engaged with a more diverse student population.

This is the first insight into a means by which the Resilience Engine might fail in the neocapitalist or entertainment-capitalist age: as Boyd would have it, the ideological and productive forces of the dominant order have gotten so far within the OODA loop of users as to prevent that loop’s even beginning to function. What they “observe,” then, is not their own lived experience, in Lefebvre’s terms, but a substitute product, a space not empty but rather filled with the ideological output of the dominant order. What happens from there, then, logically, is that the later steps of the loop – orient, decide, act – are based on a substitute data set and generate conclusions and actions deriving from the product of the dominant order rather than from their own direct experience with the affordances and constraints of their space. It is this process, this preliminary substitution,

which accounts for much of the spatial action of users within virtual worlds during the period at issue.

However, to deny all subversive practice or the emergence of any heterotopia would be to overstate the case. Heterotopias did arise, spaces of representation did flourish briefly. The hegemony of the dominant order was profound, but not absolute. The study of these – trivially tiny, mostly short-lived – spaces and the agents within them form a necessary counterpoint to the dominant narrative of the preemptive failure of the Resilience Engine. They show that the Engine could operate within virtual worlds, and that some successful assimilation did in fact take place: Section 12 will examine a debate over the academic and corporate use of virtual worlds for conferences and their role in sparking a de-privileging of the podium within highly technological communities. That this success story of resilience stands against a much larger trend of preemptive suppression of heterotopic thought and action does not diminish it; rather it indicates the scope of the transformative potential which was lost due to the very success of the dominant order in asserting itself.

d. Space, Time, and Hegemonic Relativity

This preemptive elision of heterotopic possibility might be seen as a triumph of time over space. Turner wrote at the end of the 19th Century, in which academic history was prone to both the long view and the cyclical, and was something of the last of his kind, simultaneous with the rise of the metanarrative of linear progress which dominated the 20th Century. Boyd's key contribution here is the reintroduction of cyclical time to the innovation process. It is essential to note that it is just that idea which is most frequently misunderstood and mischaracterized in Boyd's work, just as it is within Turner's: the OODA loop is generally interpreted to advocate making decisions faster than one's

adversary. That was not Boyd's point, and is not the point being argued here. It is not that corporate owners and producers acted more rapidly than users within virtual worlds: quite the opposite is broadly true, as Part Two shows. Developers were generally reactive to the sort of "poaching" theorized by de Certeau and Henry Jenkins (1992), while third-party corporations, and no few game designers, failed outright. My point, and Boyd's, echoing Sun Tzu quite intentionally, is that the battle for heterotopic space was lost before the other side showed up to fight. It was not speed of action, or even reaction, but rather action by agents of established power prior to users' beginning their own OODA loop, which was determinative of outcome.

This speed manifested itself in three ways: first, in shaping the battlefield (in Boyd's and Sun Tzu's terms) by imbuing social space with a reductionist product of such power as to overwhelm users' own lived experience or tacit knowledge within the space; second, and critically, by shaping the users themselves, a point elaborated on in Sections 3 and 6; and finally in acting so far within users' OODA loops that even in retrospect most do not recognize that the ideological substrate of their digital actions was swapped out under their very noses between 2008 and 2010.

The latter phenomenon is related to, but again, fundamentally distinct from, the general acceleration of the pace of forms of electronic communications and the social order arising in tandem with it. Spar does make that argument, that the increased speed of communications has shortened the life cycle of sociotechnical assimilation, now a commonplace observation with respect to technological novelties. This in itself is not problematic for the workings of the Resilience Engine: whether acting on a generational scale in Turner's case or over a very few years for Spar's analysis of music sharing, or mine of one generation of virtual worlds platforms, should the Engine work so as to end in assimilation of new tacit knowledge and practices, the end product of systemic

resilience would be reached (I note in passing that this is the fundamental logical flaw in Ray Kurzweil's (2005) argument for the Singularity, and that of other Singularitarians) Rather, what matters fundamentally is the speed by which producers of space within the dominant order (and not abstract forces of neocapitalist production, but in this case a few named individuals) created hegemonic space *relative to the speed by which seekers of agency created potential heterotopic spaces*.

While on the subject of special relativity, an old concept from topological cosmology bears introducing. (see, e.g., Einstein, 1920, Chapter 31) Universes – or space in abstract, conceived and perceived senses – can be categorized as bounded or unbounded, finite or infinite, leading to four kinds of spaces: (1) finite and bounded, (2) finite and unbounded, (3) infinite and bounded, and (4) infinite and unbounded. The Resilience Engine, and the work of the innovation theorists used here, assumes that the space of the dominant order is (1) finite and bounded (which can be imagined as a medieval map with edges that one could fall off of into something else, or the map of Azeroth in WoW): that it has an outside, which can be accessed in some meaningful way. Boyd explicitly states that only a finite, bounded system is capable of resilience. A finite and unbounded universe returns explorers eventually to their starting point – quite appropriately, a “Wasteland” universe. The (2) finite and unbounded universe is the perceptual error of reactionary extremism, of seeing a space in which an undoing or return is possible. An infinite and unbounded universe (4) is the one of the progress narrative, the Singularity and the “end of history:” things will just keep progressing (and to that extent a steady-state model and an asymptotic growth curve model operate within the same spatial universe). However, the space of neocapitalism is not that of the infinite and unbounded, but of the infinite and bounded (3): it lacks an outside, contains all within itself, and brooks no concept of an Other, but without the prospect of return to

previous states. This is the universe of maximum entropy (leaving aside sticky questions of where the energy for asymptotic growth actually comes from in a finite and unbounded universe, which seems a clear and obvious violation of the Second Law): given the Second Law of Thermodynamics, decay to absolute entropy should be relatively swift, an insight at the heart of Boyd's theory of systemic resilience. While an infinite and bounded universe is the dream of ultimate hegemony, it is also the locus of speediest collapse.

In the case of the virtual worlds at issue, Second Life was infinite and bounded: while it could be expanded indefinitely, it did not become, as many analysts expected (e.g., Gartner, 2007), the nucleus of a "3D internet," or of a comprehensive "metaverse," which would have made it infinite and unbounded. World of Warcraft is clearly finite and bounded: it is quite literally presented as a map of a world – albeit a dynamic one, changing across game expansions – with fixed edges.

There is apparently no correlation between type of universe and the operation of time within it, other than the obvious observation that within the "Wasteland" universe, time is inherently cyclical. What matters here is that the OODA loop is a cyclical process within linear time: it is reiterated, but stochastic rather than repetitive. Thus, it requires time to operate, making relative time of operation between actors, not speed itself, the critical factor.

The universe membrane has been theorized a bit here, and will be discussed at length in Section 7. For current purposes, what matters is that it be semipermeable, such that an outside may be theorized, perceived, entered into and acted upon and within. This is a necessary assumption of the Resilience Engine, and one invalidated by the relative speed of space creation by the dominant order.

e. Space in Games: Turning Back to Thingness

Nitsche, in his work on videogame spaces, (2008) argues that “experience, comprehension and spatial practice” – tacit knowledge evolved through agents interacting with a sociotechnical innovation in a particular heterotopic space, in our longer-winded terms – are essential to understanding videogame spaces. However, he echoes Hodder’s caution to come back to the thing itself, noting that there are fundamental differences in the way space is experienced in digital settings, paralleling our discussion of avatarized agency in Section 4 below. (2008, p. 3) Nitsche sees videogame space as centrally generative of narrative (writing out of the discipline of film studies), which seems too teleological, even for a created space within an authored game, while begging the question of “whose narrative,” which involves an analysis of power absent from his work. While he defines “narrative” as “a form of comprehension that can be triggered and affected by the gameworld,” (2008, p. 42), which tracks onto the definitions presented under “tacit knowledge” in Section 6 below, the term, particularly in the context of a long-running academic battle between advocates of narrative and of rule sets in games studies, seems to conflate hegemonic narratives, emergent narratives, critical narratives and negations of narrative inscribed, asserted or enacted in and around videogame spaces. Bundling them up into a single definition seems more obscuring than enlightening.

However, Nitsche does introduce a useful taxonomy of videogame spaces (2008, pp. 15-17), which he separates into (1) the rule-based space of code, (2) mediated space of the presented images, (3) fictional space within the player’s imagination, (4) play space, at the physical intersection of the player and the hardware, and (5) social space of multiplayer action. Two elements are missing here, which will be significant in Part Two: I’d split (2) into the space of action within the game/world on the one hand and

the user interface presented on the screen, on the other. The latter establishes key affordances and constraints of both action and perception within the space, a role quite distinct from the player/controller interface of (4). As Nitsche consistently ignores issues of power, it's not surprising that (4) conflates several hegemonic narratives – the game fiction written or intended by the designers (e.g., the conflict between Horde and Alliance in WoW), the game ideology (WoW presents/enforces/models/parodies consumer capitalism through implicit and explicit narratives), and narratives of emergent user behavior (e.g., “Leeroy Jenkins,” see Warner, 2007), which per the Engine are often in dialectic conflict with the hegemonic narratives. “Narrative” needs to be separated into explicit hegemonic fiction/implicit hegemonic ideology/emergent heterotopic narrative, in order to tease out relationships of power present, not merely in the social spaces of virtual worlds and MMOs but in any act of playing someone else's game (whether one can generate a counter-hegemonic dialectic with one's own game is a question best asked of designers). Part Two will apply this modified taxonomy to WoW and SL between 2008 and 2010 to tease out what, specifically was imported from the dominant order into those spaces, and how material practices reinforced or attempted to counter ideological imports through mediated practices.

Chapter Two Summary

In this chapter we took a deeper look into the concept of heterotopia. While we said that it's the space generated by people seeking agency outside the dominant order employing some new socio-technical package, that space is no tabula rasa, but rather upon creation contains a sub-stratum composed of the ideology, tacit knowledge and practices of the dominant order. Through the interaction of its creators with the innovation, distinct tacit knowledge develops and new actors are empowered, leading to

a dialectal interchange with the dominant order across a physical, institutional or conceptual membrane (explored at greater length in Chapter Three). Whether the dominant sub-stratum or the emergent heterotopia dominates depends in part on the relative OODA-looping speeds of dominant and heterotopic actors; the closed/open, bounded/unbounded nature of the heterotopic space, and specificities of the embodied mangle of interaction across the membrane.

The following failure points can occur in the workings of the Resilience Engine's heterotopia-creation phase: such a weight of invisible ideology within the space as to foreclose the prospect of differentiation from the dominant order from the beginning; a membrane too thin to protect the evolving agents and practices from premature absorption, and a membrane too thick to prevent the entropic collapse of a closed system. Virtual worlds managed all three, sometimes simultaneously at the subcultural level, but each represents a failed strategy of social innovation through failure to engage constructively with the dominant order.

Chapter 3

DIALECTIC AND RESILIENCE

Now that we have the parts that make up the Resilience Engine, what happens when it's running? What should we look at in any particular case to know whether it's running, and if it is, if it's succeeding or failing? How can we evaluate the final output?

Section 6: Knowledge and Imagination Across the Frontier

As imagination calls the heterotopia into existence out of the known, its boundaries are maintained and contested by the tension between two sorts of knowledge: metropolitan versus local, "savoir" versus "connaissance." This section will attempt to explain both processes in general and in the case of virtual worlds, with specific cases left to analysis in Part Two.

a. Just How "Spacey" and "Outsided" Does a Heterotopia Have to Be?

Our theorists from Chapter One range broadly in the nature of their common notion of "outside the dominant order." For Spar, spatiality is a loose metaphor on the one hand (the space in which ham radio operated) and entirely concrete on the other (the zone of the Caribbean triangle trade, transcontinental rail lines). Similarly, Boyd's external space is clearly defined as an outside place, as he draws in part from biological systems thinking about the cell and its environment, yet in his own contexts of military strategy broadly and tactical fighter combat specifically, "outside" seems to retreat into metaphor. For Turner, the notion was entirely concrete, the places of serial Euro-American migration westward. This Chapter 3 generally is an attempt to come to grips with the concrete or metaphorical notion of space in a theory of resilience; thus a selection of theorists such as Lefebvre and de Certeau for whom space is highly conceptualized, but still referring to some sort of three-dimensional existence, as

opposed to the inside of an element in a Venn diagram. Yet, coming back to our original theorists' cases, it seems like we can strongly infer that spatial separation from the metropolis may be desirable, but is neither necessary nor sufficient. Obscurity, particularly that of sociotechnical innovations just being taken up by a critical mass of users, even in the metropolis, may perform the same function as spatial removal. Thus, working from Bijker's (1984) bicycle example, even though early adopters were racing their deathtraps through the streets of major cities, they were bounded off from the general population by novelty and oddity rather than spatial remove. Only when the membrane of oddity began to dissolve did design goals shift to match a general, rather than an extreme-sports, population. By contrast, though, it seems evident that one of the factors contributing to the autonomy and cultural power of early American film pioneers, particularly in contrast to their contemporaries in radio, was the choice to relocate to Hollywood, as far from the metropolis as possible.

These examples may point to the key element of the answer to the spatiality of "outside:" it is not physical distance, but lack of attention, from the extant power structure that matters. Prior to the age of mass communications, a good generalization could be that neglect could happen without physical separation, but physical separation strongly implied neglect without mandating it, greater value being a countervailing factor (thus generally greater attention paid by the British to its Indian than to its North American holdings, as the cost/benefit ratio of attention was significantly different). This conception helps us understand some of why the metropolis might neglect an emergent heterotopic space: they may simply not see the value proposition in attention. Spar comes close to this formulation, as does Turner, by arguing from the other side: they posit that heterotopic spaces are created and exploited by those who envision value for themselves in separating from the metropolis. These calculations aren't symmetrical,

though, which is a shortcoming of viewing the matter from one side only: even if both sides assign the same objective value, e.g., “this product will be worth a billion dollars a year”, the subjective value of that billion dollars will be greatly different to a college dropout than to Apple. Further, that objective value might even have a negative subjective component, if it disrupts current practices: this is the fundamental tension of the dialectic between the holders of the dominant means of production and those trying to develop an alternate system.

Synthesizing all this, we can say that heterotopias may rise in spaces where the dominant power is absent, whether physically, conceptually, or by self-interested neglect. Whether spatial separation is necessary or useful will be closely related to the reasons for the absence of the dominant power on the one hand, and its means of asserting it on the other. When assertion of power depends on proximity of military assets, clearly distance is a big help. When that power can be asserted at low cost at any distance, through electronic information flows, by example, distance may play little role. Likewise, distance may be irrelevant when the reason for absence is a value judgment that presence simply isn't worthwhile, whether that be from fully-informed cost/benefit analysis or ignorance of opportunity.

An assessment thus cannot be made on the basis of a reductionist or abstract formula, but only from an evaluation of specific circumstances, guided by some general analytical principles. This is of course no coincidence: this is the fundamental message of the resilience theorists in contrast to the works of modernity, as discussed in Chapter One above.

b. Play, Mass Media and the Space of Neglect

Two key questions include why virtual worlds were characterized as a place in the first instance, and whether, by the time the 2003 generation of platforms launched, the attention of owners of the dominant means of production was sufficiently lacking for a heterotopia to arise. These questions are considered together, as there was an odd and complex interplay between them. A short answer is that virtual worlds were broadly conceived as a heterotopic space *long before they existed*; such that their revolutionary potential had been “discounted to net present value” by the time they actually were created: by the time the technology was actually fielded, its tropes had been played out in fiction to such an extent that issues were well-explored, if not dated, even as the technology failed to match decades of imagining. A third factor, that game-like virtual worlds were positioned in the general understanding, though not in users’ practice, as more heterotopic as a result of metropolitan disregard of games, while social virtual worlds were seen earlier on as appropriate spaces for metropolitan invasion, will be explored in the next subsection.

While early text-based progenitors of modern social and game worlds were heavily studied (e.g., Cherny, 1999; Sundén, 2003) and received some popular attention (Dibbell, 1999), the first generation of graphic spaces were largely curiosities (cf. Morningstar and Farmer, 1991), it was the breakout of *Everquest* after its release in 1999 which marked virtual worlds as a space of heterotopic – and commercial – potential (Castronova, 2001). The platforms studied here, *World of Warcraft* and *Second Life*, along with others launched between 2003 and 2005, mark a second and distinct generation of sociotechnical innovation, with releases between 2003 and 2010 largely equivalent to those studied here, and succeeded by a next generation in 2010, marked

by a “free to play” business model, generally greater simplicity, and a foreshortened time to endgame raiding play.

As noted above, social and game virtual worlds were differently situated with regard to their heterotopic status in the early years of the 2003 generation of platforms. Game worlds, or MMOs, were classic examples of heterotopias by lack of metropolitan interest, while social virtual worlds attracted the attention of the dominant power structure early on. One of the analytical goals of Part Two is to account for the reversal of that situation during 2008-2010, such that afterwards game worlds were seen as important to the dominant forces of capitalism and civil society, while social virtual worlds were ignored as a trivial entertainment for misfits.

That MMOs, as games, were largely considered as trivialities unworthy of attention is superficially unsurprising: both Huizinga (1937) and Sutton-Smith (2001) among many others document a view of play derived from the Protestant work ethic as being the “work of children,” and thus by definition unworthy of adult attention. The ideological construct of the child (and the concomitant redefinition of appropriate adult play as “sport” or gambling) was surely fundamental to the modernist social order. However, the rise of a dominant order based on the sale and consumption of entertainments, theorized as early as Warren and Brandeis (1890) and Dewey (1927), might be expected to reconceive the value of games and the playing of them. The disconnect is the consequence of the contingent development of entertainment media: prior to the development of the modern videogame, games simply did not fit within the paradigm of entertainment through mass communication as did movies, radio and television; rather, mass media supplanted both folk and commercial games as family entertainment through the period prior to the rise of videogames, and particularly their

personal-computer variants, as more or less mainstream entertainment for adults as well as children.

Even so, at the launch of the 2003 generation of platforms, videogames were generally regarded as unwholesome entertainment for children and misfit adults, due in part to the moral panic after the media association of the Columbine killers with video game play (e.g., Grossman and deGaetano, 1999; see also Appendix A to Justice Breyer's dissenting opinion in *Brown v. Entertainment Merchants Association et al.*, 564 U.S. 08-1448 (2011)) and despite a comprehensive FBI report dismissing links between video game playing and violent behavior (O'Toole, 2001). The "massively multiplayer" nature of the platforms had not in any way dispelled the popular conception of video game play as isolated and antisocial. (see, e.g., Parker, 2006) Thus, while a product of a powerful mainstream industry, MMOs' cultural status, along with that attributed to their imagined players, was highly marginalized. With a marginalized identity imposed upon players, and the moral disrepute of the platforms, MMOs prior to 2008 looked much like Foucault's (1967) "heterotopias of deviation." (in yet another of the inversions here, MMO players tended strongly to reject the definition of their space as deviant, when in fact it was (as I'll argue below) highly mainstream in many ways, while social virtual worlds users tended to embrace a notion of heterotopia of deviation in the face of metropolitan efforts to assimilate them into the mainstream)

That social virtual worlds were differently imagined from the beginning, and were treated quite differently within academia, from MMO games, owes to their very different ancestry. Specifically, WoW was the massively multiplayer sequel to the three *Warcraft* solo-player computer games. These in turn descended from the early mainframe computer game *Adventure* (a MUD, or Multi-User Dungeon, a key branching point on the evolutionary tree), which was an attempt to computerize the experience of *Dungeons*

and Dragons play, itself the unlikely offspring of Tolkien and *kriegsspiel*. (Note that this account denies a meaningful ancestral tree running through *Spacewar* and *Tennis For Two*, and thus to Cold War cybernetics. This is a controversial and contestable assertion: one could argue that the emergent instrumental play described in Section 11 is a reassertion of the platform's system-engineering roots, but I reject a meaningful connection) By contrast, SL's roots lay in the fusion of the Burning Man festival with LambdaMOO and a large amount of "California Ideology" internet utopianism, LambdaMOO being a descendant of TinyMUD, which forked from the MUD specifically to break from game elements, particularly its Tolkienesque fantasy violence.

c. Science Fiction, Psychology and Spatiality: the Popularization of "Cyberspace"

Turner (2008) makes a strong case for the direct ideological and social linkages between San Francisco Bay Area counterculture and the culture of 1990s internet "pioneers," one which, via the role of Electronic Frontier Foundation co-founder and investor Mitch Kapor, continues into Linden Lab (LL), corporate creators and owners of SL, as Kapor was chairman of LL's Board of Directors (and delivered a speech in SL in 2008 explicitly declaring the SL "frontier" closed: Kapor, 2008), attributing an ideological pedigree to the financiers and designers of SL is insufficient to account for its general perception. For that, one needs to examine the "cyberspace" concept and the work of its key progenitors, William Gibson, Neal Stephenson and Sherry Turkle. Gibson coined the term in his short story "Burning Chrome," (Gibson, 1982) and popularized it in his influential novel *Neuromancer* (Gibson, 1984), which established not only a range of tropes of the cyberpunk literary genre, but arguably shaped the later development of the World Wide Web. *Neuromancer* presents a global computer network perceived by users as an all-encompassing sensory experience of data presented spatially, a "graphical

representation of data” in “constellations,” and in an often-quoted phrase, a “consensual hallucination.” (Gibson, 1984, p. 69) Stephenson elaborated on the spatiality of data in his novel *Snow Crash*, (Stephenson, 1992), in which networked data was presented in a city-like environment, complete with designer avatars and virtual nightclubs. SL founder and initial CEO Philip Rosedale has described *Snow Crash* as a key inspiration for SL. (Dubner, 2007; Sydel, 2010) Similarly, Vinge’s (1981, 2001) “True Names” established tropes of avatar pseudonymity, identity experimentation and the spatiality of data, and was particularly influential among adherents of the California Ideology: a 2001 reprint volume (with the subtitle “and the opening of the cyberspace frontier”) attested to its influence with essays from Marvin Minsky, Danny Hillis, Richard Stallman, and Morningstar and Farmer, creators of the first social virtual world and authors of the first exploration of emergent culture in such a space (Morningstar and Farmer, 1991).

In popular nonfiction, Sherry Turkle’s (1995) widely-read *Life on the Screen*, prefiguring Castronova’s work a decade later, sought to police a boundary between the “real,” which for her meant physical, and the “virtual,” or actions mediated by a computer. That this distinction existed in the first place is deeply strange: previous electronic communications platforms such as the telephone did not generate a similar notion of a distinct, bounded spatiality of use. The only coherent explanation of this boundary-drawing lies in the prefiguring of the technology as spatialized, via cyberpunk. Much of *Life on the Screen* details a transition from naïve notions of the power and nature of computers to that of a normalized technology; Turkle sought (and still seeks) to undo this narrative closure and reinscribe boundaries that even in 1995 she describes as dissolving. (e.g., Turkle, 1995, p. 22)

Scott (1999, pp. 64-71) attributes to the desires of the modernist state the assigning of surnames, which he calls “the last step in establishing the necessary

preconditions of modern statecraft... designed to allow officials to identify, unambiguously, the majority of its citizens,” primarily for taxation. He contrasts this system with a vast range of premodern practices in which persons might have different names at different stages of their lives, and for simultaneous uses in different contexts, a richness and diversity lost to Modern standardization. Surnames, particularly patrilineal ones, enabled outsiders to identify specific individuals without resort to local knowledge, especially in societies where only a few Biblical proper names were in common use.

The “true names” (Vinge, 2001) of avatarized pseudonymity sought in no small part to undo precisely the transparent unity of identity imposed by the modernist state: in that sense, “illegibility” was a counter-modernist feature of virtual worlds. As discussed extensively in Part Two, particularly Section 10, the avatar name served the same social function as the lack of a cash economy in game-based MMOs: it enabled an egalitarian alternative to the dominant value structure. A pseudonymous avatar could be judged only on their local reputation, free of the status tokens of identity which could be linked to a “real name:” race, class, gender, credentials and affiliations. The corporate backlash against pseudonymity reasserted the goals of the modernist state: ensuring total legibility and transparency to enable resource extraction – taxation in the modernist case and marketing in the corporate.

Complicating this picture, however, is the extent to which the generating of standardized performance data was an emergent practice of MMO users, rather than one imposed by the corporate owners of MMO platforms. However, there is a clear distinction between, say, the use of player-created threat meters within WoW discussed in Section 11) and the “nymwars” over the role of pseudonymity examined in Section 16: the former was used to determine and assert hierarchy within the local system; the latter an attempt to dissolve local practices by forcing transparency and attaching offline

reputational associations to online behaviors: one established power among participants within the membrane, the other was an attempt to trump tacit knowledge with claims of systemic legitimacy by eliding the membrane, in a direct analogy to the Modernist state naming practice. Scott calls modern statecraft “internal colonization:” (1999, p. 82): the dialectic around online naming practices, one thoroughly lost by the emergent and local, was similarly an assertion against, and counter-assertion of, a means of control by the dominant order.

Taken together, by 2003 certain notions were well-established in popular, engineering and academic culture: the spatiality of data presentation, alternative online identity exploration, and a semi-porous boundary between separate realms of the physical and digital. The first generation of virtual-worlds platforms (following after the widely-documented MUDs of the 1990s, e.g. Cherny, 1999; Dibbell, 1999), including Habitat, documented by Morningstar and Farmer (1991), and Everquest, by Castronova (2001), established additional concepts as central to the genre: emergent behavior, particularly economic, and a sense of the environments as a distinct place where one lived, even preferentially to the physical world. These factors contribute to an explanation of the content of imaginings of virtual worlds; the widespread belief that avatarization and 3D environments were the future of the internet (e.g., Gartner, 2007) can best be attributed to twenty years of spatialized, avatarized environments being presented in popular fiction as what the future would look like: strangely, corporate hype was a manifestation of science fiction tropes.

d. Some Words Not in English: the Politics of Tacit Knowledge

In Boellstorff’s (2010) tightly-reasoned work on SL, he draws a distinction between two kinds of knowledge, *technē* and *epistēmē*. *Technē*, he says, is human

action that changes the world, “intentional action that *constitutes a gap* between the world as it was before the action, and the new world it calls into being.” (emphasis in original, 2010, p. 55) This may be the most concise formulation of the role of tacit knowledge in the Resilience Engine. He illustrates the distinction between *technē* and *epistēmē*, or knowledge of the world, through the story of Prometheus (“Foresight”) and his brother Epimetheus (“Hindsight”): Epimetheus’s knowledge is oriented towards the past, to the world as it has become, while Prometheus’s knowledge – the fire and knowledge of the arts he stole from the gods to give to humans – is that of transforming the world into what humans will. Boellstorff claims that what makes virtual worlds distinct from other virtualities is that *technē* can take place inside them, rather than solely in their production (2010, p. 58).

Lefebvre, along with other French theorists, draws a distinction between *savoir* and *connaissance*, which adds a richness to Boellstorff’s *epistēmē/technē* dichotomy. Lefebvre finds a tight linkage between metropolitan knowledge (*savoir*) and the assertion of hegemonic power over society by the dominant means of production: *savoir* is specifically a tool of the dominant power used to maintain control. *Savoir* is not primarily hindsight, but rather that knowledge which colludes with (the dominant) power. By contrast, *connaissance* is “a critical and subversive form of knowledge,” (Lefebvre, 1994, p. 10) which refuses to acknowledge (the dominant) power and thus is inherently antagonistic to it. It is a “metaphilosophy,” grounded in philosophy but opening it up to both the real and the possible – and thus deeply similar to Boellstorff’s *technē*. *Connaissance* leads back to practice, to lived experience, and thus implicitly acts as a critique of hegemonic ideology. Lefebvre speaks of the “concrete universal,” (1994, p. 368) which in turn tracks to Foucault’s definition of heterotopia as utopia *in practice*.

Nitsche (2008, p. 72) likens the current state of games to that of early movies, in which creators were simultaneously developing and prominently displaying a new tacit knowledge of their creative craft, stressing displays of technique over narrative, however defined, a form of practice he likens to the baroque. While this sort of spectacle is more common in console games for reasons of both hardware and genre, this *technē* of space construction raises a question of the entanglement of layers of dominant and critical knowledge, though Nitsche fails to develop the point. As artists working in a new and counter-hegemonic medium (an apt description of the game industry's relationship to Hollywood), baroque display is an assertion of tacit knowledge of the medium asserted against older art forms. Yet at the same time it is a hegemonic assertion against its users, every bit as much as the design of a theme park or shopping mall is: its very purpose is to constrain users' interactions with the space, enabling or demanding some actions while rendering others illegitimate or impossible. In this conundrum of opposite meanings within entanglements of power relations, we will do well to remember Hodder's cautioning to come back to the thing, to the specific, and ask *how* any given bit of technological/artistic expression (the introduction of mesh as a creative tool in SL, the striking status-symbol dragon mounts in WoW) are expressions of power relations within different entanglements while maintaining a constancy of thing-ness which cannot be dissolved away into the network.

Following from these distinctions, "metropolitan" and "frontier" knowledge are not just knowledge derived from different places, but different kinds of knowledge, different in the key respects essential to the operation of the Resilience Engine: bounded versus unbounded, static versus dynamic, of the coherent inside versus the entropic outside, hegemonic versus critical, of the dominant means of production versus new emergent means, of a known entanglement versus one capable of dissolving and re-forming. What

one knows about home is a different kind of knowledge from what one learns on the frontier.

Section 7: Differentiation

By now the need for, and function of, differentiation between hegemonic space and heterotopic space for generating innovation should be clear. However, its specific application to virtual worlds implicates key and controversial concepts in games studies, which were actively contested by users as well as scholars in the period at issue. A resolution of the theoretical debate largely came from a belated, begrudging and certainly not complete acceptance of the value of tacit knowledge derived from the spaces as they evolved.

a. A Three Magic Circle Circus

One of the foundational notions of games studies, dating back to the most prominent early work in the field still widely cited, Huizinga's (1938) *Homo Ludens*, is that of the "magic circle." Confusingly, the term has at least three major and distinct definitions. Huizinga only uses the term in passing; it does not even appear in the index to his work. Nonetheless, it's fundamental to his concept of play, which overlaps significantly with the Resilience Engine, as both serve similar purposes. Huizinga claims a broad space for his definition of "play," which explicitly "permeates" "the great archetypal activities of human society," including law, commerce, religion, art, and science, indeed most social constructs with a performative or ritual aspect." (1938, p. 4) First, all play is voluntary, an act and expression of agency. The people playing distinguish themselves from others, either by secrecy or by signs of affiliation like uniforms, while setting aside outside status and power. Second, play takes place in a

space apart from that of ordinary or “real” life, particularly outside the satisfaction of “immediate wants and desires.” (1938, p. 9) It is not too much of a stretch to read that space as one definitionally outside that of the dominant means of production, a concept common to much modern, though not postmodern, games studies literature. The space is physically as well as temporally bounded: the “magic circle,” while fairly imporous, is also impermanent, collapsing back into “real life” by rule or by consent, or by intrusion from outside. The space and activity within are maintained by rules and processes distinct to it and different from those of the outside world. In short, we have concepts of agency and heterotopic (if heterochronic) place quite similar to those we’ve developed for the Engine.

The primary difference between Huizinga and the theorists whose work we’ve built the Engine from is that Huizinga sees that which takes place within the magic circle as definitionally incompatible with profit and material interest. Huizinga, an art historian by training, discusses the roots of play in the potlatch and other premodern customs which he reads as inherently antagonistic to personal material gain. Huizinga laments the growth of sport in the 19th Century, seeing it as hostile to the play spirit through its organized, industrialized structure. He writes from a premodern perspective, extensively using premodern examples, to mourn the dominance of play by the current forces of production, that of industrial capitalism. It is astonishing to read his definition of play, which excludes by its terms gambling and performance for monetary reward, arguably the largest and most influential kinds of adult play across history. This gap only makes sense as a condemnation of the dominant means of production so profound as to blind him to the obvious, that play for money and play for industrial capitalism can be meaningfully distinguished. Yet, Huizinga says explicitly that play cannot take place for

gain, and so his model cannot be fundamental to the Engine, though it is strongly suggestive of the intersection between innovation studies and games studies.

A second, and vastly more circumscribed, definition has been put forth by Salen and Zimmerman (2004) and glossed by Zimmerman (2012). For them, the magic circle is the shared space of play created by game rules. Here the term loses the ritual aspect key for Huizinga while taking on a more problematic use of the “space” concept. Zimmerman means more than the physical place of a game, be it chessboard or football field, but also the conceptual distance from the ordinary world which demarcates play from not-play. This element of socio-cognitive remove, or the spatialization of distinct rule sets, does not track clearly onto Lefebvre’s categories of space, nor onto heterotopia. The spatial metaphor seems inapt, linking two logically distinct kinds of things, the locus of playing and the mental state of playing, what Salen and Zimmerman call a “lusory attitude.” Why such an attitude should be spatialized, as opposed to accompanying spatialization as an element making up the social construct of “game,” remains unclear. The Salen-Zimmerman definitions of games in general apply better to those games dominated by a system of largely formal rules, in contradistinction to less constraining spaces of play (finite versus infinite games, in Carse’s (1986) terms). Much of the heated debate within games studies cited by Zimmerman (2012) around the “magic circle” concept stems from the application of a definition crafted for reducible, and largely explicit, systems to complex adaptive systems. Games studies lacks a clear sense of the role of complex adaptive systems (a terrible and egregious lack given the importance of games and gamelike tools in the early understanding of complex adaptive systems, particularly in the wargames context: see, e.g., Perla, 1990), and definitely lacks a vocabulary for drawing distinctions between complication and complexity, though the field is largely split between students of the two kinds of games. Some of this

uncertainty is a product of confusion as to the boundaries of the circle: Zimmerman argues for Chess as a complex adaptive system, yet if one inscribes the circle around the board, the game seems merely complicated: nothing can legitimately be done that the rules do not envision, and the only thing separating it from Tic-Tac-Toe is the degree of complication, not complexity, in the rule set. Many professional sports, however, would be complex: the emergence of the passing game in American Football, playing above the rim in Basketball, or brawling in Hockey, were all emergent behaviors, legitimate within the rule set but not envisioned by it. Similarly, World of Warcraft allows for emergence: playing to level cap without dying, or without killing anything, or playing five person dungeons with three, are all behaviors permitted but not envisioned by the rule set. Chess only becomes complex when viewed as a component of a larger complex adaptive system: New York chess hustling, Cold War sport, or John Henry man-versus-machine contests. Drawn globally, a magic circle can similarly be found for Tic-Tac-Toe, in child cognitive development, parenting rituals, sibling rivalries, and suchlike (Koster, 2004). That such confusion can occur in a field populated by analysts as sharp as Zimmerman suggests just how problematic the magic circle is as a concept within contemporary games studies.

Arguably, Huizinga's definition tracks better onto complex adaptive systems than scalable rule sets, which accounts for some of the arguments over the strength of the magic circle boundary. The third use of the concept is in application to the complex adaptive systems of MMOs and their ilk. Here, as in Huizinga, the differential, if not conflictual, nature of the game space within the magic circle boundary is of primary importance, while it is relevant only in identifying which formal rule set is in operation in the Salen-Zimmerman sense. For scholars of those games which are complex adaptive systems, notably Castronova (2005 and 2007) and Lastowka (2010), what matters is the

boundedness of the heterotopia from the space of the dominant order. Here we part company with the premodern Huizinga and the arguably not-complex Salen and Zimmerman to come to grips with the magic circle concept as primarily used in studying MMOs and which tracks directly onto the workings of the Resilience Engine.

Castronova speaks of an “almost-magic circle” (2005, p. 159) around MMOs, a “membrane” through which markets, politics and law pass on a semipermeable basis. Castronova’s model is explicitly, idealistically, heterotopic: in subsequent writings (e.g., Castronova, 2007) he calls for firming up the membrane to protect emergent distinctive culture within MMOs from absorption into the dominant order. He sees that which emerges within the membrane as being a superior alternative to the external economic culture, in which fun is calculated along with economic value to determine a true price. He claimed in 2007 that there was an “exodus” across the membrane, as people were choosing more labor for fun and less labor for working within contemporary capitalism (Castronova, 2007). This is of course a description of the mechanism by which the frontier, the heterotopia, is populated: in order to gain value outside the dominant system, people leave the one for the other. They take their culture with them, and the dominant order comes chasing after. Thus the borderlands is porous to the forces of the dominant order: law, politics and markets, per Castronova’s list. The membrane, however, allows the development of an explicitly oppositional value system, here based on an economics of fun against the dominant economics of reduction of goods and labor to cash value.

b. The Membrane

Foucault’s fifth principle of heterotopias holds that they always have a system “that both isolates them and makes them penetrable,” in our terms, a membrane.

Castronova picks up the concept, an image common in the literature of complex adaptive systems. He explicitly calls virtual worlds (or “synthetic” in his 2005 term) organisms, defined by a semipermeable membrane separating them from their environment. Human society, he says, can be found on either side of the membrane, and neither side is more or less “real” than the other, quickly dismissing any “real”/“virtual” distinction at the epistemological level. This membrane works to allow users to retain “all that is good about the fantasy atmosphere of the synthetic world” (2005, p. 160) (Castronova only speaks to game worlds, not to social virtual worlds, but the notion holds) while “giving users the maximum amount of freedom to manipulate their involvement with them,” e.g., to assert agency within the heterotopic context.

Within the literature of complex adaptive systems (e.g., Miller and Page, 2007), the membrane fulfills the same function: it is the point of limited interchange between the organism and its environment, the point of interpenetration of the complex adaptive system within and the ones without. For Boyd (Oisinga, 2007), the permeability of the membrane is central: that is the factor separating closed systems, subject to decay towards complete entropy, from open systems which can increase in complexity contrary to the Second Law of Thermodynamics (which as noted above only applies to closed systems (Chaisson, 2011)). He explicitly likens the latter to living organisms in general and cells specifically. Citing Maturana and Varela’s concept of autopoiesis, he finds autopoietic systems as “self-bounded, with the boundary an essential part of the internal network. The boundary serves to make the internal system “organizationally closed,” in that its internal actions are determined primarily by internal processes rather than by the external environment, which they nonetheless interact with through the boundary through the exchange of energy and matter, defining them as “structurally open.” (Oisinga 2007, pp. 92-93) For Boyd, it is the “mismatches” generated between the

organism's internal systems and its environment which provide the impetus for evolution or growth. It is precisely this mismatch which Castronova analyzes in the case of virtual worlds in his 2007 book, focusing on the dialectic between an economy of fun versus one based solely on exchange value, while focusing in his earlier work on the interaction within the membrane of markets and law, equivalent to Spar's "creative anarchy" phase. The processes of the membrane are similarly those of Anzaldúa's *la frontera*, not a sharp line separating dominant American culture from a "natural" wilderness, but a zone of exchange of cultures leading towards transformational assimilation rather than conquest.

c. Differentiation and Spatio-Temporality

There are three sorts of "outside," only one of which functions to generate resilience. The first is that which is outside one's daily life but still within the dominant order, to which one returns after some time: the vacation spot, the classic example being Disneyland (Baudrillard, 1994). While vacation spots seem to be a break from daily routine, they still manifest (or hyper-manifest) the dominant order, and serve as a safety valve for it (e.g., the role of spas in Soviet labor policy, the American two-week vacation package). These places are spatially distinct without being spatio-economically different. Per the analysis above, they are almost entirely controlled from their outside, and lack autonomy. Thus, they are not part of an open system.

The second sort is the temporally distinct, but not necessarily spatially distinct, space of identity play: the carnival. As Second Life was inspired in large part by the Burning Man festival (Au, 2008b) an analysis of this type of space will prove useful for application in Part Two below. The carnival or masque has been heavily theorized (e.g., Bakhtin, 2009; Huizinga, 1938): Huizinga considers such things to be ur-play, the

earliest and most primal manifestation of the play impulse (for which the temporary existence of a membrane space operating under different rules is essential); Bakhtin's stress is on the role of carnival in maintaining the dominant order. While superficially opposite, what both present is a space which may be complicated, but is not complex: because of both temporal and role circumscribing, complexity cannot emerge from such spaces (Burning Man, Renaissance Faires and fan conventions are a partial exception, and some have regarded them as an alternative cultural order: in the 1970s, science fiction fandom polarized around two views: "fandom is a way of life" and "fandom is just a goddamn hobby." Regardless of the hopes of some, clearly these spaces never presented a comprehensive or popular challenge to the dominant order. However, a comparison of some of these cultural spaces with virtual worlds would be illuminating). While these spaces are richer in cultural distinctiveness than the first type, they largely fail to sustain a thick enough membrane to overcome their temporal limitations to pose a genuine heterotopic alternative.

The third sort of "outside," the one at issue here, requires a thick enough membrane to maintain internal autonomy, such that objects and information flow both ways across the membrane. One useful distinction here is between the settlement and the colony: generally, the settlement is given autonomy sufficient for two-way flows, while the colony exists for resource extraction to the metropolis. These distinctions play through spatial design: Foucault (1967) explicitly contrasts the heterotopic space of English North American town design with that of Spanish Latin American towns: the Jesuits in Paraguay, he claims, "established colonies in which existence was regulated at every turn," the spatial order of the town fixed and legible as an institution of control. Lefebvre makes the same point (1974, pp. 150-152): while New York City followed a similar grid plot to that of Latin American colonial towns, it served a different

socioeconomic end, “the production and accumulation of capital *on the spot*.” New York City had a strong membrane by intention; Latin American towns had little or none, also by intention and design. Lefebvre thus cautions that one cannot simply read from a spatial plan to intent or economic order; more careful analysis is needed, as similar designs can be put to wildly different ends.

Arguably, WoW can be read as a colony (Rettberg, 2008) and SL as a settlement: certainly the latter point was made explicit by its designers (e.g., Ondrejka, 2007). Harking back to the discussion of Einsteinian spatial types in Section 5(d), WoW is (subject to the caveat of the *Burning Crusade* expansion, which established another planet) finite and bounded: the map of Azeroth is fixed, with additions interpolated (*Wrath of the Lich King* takes place largely in Northrend, established on the map but unexplored, while *Cataclysm* allowed players to explore behind the wall of Kingdom of Gilneas, a region visible on the map but previously inaccessible). MMOs tend strongly to the finite and bounded model, with Star Trek Online being a rare exception: the Star Trek galaxy being effectively infinite, there is no practical limit on the addition of planets, a common feature of the game’s “seasons.” SL is infinite and bounded: land can be added to or subtracted from the map of “the grid” on a transactional basis, and takes whatever form its users desire, subject to the constraints of the terraforming software. Here Lefebvre’s caution is well-taken: the “infinite and bounded” of Star Trek Online, in which user-generated missions are bounded off from the designer-established map, is a different “infinite and bounded” from SL, in constant flux generated by its customers. Reading the type of space is necessary but not sufficient: uses of the spatial design must be carefully considered as well.

Where this leaves us, then, is that the membrane must be impermeable enough to allow the autonomous function of the inside system, porous enough to allow

meaningful interchange with its environment, and long lasting enough to allow the evolution of a complex, rather than merely complicated, system inside it.

Section 8: The Range of Outputs

We need a comprehensive description of the processes and products of the dialectic between the newly empowered in heterotopic space and the dominant order, to know where to look in a case study to tell if the engine's running. Our innovation models assumed that the newly empowered will be absorbed into the dominant order. This assumption conflates several cases: an entropic outcome involving the crushing of the emergent order; a neutral outcome of cadre change, in which the newly powerful become the dominant order; and a resilient outcome, in which, regardless of changes to either the dominant cadre or means of production, key ideologies, tacit knowledge and practices are taken up. We'll need to untangle each of those and examine them separately in any case analysis.

a. The Empire Strikes Back: Crushing the Upstarts

Here we need to separate two cases which are easy to confuse, but which have the greatest relevance to an analysis of the workings of the Resilience Engine in virtual worlds: failure of the Engine and failure of the heterotopic project. What distinguishes them is whether significant exchange across a significantly non-porous membrane ever took place. Arguably, most American utopian experiments saw a failure of the Engine: the dominant culture ignored them, and they collapsed of their own accord, having failed at one step of the Engine's working or another: failure to produce an innovation capable of transformation (most hippie communes), failure to achieve critical mass (most efforts across the 19th and 20th Centuries), or failure to establish a membrane allowing significant autonomous internal development on the one hand or significant exchange

with the metropolis (many spatially-segregated religious movements) on the other. Some, however, did generate a full working cycle or more of the Engine, the Amish and Mormons in particular: they offered an attractive alternative to the dominant order, maintained a physical distance, established autonomous internal systems yet trafficked in goods and ideas with the metropolis in a manner that enabled both heterotopia and metropolis to adapt and endure.

Despite some theoretical confusion over the difference between failure and suppression of a heterotopia, the two situations are actually fairly easy to distinguish: one involves the resort to legitimate (in metropolitan terms) force against members of the heterotopic community. American history has two grand narratives, commonly read in opposition, but in this analysis just piston-strokes of the Heterotopic Engine: frontier and repression. The New American History movement beginning in the 1980s, as exemplified by Limerick (1987) attempted to supplant the frontier narrative with one emphasizing repression (or, repression, resistance and synthesis, a very Engine-like conception, but glossing over the question of how that which resisted was constituted, in part from the choice of indigenous heterotopias as the ur-case and in part from ideological resistance to the frontier narrative broadly). The Mormons are illustrative: a polygamous heterotopia could not be allowed by the metropolis to endure; it was crushed by the U.S. Army. A sufficiently remote, toothless, sectarian heterotopia, however, could be allowed to flourish, and over time to wield considerable influence in dialectic with the dominant order (e.g., the Romney Presidential campaigns, the extensive but undisclosed financial holdings of Mormon institutions). Indigenous heterotopias, perhaps because they call into question the legitimacy of the real property system underlying the dominant order, have consistently been crushed by armed force.

So, to distinguish cases of Engine failure from those in which the outcome of a cycling of the Engine was the destruction of the heterotopia, one looks for a conclusive exercise of legitimate force by the agents of the dominant order. Depending on cultural context and the degree of threat represented, that use of force may be military, as with Wounded Knee and Deseret, or legal, following Hayek's thesis (broadly shared by the techno-libertarians designing and running the possibly-heterotopic online spaces studied in Part Two) that state executive action is inescapably grounded on the threat of legitimate violence. A more moderate expression might be "state coercion," via executive action. On the other hand, the term "legitimate" may be challenged: many challenges to the dominant industrial order were suppressed by non-state actors using means of dubious legality: e.g., the use of the Pinkerton National Detective Agency to crush labor movements. While "legitimate" and "legal" are somewhat orthogonal, I use "legitimate" in this context since, judicial rulings aside, a colorable claim of action in necessary defense of (some values of) the dominant order could, and was, put forth.

Part Two does not address several prominent cases of the application of legitimate state coercion to heterotopic activities within SL, as the cases are both too cut-and-dried to be worth theorizing and have been exhaustively covered elsewhere, particularly in Au (2008) and Lastowka (2010). They are worth mentioning here, however, as examples. Between 2007 and 2009 LL coercively suppressed (by account banning and the threat of criminal prosecution) several activities deemed too threatening to the dominant order. Intriguingly, they all fell into one of two categories: sex or finance (also intriguingly, their intersection, various forms of sex-for-money, was never challenged: apparently this form of power exchange (see Section 15) was no challenge to the dominant order). Ageplay, or roleplay involving the fantasy of sexual activity under the legal age of consent; banking, securities exchange, and gambling, were all decisively

suppressed by LL, a company not otherwise known for decisive social action (Au, 2008; Malaby, 2009). It has been widely rumored, though not proven, that the ageplay ban came in response to a threatened inquiry by a German prosecutor, and the gambling ban from a visit by the FBI to LL headquarters shortly before. Assuming any truth to these rumors, the corporate owners of the heterotopic space coercively suppressed challenges as *de facto* agents of nation-state power, a rather more clear-cut case than that of the Pinkerton Agency, operating as an agent, in the legal sense, of owners of the dominant means of production, outside the state apparatus. LL could thus put forward a stronger claim of legitimacy than Pinkerton during the Homestead Strike, but less than that of the U.S. Army at Wounded Knee. In none of the three cases, however, was a serious challenge to the legitimacy of the repression raised within the dominant order: these are all variants on the type of “crushing the upstarts.”

b. The Next Generation: Triumph of the Emergent Order

Spar (2000) is particularly partial to cases exemplifying an innovation cycle leading to a change of cadre within a continuing dominant socioeconomic regime, a particularly turn-of-the-millennium attempt to have the cake of Schumpeterian creative destruction and eat it in peace too. Her choice of the web browser and music file sharing supported an argument that, contrary to her case of heterotopic repression in the radio industry and the rise of a new order around the railroad and telegraph, just such a changing of the guard within industrial capitalism was taking place in her time. Thirteen years on, we may focus more on the aftershocks and problems of that transition: clashes between winners and losers exemplified by the Occupy movement, the internal policing of cadre membership among the winners seen in trolling and the “fake geek girl” phenomenon. Spar is largely correct in her analysis of a peaceful transition from

industrialists to information technologists at the top of the capitalist order; she misses another transition which fits neither her model nor mine, discussed above in Section 1(b): the long transition from laissez-faire to a scientific-military form of state capitalism in the late 1940s. That example needs to be raised again to clarify that I am not, nor do I think Spar was, asserting that an innovation cycle has been the only force acting upon the dominant order in modern history: the legitimate or illegitimate seizure of economic power by a state apparatus supported by military force is as old as agriculture and the sword. The predominance of a military-industrial order in the half century after the Second World War does not invalidate innovation models of transformation: quite the contrary, it points up their importance.

President Eisenhower's final speech in office (Eisenhower, 1961) captures the argument of this paper and the models it is built from: systems which seek to impose order, particularly those in which there is a close coupling between the dominant means of production and control of the legitimate means of asserting force to maintain it, as in a range of state-capitalist systems, almost by definition tend to maximize order, and thus entropy, thereby engineering their own collapse. Heterotopic resistance and dialectic across the heterotopic membrane is essential to resilience: such systems will either adapt, as in the cases of subsection (c) below, experience an internal coup leading to transformation, the cases of this subsection, or collapse outright.

By the 1970s, military-industrial systems built on models ranging from American state capitalism to Soviet state socialism to Korean strongman-capitalism to single-party capitalist systems in Japan and Mexico, and the Nordic "third way," were all in significant entropic decline. Democratization and information technology saved some; the Soviet system suffered textbook entropic collapse. The reasons for the distinction are crucial: some of these systems allowed for legitimate transformative change where others did

not. The existence of democratic-republican forms, if not deep practices, in some states provided a discourse of legitimate resilient transformation which worked in some cases (South Korea, Singapore) and less so in others (Japan). Some systems with robust democratic institutions managed a resilient transformation via cadre change (in the US, the rise to dominance of information-technology firms over those in manufacturing industries overlapping the Reagan transformation of the Republican Party and Clinton's transformation of the Democrats; the parallel Thatcher/Blair changes in the UK); some without mechanisms of legitimate systemic resilience collapsed (the USSR, "failed states" generally).

Transformation via cadre change is perhaps the prime example of a working cycle of the Resilience Engine; however, distinguishing it from the case of pure assimilation in subsection (c) below can involve some hair-splitting over choice of scope. Changes of party leadership among legitimate parties in pluralist democracies, such as regular exchange of offices in the US and Europe between center-left and center-right parties can generally be put into the latter category, as routine system operations rather than systemic transformation through leadership change. Breaks in *de facto* single-party rule within a *de jure* multiparty system, as in Japan, Mexico, and Sweden, however, would qualify as at least potentially transformative.

Here I use the term "dominant *system* of production" in a Marxist sense rather than dominant *institution(s)* of production: economic, political, military and cultural dominance are all different things, and domination does not directly map onto whatever may pass for holding the supreme office in any. This is a classic tradeoff between precision and accuracy (the logic error of conspiracy theorists, who conflate the two). Lack of precision in designating dominant persons or institutional offices, however, is not a flaw: accuracy involves identifying *systemic*, rather than *specific*, effects: what we are

examining here is an emergent, contingent, politico-economic, sociotechnical mangle (Pickering, 1995). The Resilience Engine is an attempt to accurately model the objects, entities with agency (actants, in ANT terms, though I prefer more object-oriented analytical systems over ANT here), and forces acting upon them, using precision only to provide exemplary cases in Part Two. Where Spar wrote during the rise to power of the information-technology order, this work theorizes its consolidation of power, and Part Three briefly sketches a more recent era of its imposition of entropic order and suppression of attempts at heterotopic alternatives: the choice of system over institution can be quickly supported by noting that few if any emergent champions of information-technology heterotopias (e.g., Lawrence Lessig) have attained institutional power, yet the emergent order has consolidated power quite effectively through extant institutions in critical areas related to personhood, place and power: identity, property and speech legislation and enforcement.

In short, this subsection points to cases in which the entities and persons who have attained power within the heterotopic space legitimately taking power in the metropolis (including, without addressing, cases in which revolutions or coups might be considered systemically legitimate and the related question of whether “creative destruction” is precise, metaphorical or hyperbolic). This is Turner’s failed ideal: he writes of the end of an era in which a Daniel Boone could be elected to Congress and the beginning of one in which industrial capitalism legitimately succeeds its mercantile/agricultural form. Hence Turner’s central relevance: at the largest systemic level, globalized entertainment capitalism has taken systemic, rather than specifically institutional, control through a complex dialectic exchange between the entropic systems of the military-industrial order and those of resilient information-technology heterotopias and those who gained power within them.

c. Your Culture Will Adapt to Service Ours: Assimilation and Resilience

As noted above, some hair-splitting is required to distinguish the case of assimilation of heterotopic elements by a continuing dominant system from that of a continuing system in which emergent leaders legitimately take dominant roles. China provides the clearest case, assimilating capitalism, if not capitalists or democrats, within the dominant system of the Communist Party. Other oligarchic and dictatorial regimes have attempted to, as it were, assimilate the tiger, often resulting in collapse (the Shah's Iran, Mubarak's Egypt – arguably Gorbachev's USSR was a failed attempt at case (b) rather than case (c), leading to the Chinese attempt at case (c)). These attempts fail when legitimacy is lacking, when dialectic across the membrane has historically been illegitimate by the dominant order's own terms. An entropic entity attempting resilient transformation loses legitimacy on both sides: from its enforcers of entropic order on the one side and its long deemed illegitimate alternatives on the other. Thus the preliminary task is not the building of resilience but the building of the legitimacy of dialectic: failure to recognize this tips attempts at case (c) either into case (a) repression, collapse, or a worse combination of the two (Syria). The Chinese Communist Party seems to recognize that its challenge is not in transformation of itself into the controlling institution of a capitalist order (an entrepreneurial kleptocratic-industrial state being one of the easier things to build) but to circumscribe a legitimate dialectic with consumer-industrial capitalism while denying legitimacy to a dialectic with the heterotopic elements of bourgeois-democratic capitalism.

This power relationship can be inverted, however. As subsection (b) noted, it is possible for a new system of power to achieve dominance without taking direct control of some institutions of expressing that dominance: hence the overlap between “soft power” as a non-institutional means of asserting state dominance on the one hand and

information/entertainment capitalism's controlling influence, without controlling agents, of the state capitalist system's legislative and executive functions in the areas of privacy, property and identity. Thankfully, analysis of why assimilation-from-below of state institutions has proven easier than assimilation-from-above of economic ones is beyond the scope of this work.

Part One Summary: The Resilience Engine

Via the theorists of Chapter One, then, our model of the process by which sociotechnical innovation generates or fails to generate systemic resilience is a Resilience Engine, a machine for generating heterotopias, which can then be evaluated by Foucault's six principles. This is not Foucault's interpretation: he viewed them as existing *ab initio*, despite his use of the American frontier as an example. He does, however, at the close of his essay, describe "the boat" as the heterotopia *par excellence*, for generating both wealth and dreams (the latter being a necessary precursor to the former in this model of the Resilience Engine). Thus, what Spar describes blandly as "commercialization" is the creation of a very particular sort of "space," with defined properties, which give rise to the "creative anarchy" of Spar's next phase by way of the development of new tacit knowledge and new practices within that heterotopic space. The space then can be repurposed, demolished (like Foucault's urban cemeteries) or absorbed, as the dominant culture changes through its dialectic with the heterotopia. Absent a heterotopia, sociotechnical innovation, the precursor process to the actions of the engine, and thus an assumed input for our purposes, is not worked upon so as to render the dominant order more resilient through a successful dialectic with novelty external to the system, a requirement drawn from Boyd.

In short, the Resilience Engine works by taking (1) sociotechnical innovation (“free land,” the telegraph, the three-dimensional virtual world,), putting it in the hands of (2) dissatisfied persons seeking greater power and autonomy than the dominant order can generate, who then (3) use it to give rise to and populate a heterotopia, a (3a) real space (whatever that may mean, see below) (3b) outside the dominant order in which (3c) new tacit knowledge and social practice emerges. This heterotopic space is (4) challenged by the dominant order, which sees it as a threat to the status quo. A dialectic ensues in which the heterotopia and its emergent knowledge and practices are (5) assimilated into the dominant order, making it more resilient and better able to meet the needs of its members. Given the application of the Second Law of Thermodynamics to social and biological systems, as argued by Boyd, Bertalanffy, and complex systems theorists in a range of fields, that order tends to stagnation and incoherence, unless regularly revitalized by the operation of this engine.

Part Two: The Resilience Engine in Virtual Worlds, 2008-2010

With a model of how innovation and discontent agents lead to resilience, and a sense of what generates failures of the Resilience Engine as well as successes, it's time to test the model against cases. I'll use the Resilience Engine to argue that events in two virtual worlds of the mid-2000s largely validate the model, primarily in explaining collapses but including a few resilient outcomes, but generate surprises around the universally-assumed axiom of maximization of agency.

Part Two applies each of the structural elements of the Resilience Engine developed in Part One in turn to relevant features and events within Second Life and World of Warcraft between 2008 and 2010. Beginning with the tight grasp on materiality called for in Section 2, Chapter Four examines the interplay of bodies, software and imagery entailed in participation in those virtual worlds, through the construction of identity and agency in (digital) place. Chapter Five presents three case studies of dialectic across the membrane and the resultant mangles of knowledge, practice and legitimacy. Chapter Six discusses the interplay of software affordances, a market for the removal of personal agency, and the challenges of developing local tacit knowledge to point towards an explanation for the failure of virtual worlds to live up to their hype and analogizes to problems of resilience in the global entertainment-capitalist order of which these worlds were a product.

Chapter 4

CONSTRUCTING PLACE AND PERSONHOOD

Rather than a boilerplate history of virtual worlds or a software-manual introduction to the technology, this chapter will excavate the particular persons and things which served as inputs to the Resilience Engine in action within our two virtual world platforms. The expanded version of Nitsche's catalog of games spaces developed in Section 5(f) will provide a framework for examining key elements of the platforms-in-use, while a walkthrough of first experiences will demonstrate their affordances and constraints of personal expression. All of this will be grounded in an ontology which respects the specificity of things while privileging consciousness-driven agency examined within the contingency and messiness of relations in ethnographic study.

In *Alien Phenomenology*, Ian Bogost (2012, pp. 17-18) provides a list running over most of two pages, of definitions, or levels of analysis, of the videogame *E.T. The Extra-Terrestrial*. None of these levels ("E.T. is 8 kilobytes of 6502 opcodes and operands..." "E.T. is a molded plastic cartridge..." "E.T. is a sign depicting the circumstances surrounding the videogame crash of 1983...") is inherently privileged over, or prior to, any other: a meaningful analysis could be performed of any subset of the whole list. A choice of where, or if, to bound any particular analysis has some element of the arbitrary: each exists, not only in a common set with all the others, but in dynamic interplay as well. Yet not all need be discussed for any particular purpose, as some will be too attenuated in their connections to the reason for or conclusions of any one analysis. Obviously, the knowledge and experience of the analyst are factors as well: not everyone can write with equal understanding of 6502 opcodes, injection molding, and business cycles in consumer entertainment.

I've called this chapter "A Quick Archaeology," and that's what I'll provide: not an exhaustive analysis at each possible level, but a narrowly-bounded sample shaped by direct relevance to the Resilience Engine and by my own competences. One hopes the results will be closer to archaeology than to tomb raiding. This analysis is grounded in the theoretical perspectives developed in Section 2. However, there is a contestable assumption underlying the choice of those perspectives which needs to be made explicit before proceeding. This work operates at a level of analysis which takes virtual world environments as enabling novel experiences of place, personhood and agency in ways equivalent but not equal to those of the physical world: in Jurgenson's (2012b) typology, "mild augmented reality." While this section is grounded on that assumption, Part Two broadly is the story of the move to closure around that perspective within and about virtual worlds. In the period of study, the ontological nature of virtual worlds and their relation to the physical was actively contested, the mild augmented reality position initially being less strenuously asserted than either "strong digital dualism" or "strong augmented reality," which argued for a fortified border, or no border at all, separating online and offline. This chapter applies the mild augmented reality perspective to initial user experiences with SL and WoW; Chapter Five presents a case study of a clash between strong digital dualism and strong augmented reality, and one between strong augmented reality and mild augmented reality. In both those cases collaboration and consensus failed: these positions are apparently fundamental epistemological matters, closely held and strongly defended.

This chapter examines the stuff these two virtual environments were made of, with an eye to how they provided distinct affordances and constraints, and how and whether those factors might have been able to give rise to heterotopias, or something

else. Elements of other levels of analysis presented here should clarify just how these virtual worlds created place, personhood and agency.

Section 9: Between Here and There: Platforms and Interfaces

Any thick description of a virtual world should be grounded in a thorough description of hardware, software, and user interface, with a modification of Nitsche's game-space elements providing a comprehensive structure. Our purposes are narrower, and only those material elements directly involved in heterotopic synthesis need particular attention.

a. Platform: the Interplay of Hardware and Software

SL and WoW are run from large software clients, rather than in a browser, and thus require installation of special-purpose software on a personal computer (both have official Mac and PC clients). They require an active broadband internet connection during use. The SL client has, from the beginning, been available as a download only, long before downloading of substantial software applications was a norm. WoW was primarily encountered as a boxed DVD, later multiple DVDs, with a digital download option becoming available several years after its initial launch. Thus WoW was primarily encountered as a physical artifact in a store, shelved alongside traditional videogames and thus framed as such, where SL was encountered online, initially on the secondlife.com homepage in a browser. That difference was under-studied and now largely moot, as PC games are now commonly purchased online and played with an "always-on" internet connection, removing much of the associated materiality (though users often have the option of paying a premium for an object, framed as a "collectors' edition," suggesting a remaining privileging of the material) along with a distinction between web-encountered and store-encountered platforms.

While much can be written about these platforms at the level of software code, programming languages, and code-writing processes, for our analysis we can limit ourselves to a few salient factors, above all one technical matter which profoundly shaped the demographics and expectations of platform users. SL is built on an unusual server-side architecture, while WoW uses a client-side architecture which more closely resembles other forms of videogame play. Users of WoW with an experience and expectation of videogames find a familiar experience of certain features, while SL tends to confound those expectations. Where an unfamiliar viewer might categorize all three as videogames based on player interaction with computer-generated imagery on a screen, gamers tended to treat SL as a category error, something which seemed like it should meet their expectations of a videogame but instead violated them in unexpected and largely undesirable ways.

WoW, as a corporate-designed artifact with limited affordances for user modification, is built on a client-side architecture: the user downloads the software enabling the presentation of all sensory experiences, which are stored on the local machine. Use involves the corporate servers tracking and downloading only state changes, primarily interactions with other players and with the environment, rather than the environment itself, which remains stored and fixed on the user's machine. Single-player videogames operate much the same way: the user enters commands which manifest agency through the avatar, the results are processed by the local software and displayed on the local machine: thus each user has a self-contained experience of interacting with a largely unchangeable environment. In an MMO, the actions of other users are simultaneously processed in a common environment, allowing both interaction mediated by the software and internet connection and the experience of shared presence. Client-side architecture implies a massive initial software installation but a

short time between player input and seeing the results of that input on the screen, as the moment-to-moment exchange of information between client and server is minimal. By contrast, SL employs a server-side architecture. As much of the code relating to visual display is user-created and subject to change at any moment, it is not feasible to store complete environmental features in static files on the user's machine. Thus what a user downloads from moment to moment is not only changes in their own actions and those of avatars around them, but much of the perceived environment. This entails a vastly larger ongoing download of information. As a result, a user's OODA loop is significantly longer, as much more information is transmitted to the user's machine between iterations of the observation phase of the cycle.

Client-side architecture feels more responsive in use as a result of the shorter OODA cycles. Unsurprisingly, short OODA cycles are advantageous in combat games. Single-player console games, running as the sole application on dedicated hardware, have extremely fast processing and display intervals. Multiplayer online games, as a result of processing multiple simultaneous inputs and outputs, and subject to the vagaries of the user's internet connection, are prone to "lag," a lengthening of the OODA cycle. This produces a frustrating user experience: we're used to effective simultaneity between taking an action and seeing it manifest before our eyes. Lag breaks immersion by breaking the unity of action and manifestation. It may result in seeing one's avatar stuck in place or walking into a wall, or it may generate a loss in combat as the player's OODA cycle slips out of sync with that of another player or non-player (computer-generated) character (NPC). Lag is the bane of MMO players, but the experience of lag in a client-side architecture pales before that of server-side architectures like SL's, where vastly more data is being transferred at any given time. Where lag is an occasional irritant in WoW (and more commonly experienced in social hubs at peak use times

rather than in less-populated, because more numerous and dispersed, combat zones), it is a fact of life in SL, an essential environmental element which must be planned for, much like bad weather (Boellstorff, 2010).

Aside from lag, the content of the software differed between SL on the one hand and WoW on the other. In the latter, all visual elements are pre-programmed, created by professional designers to a common standard of appearance and use. WoW displays beautiful, consistent visuals and a consistency of interaction, in common with single-player games created in full by professional design teams. (Nardi, 2009) By contrast, virtually all elements in SL have been created by users, using one software language unique to SL, but employed to a vast range of expressive and interactive ends, from the crude and buggy to the immensely detailed and smooth-running. As a software object, WoW is polished in appearance and action and internally consistent; SL is wildly variable and unpredictable in display and interactivity.

This distinction is not metaphorically equivalent to that between the planned community and the emergent town, or that between the mechanical and the natural: it is the same distinction. It is the same distinction Bogost draws between “systems thinking” and “unit operations.” (Bogost, 2008) One is fixed, consistent, centralized and totalizing; the other is dynamic, variable, emergent and contingent. The distinction extends beyond the structural nature of the software into higher-order elements, but users’ perceptions of the distinction begin with the software architecture.

b. Heads Up: Design, Customization and Modding

We don’t tend to think of our experience of the physical world as mediated – at least not till we get older and our interface elements begin to degrade. Of course, observation is dependent upon particularities of our sense organs, decisionmaking upon

our cognitive architecture and neurochemistry, action upon our bodies. With facility in their use, we tend to black-box these interface elements until they malfunction. Each virtual platform has its own particular interface, necessitating the development of the sort of tacit knowledge Turner found in the interaction with new technologies in the American West. It may matter whether and to what extent those technologies are taken as given or user-developed or -modified: it seems logical that the greater the degree of user modification and the greater the divergence from the dominant norm, the greater the amount and divergence of tacit knowledge, and the more profound the sense of distinction from the dominant experience. On the other hand, tacit knowledge of local technologies which seem inferior or unsuited to the environment might reinforce the dominance of established knowledge and technologies. What we'll see in our cases is a complex mess of both outcomes, within and across SL and WoW.

Here "user interface" encompasses a range of profoundly different elements (which points to the inadequacy of Nitsche's grouping of them all as "mediated spaces of the presented images" (2008, pp. 15-17), discussed in Section 5(f) above). As personal computer software, the elements of the computer are of course common across each of the platforms: each requires a computer, monitor, keyboard and mouse (though customized gaming tools are available, they are far from generally used) for which general user conventions apply. In addition, some of those elements take on specialty use: in computer games the W, A, S, and D keys are used for avatar movement: W for forward movement, S for backward movement, A and D for turning left and right respectively. Commonly, games actions to particular "hotkeys" (pressing the "1" key triggers a standard attack, pressing "spacebar" makes the avatar jump, etc.).

An entirely distinct level of analysis covers the graphical user interface. What one sees on the computer monitor is not the sort of pure vista we see with our eyeballs: it

more resembles the experience of a fighter pilot with a heads-up display mediating the view out the cockpit window. In fact, “HUD,” for heads-up display, is a common term for the user interface for MMOs and virtual worlds. The HUD has several functions: typically it includes a chat client much like any text-based chat client embedded in other software, like Google Chat within the Gmail interface. A “minimap” is also common: a small radar-like iconic display with the avatar at the center, showing types of things (friendly players, enemy players, vendors) nearby. Another set of iconic elements replicates the functions of hotkeys as a point-and-click interface: where one might use the hotkey “1” to trigger a basic attack, one could also use the mouse to click on the first icon on a bar of them to perform the same function (using the buttons, “clicking” or “keyboard turning,” is generally regarded as a less locally literate performance, as it slows the OODA loop). Other elements provide a range of information about the environment. Typically the user has some choice as to which elements to display at any given time depending on their particular interests, roles or actions.

The user interface in the broad sense (keyboard, mouse, monitor) is the instrument mediating the user’s decision to act (the “D” of OODA) manifested in bodily motion and the manifestation of that decision as action (the “A” in OODA) within the virtual space. The HUD serves a similar function at the beginning of the OODA loop: it is an intermediary sensorium lying between one’s bodily senses and that which can be perceived within the virtual space.

The HUD is a rich level for analysis, but for our purposes there are only a few salient issues: degree of rupture from the familiar and the closely-related issue of degree of possible user customization or modification. These three together encompass three key elements of a potential heterotopic experience, suggesting a true discontinuity across the borderlands , a difference of experience in kind rather than merely of degree.

The difficulty of tacit knowledge acquisition or becoming literate in the language of HUDs generally and each platform's HUD specifically can cut two ways, depending on whether that difficulty is seen as a positive accomplishment of *connaissance* or an annoying design failure, a distinction readily apparent in commentary on user forums and in the treatment of noobs, or the new and locally-illiterate. WoW's HUD was complex and grew more so over time in response to user feedback, but was generally perceived as an example of design elegance. SL's, as discussed below, eschewed gaming HUD conventions for a browser-like interface that ill-suited the technology; and SL's designers were notoriously slow to fix bugs, let alone upgrade the HUD (Au, 2008(a); Malaby 2009). Notably, user modifications to the WoW HUD tended to pile capabilities onto a powerful engine; SL's tended to fix bugs or to replace the designers' interface entirely (see, e.g. the difference in framing between SL users' Firestorm Viewer (Phoenix Firestorm Project, 2011), with a discourse of fixing and improving the corporate client, and that of popular user-created WoW modification Deadly Boss Mods (2011), framed as the provision of supplementary resources to the corporate client). Per Boyd, we've seen that the encounter with the different is fundamental to systemic resilience, thus whether and how much the HUD experience is different from, for example, common office software user interfaces, points to its role in creating a heterotopic environment (here is where the user interfaces of the subsequent technology generation (e.g., iPhones) undercut heterotopic potential: they require little in the way of tacit knowledge acquisition, and certainly don't tend to generate ontological crises).

Closely related is the degree of agency granted to the user to create or customize the HUD. Arguably, the greater the degree of agency, the richer the heterotopic experience, or at least such was the consensus of the thinkers discussed in Section 1 above. Here it is important to distinguish ability to create from breadth of

affordances. The two are in complex interrelation: both Firestorm's bug fixes and DBM's extra features are the products of a sort of user agency that Lessig (2008) and his ilk generally overstate the prevalence of: thus both platform failures and successes can generate opportunities for user agency. By contrast, corporate-designed user interfaces can enable swift OODA loops, a broad range of options, and a seamless user experience without enabling agency with respect to the software in the slightest: subsequent MMOs have tended to allow little or no user control over the interface. This is the sandbox/on rails distinction: "sandbox" is a game development term of art, covering a range of degrees of user agency: it is contrasted to an experience "on rails," like a theme park ride, in which the user is led through a designed experience. Whether something is a "sandbox" or "on rails" depends on genre customs and expectations. With the former, a complex, evolutionary interplay of designers and users, designed object and user modifications along with an upward ratcheting of the bar for platform literacy (see the difference between the default WoW HUD and my own below, noting that mine is very minimal compared to that of an elite player), enables, perhaps even actively encourages, a culture of agency (Gee and Hayes, 2010). The latter may provide a satisfying experience, but it is the experience of the product of someone else's agency, that of the designer.

WoW's HUD begins with default settings presented to the user on their first encounter with the environment of Azeroth, its fictional world. The default HUD displays only a few elements: a one-line icon bar for actions, a mini-map, a box displaying help tips, and an icon assemblage displaying your avatar's profile picture, name, and health bar with an additional bar for another resource, depending on player class (e.g., mages draw from a pool of "mana:" each spell has a fixed cost which depletes it, and the character may use various means of refilling it over time; "rage" is the equivalent for

warriors). The “only a few elements” in the previous sentence clearly comes from the perspective of someone highly literate in genre and platform conventions: as a list, it sounds as overwhelming as new users not literate in PC gaming often find it. The interface guides the user through a synthesis of gameplay and interface tutorial for the first hour or so: learning to use tucked-away elements, each with conventions drawn from different sources: for example, a crucial element, summoned by either use of a hotkey or an on-screen button, is built around a “paper doll” metaphor representing the avatar and its clothing and equipment, which is used through drag-and-drop interface conventions. An early quest awards the player a new piece of gear, which appears in their inventory, a grid of various types of icons, which display more detail on mouseover. The player is coached to open their inventory, find the item, open their character screen and drag the item from the inventory box to the appropriate place on the “paper doll” (pants to the “doll’s” legs, weapon by its right hand), and then close both windows till needed again. The character will acquire a new ability, displayed as an icon appearing and moving to an open spot on the action bar, highlighting the process. Eventually, the system manifests the assumption that the player understands the process of acquisition and display of the trigger for new skills, and no longer highlights the process.

This system, which Gee calls “just in time learning,” (Gee, 2007) teaches, or guides the user to acquire, situated knowledge. Pedagogically desirable as just in time learning may be, it remains a hegemonic practice in which the dominant power still controls the content and means of delivery, if not the timing. The first hour experience in WoW in which HUD use is taught is a model of just-in-time learning, particularly in comparison to games in which such information is buried in a print or digital manual or delivered onscreen independently of context. It also, though, creates an implicit contract not unlike that of buying a ticket to Disney World: that the user will take in experiences

provided by their creator in a unidirectional and systemic, rather than dialectic and emergent, manner.

SL's "first hour experience" has been a *bête noir* throughout the platform's history. Reasons for this are complex in our sense of the term: multiple, interactive, contingent, and effectively incomprehensible (for an excellent "lab study" of the LL culture in relation to the software, although not to its users, see Malaby, 2009). The initial steps of account creation, avatar selection, and, critically in SL, naming and customization, will be examined in Chapter 4 below: what follows is a description of the "first hour" after entry into the world.

The SL HUD was built on a browser-like, rather than game-like, vocabulary: a top menu bar with drop-down lists of actions, supplemented with a few fixed buttons at the bottom. This can be read as a fundamental category error. WoW's HUD said "this is like other games," and it was. SL's said "this is like Microsoft Office" and it wasn't. SL's failure to meet LL's ambitions is largely one of compounding category errors as the rest of Part Two demonstrates, or of ontological confusion beginning with the designers and spreading through the 97% of would-be users who left within the first hour of use as well as through the 3% who stayed, as supported by Malaby's (2009) experience as an ethnographer of LL.

The SL HUD's only customizable elements were the ability to unlock a set of advanced options as an element on the top menu bar, and to display or not in HUD form controls for camera and avatar movement and a minimap, all assumed-as-given features in MMOs. MMO conventions were not carried over: one could move one's avatar with the mouse or keyboard arrow keys (or the optional HUD elements), but not with gaming-standard WASD. The toolbar had buttons for communication, building, and screenshot capture. As noted above, what's on the HUD shapes the user's option space. In the

WoW case it expanded through the first hour from a minimap and two or three action buttons to a larger suite, and even in the base client to scores of enabled actions or provided items. Though WoW's starting zone was a meticulously designed experience, the HUD was suggestive of the range of things one could do in the world: By contrast, most of SL's options were tucked away in top-bar menus: the buttons only suggested the generalities of communicating, building and picture-taking.

After initial "rezzing," in which the avatar appears in the space to the user and to other users, and the space itself comes into resolution for the user, the new SL user found their avatar in a "welcome island," a bounded space with a range of objects to interact with, along with other people's avatars, old and new. LL would later introduce volunteer mentors rather than relying on pure happenstance for socialization, but failed to recognize that doing so simply replicated, rather than fixed, the problem: anyone comfortable in exercising agency within the space would do so and benefit from the static tutorials, while anyone uncomfortable with experimenting in solitude would likely be doubly uncomfortable to approach a stranger for advice, especially since communication was one of the more challenging elements of the interface (SL's social tools, as discussed below, were more clumsy than was common among MMOs of its 2003 launch vintage, and went largely untouched until a major overhaul in 2010, which still failed to bring them up to the standards of conventional social media of that time). The expectation was that the user would immediately express agency in moving, talking with other avatars, and interacting with the environment. (see Au 2008c for a comprehensive discussion of the Welcome Island experience at that time) There was no exposure to LSL, the custom scripting language, and the building tutorial was limited to "rezzing" a basic polygon or "prim," rather than teaching or emphasizing the power of the software's creation tools. One side of the island bore an exit sign, which led to another

island with a large circular dance floor, to encourage avatar-to-avatar communication without structuring interactions, and with a few dispensers of lists of and links to various destinations on the grid.

The experience was like arriving at a big-city bus terminal: aside from a few tourist brochures and platforms to other destinations, there was nothing to define or shape the subsequent experience: people would either seek out things of interest and stay, or fail to do so and leave (I picked up a brochure with a long list of museums, amateur and professional, and was thoroughly entertained for the next few days). Many failed to do so: SL's retention past the first hour experience averaged 12% in 2006, dropping to 10% by 2008. (Nino, 2007; Davis, 2008) (LL used to release detailed quarterly statistics; this information is no longer publicly available) Nothing in the structure of the software necessitated a sink-or-swim outcome: WoW, analyzed before, took a radically different approach, enacting astonishingly excellent learning principles, aimed at maximizing retention after the first hour, and consistently had triple SL's retention rate (Chalk, 2010). SL's approach was consistent with designer expectations of who its user base would be, and with its overall ideology. SL's design appealed to highly self directed, experienced users and creators of 3D software objects, and correspondingly tended to repel those with diverging UI literacies (particularly gamers: SL did not use standard conventions of gaming UIs, such as the use of the W, A, S, and D keys for basic avatar movement) and passive spectators. (Au, 2008c)

However, despite the aspects of the software design which attempted to shape the user base towards high-agency creators (inferring agency on the part of the software may highlight the distinction between designer intent and unintended, but built, consequences of the design), the initial focus on detailed avatar creation, and the lack of building and scripting emphasis on the welcome island, canalized users to expect a

space of identity performance – which in fact SL became for the vast majority of its users. The design of the initial experience selected for a sort of user LL neither wanted, nor understood, nor was prepared to serve. Malaby (2010) extensively documents the disconnect between LL’s reflexive vision of its ideal customer: a techno-libertarian software creator – and its actual customer, typically seeking social, not technological, experiences, which also reinscribed a cultural clash within LL between its high-status software designers and low-status marketing team. (2010, p. 124).

First-hour experience and user interface design, perhaps more than other features, are ideological statements: with SL and WoW they stand metonymically for the platforms as a whole. SL and WoW take very different approaches to the initial presentation of the HUD, which raises yet another issue assumed or ignored in other models of the innovation frontier: the specifics of *how* tacit knowledge is acquired. One would imagine that the first question about tacit knowledge acquisition in new spaces would be “who teaches?” yet both “how does teaching happen” and “from whom does one receive the teaching” seem to have gone unasked in the context of the politics of *connaissance* or tacit knowledge acquisition generally, and the study of virtual worlds generally (it is astonishing that none of the numerous academic books on SL even list “Welcome Island” in their indices, let alone analyze, from any perspective, the nature of the first island experience beyond a brief “avatars for dummies” boilerplate explanation). Turner comes closest to addressing these questions, in his implication that on the American frontier *connaissance* had two sources: the indigenous population, primarily for technologies of survival including construction and farming, and fellow frontierspeople, particularly in political expression and action; and notably not from hegemonic sources (presumably “RTFM” was not a counter-revolutionary assertion of *savoir* with respect to the Conestoga wagon). This power-based distinction is, oddly, less

clearly articulated in French postmodern discussions of the *savoir/connaissance* distinction: perhaps in context it was taken for granted. Nonetheless, the “how” and “from whom” questions bear asking in our context: it matters for the emergence of culture discussed in subsection (f) below, it matters for conceptions of agency, and it matters for shaping user demographics.

c. Past The UI: Graphics and Physics

At the next level back of perception, what is rendered “behind” the HUD and how its elements interact – without yet considering the meanings evoked – can profoundly affect the user experience and the operation of the Resilience Engine. This subsection will sketch out some general principles around graphics and physics: crucial examples will be presented in detail in Section 16 below, in conjunction with the undoing of place between 2008 and 2010. We’d noted above that the difference between SL’s and WoW’s client/server architecture directly affected the demographics of the user base. While some of the tensions between expectations and outcomes related to speed of OODA-loop processing (e.g., lag), some also arose from the differences in graphics and physics, in a complex mangle of cross-cutting factors.

One of the most debated topics in games development has involved the nature of graphical realism and its role in generating player engagement, or more specifically, “immersion.” This sense of immersion differs subtly from that of the immersion/augmentation debate over the nature of online identity, but addresses more the impulse to keep playing or to find the experience compelling. Part Three will focus on the radical transformation of generating this sort of immersion in the next generation of platforms: in this period designers pursued a range of distinct paths towards engagement. Designers of console games have tended to stress “graphical realism,” a

photo-realistic style rendered in as much detail as dedicated hardware can generate: contemporary military shooting games such as *Call of Duty* or *Battlefield* and sports games including the *Madden* football series and *FIFA* soccer games exemplify this approach. From there, virtual environments on the PC tend to be judged by many gamers on the basis of their reproduction of the console experience. Yet, as discussed in subsection (a) above, the general-purpose hardware of the PC, coupled with an internet connection, cannot replicate the OODA speed or graphical detail of a dedicated gaming console. Thus, measured by graphical realism, the PC-based, internet-enabled platform is destined to fall short of console gamers' expectations.

WoW and SL took different approaches to the problem: WoW eschewed “graphical realism” entirely for a distinct visual style with painterly or cartoony elements (Nardi, 2010) which could be easily rendered on a broad range of high- and low-end PCs, enabling broad uptake of the platform. SL, by contrast, as the descendant not of graphics-heavy video games but of the text-driven MUD, ignored the expectations of gamers and the conventional vocabulary of the platform until well past the end of the period at issue . For example, WASD for movement was not introduced until the second generation of the Version 2 HUD, in 2010 (Second Life Wiki, 2010). Thus one of the first experiences someone familiar with other multi-user graphical environments would be the discovery that simple avatar movement was no longer transparent and familiar, necessitating the development of a new tacit-knowledge-in-place at the most fundamental of levels, with consequences discussed below. SL was positioned by its designers at an odd place on the graph of tradeoffs between “graphical realism” and range of hardware it could run well on: its client-side architecture necessitated powerful machines (again with demographic shaping, leading to an ongoing ambiguous relationship with the educational community, which combined an interest in the potential

of the platform with requirements for low-end hardware). At the same time, the combination of user-created content and the need to stream all of it resulted in a less coherent and detailed visual presentation than either the high realism/custom hardware of consoles or the low realism/breadth of hardware of WoW.

Surprisingly, WoW and SL made key physics decisions seemingly contrary to the themes of their environments, but which over time converged on solutions which significantly, even perhaps fatally, undercut the creation of place, heterotopic or otherwise. In the fantasy environment of WoW, movement largely conformed to physical-world expectations, though temporally truncated in a manner descended from cinematic conventions. SL, by contrast, enabled realism-breaking movement from the beginning: its use, however, changed dramatically over time as user values (were) changed. In WoW prior to 2008, movement within the environment happened primarily through the running avatar: one experienced the environment at the pace of a quick jog. Aside from a flying “taxi” service connecting major towns, until level 40, about 80 hours of play, one got from place to place by running, sometimes subjectively long distances. A rite of passage for Horde characters was the endless-seeming run from Splintertree Post to Zoram’gar Outpost, through territory controlled by high-level enemy NPCs: while probably only taking ten minutes, it seemed endless and fraught with danger. As with most everything, the experience cut two ways: it strongly conveyed a sense of the scale and danger of the environment, while from a game perspective it was *not fun*: whatever ten minutes of trotting through a beautiful but dangerous virtual forest might be, it is not gameplay. At level 40 one could acquire a mount which galloped at 125% of running speed, and seemed a transformative improvement. Over time, mount speed increased and time to acquisition decreased, in order to shorten the time between gameplay

elements, at the cost of the experience of an extensive place in which events occurred, as opposed to a gameboard in which movement only connected incidents of play.

SL, on the other hand, coded avatar flying into the environment from its earliest days. Prior to 2008, among the first objects available for free within the staring zone were sets of wings – usually nonfunctional but underscoring the expectation of flight. Among the most common user-created objects of the period were wings or a feather scripted to break the altitude restrictions coded in by default. Wings were a common fashion accessory in the early period (e.g., Amdahl, 2006; Stenvaag, 2007) but had effectively vanished by 2009, as part of a broad trend away from imaginative avatar presentation. (McKnight, 2011)

These choices of avatar physics can be attributed to designer goals for the platforms: for SL, CEO Philip Rosedale modeled it explicitly upon the Burning Man festival, (Au, 2008b) a temporary space of exotic creative expression (the tensions between an evanescent and finite/bounded transgressive space of carnival and a lasting, infinite/unbounded heterotopia were briefly sketched in Chapter 2 above); while WoW descended from spatial-exploration games including the ur-ancestor, *Adventure*, in which play consisted of exploration and combat in a textually-created underground environment. That the two converged on similar implementations and customary uses of avatar physics is highly suggestive of the work of forces trumping both designer intent and its manifestation in code, highlighting how deeply problematic the notion of a “magic circle” is (cf. Castronova, 2012).

Section 10: Hello Avatar: Constructing Avatarized Identity and Agency

The exercise of avatarized agency in each platform is grounded in the creation process, which shapes and constrains expectations of self-expression through

presentation and actions. For the virtual worlds at issue, that process is presented in detail, with a focus on the interplay between the user, the object and the designed experience. Whether this process created any sort of distinct or alternative identity is examined.

a. We're All Taller Than Average: Initial Avatar Customization (Or Not) in Second Life

Section 9 analyzed the first elements of the encounter with SL, that of registering for an account and downloading the client, along with an analysis of the HUD element of the user interface. This section focuses on an intermediate step, avatar creation. From the SL website, prior to encountering the world, one chose from a small set of decontextualized avatars representing a narrow range of fashion styles: Boy Next Door, Cybergoth, and so on. Where WoW embedded the avatar creation process in lore and imagery of the world, within the software client, SL's initial steps of the process took place against a neutral background on a separate website, with no cues to the contextuality of one's choices other than metropolitan-world stereotypes.

After rezzing on the Welcome Island as described above, the tutorial prompts encouraged the user to open up the "Appearance" screen, which enabled a vast range of customization of facial and bodily features, from nose bridge width to "saddlebags," or hip fat, through a system of sliders ranging from arbitrary values designated 1-100. There were no external referents, thus in selecting a height, for example, there was no way to determine if your avatar was six or seven feet tall, merely whether they were "50" or "75," with no referent unit presented, and which didn't carry over to other features (such that one unit of height bore no relationship to one unit of butt size). The slider system enabled both the grotesque and the realistically detailed, though some features were arbitrarily limited.

One crucial element of literacy, an immediate visual marker of noob or veteran, was the degree of avatar customization, particularly through the adoption of user-created fashion elements. Many users of male avatars didn't bother customizing the default avatar at all: "Boy Next Door" became an icon of the outsider, often used for laughs among SL veterans. Interestingly, degree of customization tended to track closely onto profession: teachers and government employees could often be picked from a crowd by their unsophisticated avatars, while business people usually sported cutting-edge fashions.

Where the static image of an uncustomized avatar served as a synecdoche for "noob," there was another key giveaway, the walk. The default walk animation in SL resembled that of a zombie in leg casts: it was a distinctive sort of lurching shuffle. The locally literate would immediately replace the default with graceful user-created animations reflective of personality: demure, bold, samurai, mermaid.

As common with status markers of cultural literacy, these things were not readily apparent to a new entrant into the community. While some user-created guides mentioned these factors, most learned through apprenticeship to an SL veteran, by entry into a community of practice (Wenger, 1998)

The avatar creation tool may have had an unrecognized role in creating and magnifying the gap between LL's desired user culture and the one it got. Malaby (2009) discusses how LL's coders envisioned SL users in their own technological and ideological image, as builders and makers, "that the only social exchange that would occur there was an exchange of ideas, of expression through technological creation. (2009, p. 53); that "they had not expected the cultural aspects of Second Life to occur at all." (2009, p. 98). Yet the crafted first hour experience shaped users away from building and scripting and towards expression of identity-in-place. As noted, the tutorial barely

exposed the user to building tools and not at all to scripting, but did foreground the immensely powerful avatar customization engine. So the new user would spend their first moments on self-construction, then enter into the wider grid where status was determined, not as LL expected by mastery of craft, but by adoption of user-created elements of self-expression. This outcome may have been an unintended consequence of LL designer assumptions: as they expected their users to be builders with a high degree of personal agency, there was an articulated view that merely providing construction tools was all that was needed to generate users in the designers' image. (2009, pp. 52-57) However, SL's avatar tool was considerably in advance of the MMO state of the art, and not an expected feature of a building platform, and thus may have, in LL's estimation, needed foregrounding. As SL attracted users who didn't share the designers' techno-libertarian assumptions, what they encountered was an emphasis on avatar customization and little exposure to the complex, fiddly and idiosyncratic building tools and scripting language, and thus built a culture on what was made explicit, rather than on that which had been assumed, perpetuating a snowballing user culture quite alien to the platform designers.

This process of design interventions generating social consequences opposite to designer intent was not unique: rather, it is emblematic of designer/user relations in virtual worlds, as many of the cases in Part Two here demonstrate. Again, Malaby provides a sharp insight: he claims that the designers, acting within the norms of programmer culture, saw social problems as preferably solvable through code rather than social interaction, policy or negotiation. Despite the libertarian foundations of programmer culture, this response, of course, is that of the technocrat: "technoliberalism holds up the idea that such complex systems can be contrived, in their entirety." (2009, p. 133) Classical liberalism holds that complex social systems such as political

economies are essentially unknowable: that there is no way to observe sufficiently for an OODA loop to produce optimal actions. Yet the designers of SL and WoW tried to do just that, and failed *ab initio* because they were observing not just less than the totality, but primarily only themselves. The failure of governance through code is a primary theme of Part Two: it is evidence of a failed dialectic across the membrane between *savoir* and *connaissance*.

b. Big Blue Dress: Gender and Constraint in World of Warcraft

Where in SL the initial avatar creation process was focused on the adjustment and selection of a broad range of avatar details, WoW's took a different approach. After server choice, the user faced a selection screen of race and faction options. Players in WoW were divided into two factions defined as antagonistic, and between whom the software prevented any exchange of information, funds or goods. This division was created and enforced solely by the software, prior and superior to any player intent. The "lore," or mythology, of WoW is a complex history covering thousands of years (via the single player games Warcraft I-III prior to WoW, as well as a large transmedia realm of storytelling), in which two broad coalitions exist in a cold war state, occasionally skirmishing or cooperating against mutual threats. The software-enforced impossibility of cross-faction content is not established in lore, in which members of the factions could speak and understand each others' languages, often joined in overarching associations, and in the main storylines of each expansion, cooperated in battle against common foes. Thus, the character selection screen presented two columns, divided between the factions, Alliance and Horde. Each faction was composed of five "races" (in the Tolkienesque, rather than common, sense of the term – e.g., orcs and elves), each with two genders. Mousing over any of the types brought up a few sentences of description:

while there are minor statistical differences between races, appearance is the primary factor.

After choosing a race, the user clicks to move on to the next screen, choice of class. "Class" here means "combat mode," as characters can only fight in one way, e.g., as an archer or magic user. At the time, class descriptions on mouseover were lore-focused, with a stress on the moral valence of each type: the description of warlocks focused on their use of black magic, rather than on the combat specifics of ranged magical spells plus the use of a companion. Thus the descriptions gave the new user little sense of their experience of play, but rather an introduction to the lore.

The next screen presented avatar customization, but in a very limited way. Bodies were fixed; choice extended only to facial features and hair, selected from a list rather than customized with sliders. Body types further were standard across classes: all human men were broad-shouldered and beefy, whether they were archers, warriors or mages, and all Blood Elf women were thin and busty. Significant sexual dimorphism was the norm, though a few races (Night Elves and Dwarves) offered a minimum. Given the paucity of hair/face combinations, one could count on encountering many identical avatars, especially for female avatars using the conventional-beauty choices. Choice of gender had no gameplay significance: male and female statistics and abilities were identical.

After avatar customization and choosing a unique name (quite a challenge on old servers, as characters were never deleted and numbers not allowed, preventing the AOL-style names like JOHN08372, which would plague SL on a later change to its naming system), the user clicked on to a "cinematic," or short movie, which established the setting in lore, ending by zooming in on the starting position of the avatar. From there, the first five levels of gameplay (1-3 hours, depending on one's extant tacit

knowledge of the user interface), served multiple functions exceptionally well: they taught use of the UI in step-by-step fashion, taught the basic actions of gameplay, and further established the character within the lore of the world, as discussed at greater length in Section 10.

What WoW's "first hour experience" did well was teach play skills at the interface (use of the HUD and keyboard/mouse), site the character within an encompassing virtual world and narrative and serve as its own skills test: if the player could finish the sequence of tasks, or "quests," in the starter zone, by definition they were ready to move on to the challenges of the larger environment. While it was possible to leave the starter zone without completing the quest chain, no quests would become available until the player reached level 5. This effectively required the player to complete the quests in *some* starter zone, if not necessarily the one they'd chosen (experienced players might choose to change starting zones to "grind rep," or gain reputation points, useful for certain achievements and goods later in the game, with a different race (subject to the Horde/Alliance division) than one's character, but this was not a common practice in the 2008-2010 period).

On the other hand, the system created two sets of tensions, one between desired and possible morphological expressions, and one between the instrumental and the immersive. The limitations on gender expression were discussed extensively both in academic and popular contexts, from forum post threads to YouTube videos (Phenixx, 2006; Duchenaut et al., 2006, 2009). Beyond the lack of choice of body types, armor pieces were designed to look very different on men and women, men's versions looking as if they were designed for protective function, the women's to appeal to the male gaze. (see, e.g., Tramp, 2009; ArgentSun, 2008) As armor serves two functions in the game, aesthetic (Klastrup and Tosca, 2009) and practical (it provides different statistical

bonuses, improving various specific abilities, such as extra melee defense or spell power), users wanting a female avatar either modestly or practically attired might have to choose less than optimal stat-bearing pieces, in a game, as shown in Section 11 below, increasingly driven by statistical optimization. Similarly, the initial focus on lore – a blend of narrative and place – conflicted with a statistics-based game engine which canalized gameplay towards statistical optimization, or “min-maxing.”

Taylor (2006), Chapter 3, provides a thorough analysis of the tensions between min/maxing and lore-based play, with a focus on psychological and cultural factors delineating play styles. Chen (2012) is one of the few academics whose analysis points to the tension between the shaping forces of the software and implicit social goals, rather than between different sorts of players. He documents the process of transformation of his guild from social to instrumental, with the introduction of a user-developed statistical tool added to the HUD as a key actant shaping the nature of the experience. This tension was constructed from the first screens, prior to ever entering into the game environment, and that contrary to scholars stressing the narrative of WoW (e.g., Bainbridge, 2010), both place and code shaped the user experience, and thus the person-in-place, from that first screen.

c. Virtual Agency, Platform Literacy and the Free Camera

Before addressing matters of political agency within virtual worlds, some basics of agency in these environments need to be established. At the most basic level, “agency” refers to the means and nature of one’s actions in the world intended to effect changes upon it. It begins in general cognitive and social development, from infancy on, as one learns to use one’s body, either through physical action or speech acts, in order to induce change, from crying for attention onward. Similarly, agency in virtual

environments begins with the avatar, one's body in a specific digital space. For any user on any platform, there is a necessary process similar to infant development of learning to use the avatar to effect environmental change. One essential difference is that one's avatar itself is the product of agency, rather than genetics: while platforms differ in the extent to which they enable breadth of avatar choice and design (SL being extremely broad, WoW being quite constrained), acts of agency *prior* to one's entry into the space can have profound effects upon one's experience. Another, of particular importance to perceptions of spatiality, comes from the combination of third-person perspective and a largely free camera.

Our experience of our instruments of agency in the physical world, our bodies, is essentially from inside: one sees out from the eyes, and is limited by the position and perspective of those eyes. We cannot thus “see ourselves as others see us,” a fundamental limiting factor. In virtual worlds, by contrast, our standard perspective is from the equivalent of about a meter above and behind our right shoulder. As we act in the world, we see ourselves doing so from a distance – and also spend more time looking at our backs than our own faces. Additionally, the “camera,” or specific locus of point of view, is usually highly mobile, independent of the position and actions of our avatar: we can swoop around to see ourselves from the front, zoom in or out on a feature, and in SL even have our “camera” fairly far from our bodies and taking in information unavailable to our avatar perspective. Spatially, this means that one designs for the constraints of the camera, not of the avatar body: architects who try to import their designs into virtual environments tend to build un-navigable spaces, as it is not the body maneuvering in space which creates the experience, but the camera moving. Consequently, well-designed virtual interiors tend to be on a larger scale than even

direct analogues, like office buildings or homes. (see Nitché, 2008, pp. 92-114 for a classification of camera use possibilities and effects in videogame spaces)

While extensive research has been done on how the experience of avatarization affects agency in small scale virtual environments (e.g., Blascovich & Bailenson, 2011, summarizing extensive work by the Stanford Virtual Human Interaction Laboratory), this line of research is relevant only as background, much as developmental psychology is background to a theory of political agency: here, it only demonstrates the basis for the axiom that people do in fact demonstrate meaningful agency through avatars. A more relevant point is that, as with children exploring agency in their physical bodies, agency in virtual environments is learned by doing, and takes time, trial and error to develop. This is critical: agency in the virtual environment is inseparable from tacit knowledge developed with a particular avatar in a particular virtual space. Thus, personhood, place and agency actively co-construct each other in individual OODA loops. One creates an avatar as an expression of selfhood and expected action: how do I see myself? how do I want to be seen by others? what do I want to do? For example, in a game space, whether to play a burly melee fighter or a delicate elven mage is a mix of self-perception (do I see myself as big, strong, and confrontational or small, delicate and removed?) and desire for a certain set of actions (melee versus ranged combat in games; steampunk roleplay versus academic lectures in non-game spaces) which are afforded and constrained by the platform (it's easier to play a melee fighter than a professor in WoW, harder to be an orc in SL than WoW), and that the OODA loops play out over time: one does not step into any virtual environment, any more than a physical one, fully formed and capable of sophisticated action, but rather one's capacity for agency develops over time through interaction.

d. Avatars, Magic Circles and the Frontier

Avatarization, of course, raises the issue of exactly who or what has agency in the virtual environment: is it the physical person, the avatar, or some fusion – and if the latter, what is included and what is left out? This question was actively contested during the period of study, and the evolution of its answer one of the key factors discussed here. This question is not unique to the virtual environment, though it tends to be encountered more in postmodern theory than in one's daily experience of the world: typically we assume the agent to be an "individual," with identity remaining largely constant over time despite physical, cognitive and social changes, and bounded by the physical body.

There are at least two overlapping perspectives from which the question, who is it who is acting in this space? can be answered with respect to virtual worlds. One is from the games studies perspective of the "magic circle," (see Section 7 above), and one from that of the frontier. These perspectives are, pardon the expression, virtually identical, but have never been analyzed in parallel before. Internet research has long grappled with the question, most notably in Turkle (1997) and more relevantly in Boellstorff (2010). A full exploration of digital embodiment is beyond the scope of this work; only basic concepts will be drawn out here. At the most fundamental level, a person acting in a virtual environment has two bodies, each expressing agency by different means simultaneously. One does so by typing, moving a mouse, and perhaps speaking into a microphone, while otherwise remaining largely still. One also at the same time walks, runs, dances, fights, but with significantly different kinesthetics and meaning from the direct physical analogs of those activities (for example, the kinesthetics and consequences of hitting someone with a two-meter-long sword are different in Arizona than in WoW's Azeroth).

Many debates over video games, both academic and popular, arise from the question of how the magic circle, boundary or membrane is drawn around the amalgam of human and avatar: is there unity, such that killing in a virtual space is, if not murder, directly transferable training for murder (Grossman and deGaetano, 1999)? Does playing a bad guy reflect meaningfully on one's out of game ethics (Gee, 2007)? Hodder (2012) notes that the "boundaries around self and other" are drawn differently in different cultures. He cites Malafouris (2009) who argues that a concept of a unitary self is absent from the Homeric epics, such that agency takes a very different form from that in modern narratives. While the relationship between Olympian god and man is not analogous to that between avatar and "typist," as one convention from the era had it, the notion does suggest that questions of agency and the membrane are neither new nor subject to universal closure. Nitsche (2008, pp. 192-3) argues that "human identity is tied to the character of inhabited place," such that techniques to create personhood and techniques to create place cannot be untangled, as good an axiom of the frontier as might be found. Those questions of personhood, place and power actively contested in the times and places of my study closely paralleled those of the frontier: to what extent should status or expertise in the metropolis count in the new space? As the following chapters show, answers evolved over time towards the assimilation of the new spaces, such that metropolitan status and knowledge came to dominate.

Chapter 5

DIALECTICS: MANGLES OF CONNAISSANCE AND SAVOIR

Virtual worlds did see encounters across the frontier between heterotopia and metropolis. Some, particularly between designers and users in WoW, generated recurring OODA loops in both groups, leading toward the creative synthesis we've identified with resilience. Some of this was the product of a culture of rapid iteration by the WoW designers that was strangely absent at LL; some a result of a greater ideological commonality among WoW's designers and users than SL's. By contrast, encounters between users of both WoW and SL holding opposing ideologies with a common perspective of "digital dualism," or the incommensurability of online and offline cultures, tended strongly towards rejection of the other and ghettoization of the heterotopic, leading to entropic collapse. The following case studies indicate that the working Resilience Engine in these worlds could generate a dialectic leading to resilience, while a failure of that dialectic produced unavowed entropic collapse.

Section 11: The Dungeon Finder: The Social Software of the WoW HUD

The WoW HUD has been the site of several full cycles of the Resilience Engine, illustrating perfectly the range of outputs possible from Engine operations. One set of recurring cycles displays the hypertopic dialectic between users and designers as users shape a play space from a collaborative world into an arena for quantitatively measured competition. Another provides a classic example of unintended consequences of code-enabled central planning within a system of emergent complexity. This midway section is a microcosm of the whole work.

a. That's fun? Instrumental Play and the Membrane

WoW allows users to create, use, and share modifications to the HUD, a practice fundamentally implicated in the performance of identity and agency within the space (for an outstanding discussion of the role of one such modification on the values and practices of a group in WoW, see Chen, 2011). This practice, “modding,” takes place in close symbiosis with the game designers: they enable access not only to the HUD code but to the data output of the WoW system, enabling users to create applications which present that data in a range of ways distinct from that of the designers’ HUD. As noted above, the HUD is a crucial part of the sensorium by which one observes, and on the basis of which one decides and acts, within a virtual environment, game or social. The selection of what data to perceive readily, and how to perceive it, is value-laden at a level prior to (both ontologically and in the OODA-loop sense) the exercise of agency. Further, decisions about sensorium selection are not made by solitary actors in a vacuum, but are profoundly subject to socio-political pressures, which are in turn the product of a complex interplay of inside-the-membrane and outside-the-membrane forces, as indicated in the previous chapter’s discussion of the SL first-hour experience. That chapter also introduced the notion of a social tension between data-driven instrumental play and social play. In SL the tension fell almost entirely along a split between the LL software engineers and the SL social user base. Few if any “played” SL instrumentally – which is distinct from *using* SL instrumentally as a business platform or educational site. There was no consensus optimal state derived from numerical data, the foundation of instrumental play, as I use the term here (consider the role of statistics in baseball versus a high school prom, though the two use a common vocabulary of “scoring”).

There is a distinction here between finite and infinite play (Carse, 1986) on the one hand and play and not-play on the other. It is not entirely accurate to say that both forms of play take place within a magic circle, while the circle delineates the space of play from that of not-play, either in the context of SL or WoW. Many analysts start and end with that conception of the magic circle: it is not entirely wrong, but it is entirely inadequate. In McKnight (2011) I document the rise and fall of playfulness within the academic community in SL over time, the loss of what Salen and Zimmerman (2004) called a “lusory attitude” and Castronova (2007) means when his rational actors assign a greater value to play-that-looks-like-work than to the jobs of a capitalist underclass. An IBM working group meeting held at the bottom of a lake among cross-gendered avatars, dragons and tiny elephants has a relation to both heterotopia and metropolis, but drawing a magic circle anywhere there would be much like drawing maps of Martian canals: they would be mostly in the eye of the beholder.

Thus the discussion of the role of mods across the heterotopic frontier is not a simple matter. Taylor (2006) clarified that instrumental play, or min/maxing is in fact play for the people who choose that style. MMOs are designed to support a range of play styles and objectives; however, min/maxing has the effect, though not the intent, of transforming everyone else’s play, in a sort of ludic Gresham’s Law, as observers ranging to Castronova and Fairfield (2007) to Chen (2011) have explicitly or implicitly noted. It was an emergent issue as early as from Dibbell’s (2006) and Taylor’s (2006) pre-WoW work. Statistical-engine modding is to the social what user inscription of entertainment-capitalist practices onto virtual worlds is to the spatial: both are colonizations of heterotopia by metropolitan value systems. The colonization of space was largely invisible , as discussed in Chapter 2, because it took place simultaneously

with the formation of space; the colonization of the social was evident to all because it displaced well-established local-heterotopic practices.

Chen (2011) tells the story of the impact of one such “mod” on his small group of WoW players. They had been a group of friends who played “casually,” a term subject to a range of definitions, but which usually means prioritizing social contact over quantitatively measurable game outcomes and maximally efficient play processes. A new mod was developed which made explicit, measurable, and publicly displayable a statistical element of gameplay which the default HUD obscured. Explaining what the KLH Threat Meter (KTM) measured, and its role in gameplay, would be an unnecessary digression here: see Chen (2011, pp. 97-108) for details. Here it need be noted that for most players in a raid, doing damage (known as Damage Per Second, indicating the statistical foundation of the concept for players) was good, and generating “threat,” or the calculable attention of adversary nonplayer characters, was bad. KTM enabled users to publicly post data on both users’ and non-users’ threat generation. The mod was taken up quickly by WoW players, especially those active in the most challenging areas of the game. It became nearly universal among those players, and even those who chose not to use the mod could not escape the posting of its results by other users in their group.

Chen documents how the uptake of this tool, with a focus on quantification of play actions, served as an actor, in the ANT sense, in a network of the software, his group of friendly players, and the larger community of quantification-driven players, pushing his group to abandon its own values of sociability in favor of the values served by the mod, of maximizing efficiency through not only the presentation of quantitative data but the social shaming accompanying a less than optimum numerical output. ANT was an effective tool for analyzing Chen’s auto-ethnographic dataset: his level of

analysis encompassed the interactions within his small social guild, among his guild and the two larger specialized raiding guilds they were associated with, and with the KLM mod. Within this frame, the mod could be treated as an agent, with an ideological agenda and a set of rhetorical tools (easy to understand numerical results and rankings, the ability to share its output with non-users), which was able to persuade Chen's group to change its decisions and actions to conform with the observations it enabled.

This work uses a more macroscopic frame, to capture the scope of WoW as a complex adaptive system. This framing requires us to open up the black boxes of the actors, and to admit new actors within the membrane. Questions not appropriate to Chen's level of analysis appear here: why did the pressure for quantitative measurement and instrumental play come from (a certain segment of) the players, but not from the designers? Why did the mod's values drive out alternatives in a broad ecosystem of play? And critically, what happened in the next iterations of players' collective OODA cycle vis à vis the designers, which used this mod's output as its input? How did the system evolve from this initial punctuation of equilibrium?

b. Mods as Innovation Inputs for the Resilience Engine

WoW's designers act in a closely-coupled system of the HUD they iteratively design, user mods and modders, and a section of the playerbase which defines, through both enablement and constraint, "proper" gameplay for players generally. More loosely coupled but no less important is the great majority of players whose role in the process is neither that of active and intentional co-designers, nor that of a mass subject to technological determinism, but rather the largest source of emergent complexity and the sort of unintended consequences which generate the greatest potential for systemic resilience.

Each HUD mod introduced can be seen as an innovation input for a cycle of the Resilience Engine. However, in practice, very few combine general uptake by the player base with the potential for sparking social transformation. As of July 16, 2012, the website curse.com, the main distribution center for WoW mods, lists 5,188 mods currently in stock. Of these, the most downloaded is “Deadly Boss Mods,” (“DBM”) downloaded 502,646 times in the previous month alone, and over 42 million times since its creation in April 2008. By contrast, “LibMSP” has been downloaded 79 times since its creation in May 2011. DBM is a package of interface transformations that together provide a radical transformation of the sensorium in the context of high-end group play and is the product of years of iterative co-construction of the developers’ HUD, the modding community and the raiding player community. DBM’s designers state that they release multiple versions per day to fix bugs or add features “for the bleeding edge raiding content.” DBM, providing both a fundamental and comprehensive transformation of the sensorium for the most involved players, has the potential to generate complex systemic transformations.

Some mods are capable of large second-order transformations, or generating unintended consequences far removed from the mod’s purpose. For example, Curse’s sixth most popular download, “Bagnon,” while having been downloaded over 11.5 million times, might seem like an unlikely candidate for sparking the Resilience Engine: its function is to provide an all-in-one display of one’s character’s inventory (the items that travel with the character and are always available) along with that of its personal bank (offsite storage) and affiliated guild bank (group storage). Yet Bagnon’s socially transformative effect is not negligible: by providing one always available resource window, it obviates the need for its several million users to travel to a bank in one of the capital cities to peruse individual or guild storage. By doing so, it lowers the population of

those cities and decreases opportunities for serendipitous social interaction and for perceiving the game as “massively multiplayer,” or a social world, as opposed to “simultaneously single-player,” or one large game client for atomistic agents.

And yet, some popular mods do have a negligible first- or second-order socially transformative potential: Curse’s seventh most popular download, at 6.6 million total downloads, is “Tidy Plates,” which enables the user to customize the shape and color of status indicators. While clearly affecting the user’s sensorium, it seems unlikely to generate complex social transformations.

So, some mods, like some socio-technical innovations generally, have the potential to spark social transformation while others don’t. Certainly, broad uptake is a factor: revolutionary as LibMSP might be, it has failed to develop a significant user base. This of course begs the question of what leads to broad uptake: the motivations of users of DBM, Bagnon and TidyPlates are likely radically different, and not necessarily correlated, as we’ve seen with Bagnon, to a desire for the output of the Resilience Engine stemming from its input. Further, as Chen’s example shows, the motivations for early adopters (to optimize performance or to display performance-based status) differ from those of later adopters (because a critical mass of influential players have deemed its use a requirement for all involved in raiding play, a form of “keeping up with the Joneses”). As with innovations generally, as shown in Section 2, much of what leads to “an innovation with sufficient uptake” remains un-theorized, though not un-interrogated.

Where such uptake can be interrogated lies in examining who the critical mass of early adopters are, or are not. A survey of Curse users might find that TidyPlates and Bagnon are not the exclusive property of elite endgame players, while DBM, only usable in the context of raiding, is. One key factor is the role of the mod in providing statistical evidence of positioning in the social hierarchy: as Scott (1999, p. 27) observes in the

context of a high modernity which WoW users have chosen to replicate, “[e]very act of measurement was an act marked by the play of power relations.” Threat and damage meters and their ilk perform this function, of establishing and communicating quantified hierarchy. That users consider social hierarchy as produced and performed quantitatively speaks to the extent to which the heterotopic space is preconditioned by modernist expectations: as products of a Taylorized educational system and corporate environment we carry with us the values of those systems. What requires explanation is why we voluntarily reinscribe them, rather than attempting liberation through experimentation with heterotopic alternatives.

c. Social Engineering 1: the Dungeon Finder Deployed

WoW’s Patch 3.3.0, deployed in December 2009, (Blizzard Entertainment, undated) included perhaps the most profound intended changes to the social architecture of the platform. One feature, the RealID system, controversially attempted to reverse community norms of identity expression by requiring the use of “real names” as opposed to character names, on the official forums. This section focuses on the second transformative element of the patch, the Dungeon Finder. Prior to Patch 3.3.0, 5-person dungeon play (a half-hour to roughly three-hour contained, instanced play session with greater challenges and rewards than standard leveling play in the open and shared space of the world, designed as an introduction to and training for endgame raiding) was accessible by two means: assembling a group through planning within one’s own guild, or soliciting in text chat (“Looking For Group,” or “LFG” used as a preface to requests for players in specific roles to run a particular dungeon: “LFG heals SM” for “Healer looking for a group for Scarlet Monastery”), and then traveling by taxi and foot or mount to the often remote location of the dungeon, and entering together. Assembling a group of

guildmates could be done across a range of channels: a dedicated guild chat channel within the game; an in-game guild scheduling calendar and notification system (“Tuesday at 9: Scarlet Monastery!”); an external, independent guild-run website; or by social media generally. These multiple channels made assembling a group within a guild much easier than calling out for strangers to join up at any given time. As a result, the system incentivized guild membership, which in turn carried with it typically greater social interaction and opportunities for collective play. In both cases, the pool of potential dungeon group members was limited to that of one’s own server, with a maximum capacity of about 6,000 avatars and some much smaller number actually online at any given time.

In early WoW, standard leveling play was challenging enough that pairing at least offered clear benefits to solo play: again, while one could ask in one of the chat channels for someone to pair up with, the availability of multiple channels and prior asynchronous coordination gave guild members an advantage. However, user preferences and commercial pressures had led WoW’s designers to a dilemma: on the one hand, they were making gameplay easier to broaden their user base beyond experienced gamers and to accommodate calls for greater solo play; on the other hand, they believed the business cliché, “the killer app is other people.” Yet another tension lay between players’ desire for quick progression alone through the world-based leveling experience to reach the endgame raiding content, increasingly seen as where “the real game begins” and the growing disconnect between the tacit knowledge and skills developed from solo leveling and the high level of group-based skills demanded by the raid environment.

Patch 3.3 included an attempt to square these circles, the Dungeon Finder. The Dungeon Finder was a modification to the default HUD: it added another button to the

main taskbar, which opened up a window. In the window, a player could indicate the role they wanted to perform in the dungeon (DPS, healing or tanking), and whether they sought any level-appropriate dungeon or a specific one. Selecting a random dungeon, and thus exposure to a greater range of available content, delivered superior rewards to those available either from using the Dungeon Finder to select a specific dungeon or from assembling a guild group outside the system. Software would then match up the players' request with those of others across a cluster of WoW's servers, not just the player's own, and assemble a team of one tank, one healer and three DPS. Players would all be transported instantaneously to the entrance of the dungeon, and on completion back to their previous position, without any travel through the world or expenditure of travel time.

On its face, the Dungeon Finder elided time and space, two features of "worldness" which were becoming increasingly unpopular, as they stood between the player and the play experience with its subsequent rewards of material goods (see Chapter 4 on changes to travel in WoW). It also enabled the growing mass of solo, un-guilded players to access the content which would prepare them for endgame raiding. The patch notes (Blizzard Entertainment, undated) stress "quick and easy access" and "additional rewards" from using the system. Thus, the system was intended to make a type of gameplay and training broadly available to a new majority of players by providing them with incentives in the form of goods (weapons and armor) better than otherwise available.

d. Social Engineering 2: Lapse in the Common Pool

In the coupling between WoW designers' desired outcomes from the Dungeon Finder and the rewards they provided to induce them, along with the cross-server

candidate pool, an unintended social problem emerged. By providing individual rewards for engaging in a group activity, Patch 3.3 delivered a classic study of failure to learn from broad experience in managing common-pool resources – though to be fair, the lessons of cowboy ranchers (Ellickson, 1994) and irrigation communities (Ostrom, 1990), are far from the core knowledge of videogame designers.

The previous chat-channel “LFG” system had an emergent property which the designers of the Dungeon Finder had failed to take into account: it was also a forum for enforcement of normative behavior through gossip-based sanctions – an informal reputation system. As the pool of candidates was limited to some subset of the 6000 people on one server who sought dungeon pick-up groups (likely only a few hundred on most servers), players developed broadly known reputations, and norm violators would be called out in chat: if a player posted a request for others to group, people who had had bad experiences with them before (typically for violating norms around the complex system for allocating “loot,” or special rewards) would call out warnings in the same channel, making it harder for the player to find others willing to play. Server groups tended to be self-enforcing of social norms, as it was hard for players to avoid consequences of bad behavior across iterations of rounds of play, just as games theory, and observed practice across a range of environments, would predict (e.g., Ellickson, 1994) on the differences in norm observation between neighboring ranchers on the one hand and ranchers and long-distance drivers on the other).

The Dungeon Finder broke that self-enforcing mechanism. As it drew from a cross-server pool and matched players at random, the chances of ever grouping with the same person again, along with the difficulty in avoiding being matched with violators, were low enough to make social sanctions impossible. Unsurprisingly, the transformation in player behavior was swift and dramatic. (Cassandri, 2010; Robert, 2011)

The upshot was a pair of contradictory outcomes: the Dungeon Finder was extremely popular (Syp, 2009; Lauren, 2011) as it provided excellent loot without costs in travel time or the need to respect behavioral norms, yet the frequency of bad experiences the system engendered discouraged many from group play – typically those most sensitive to normative violations, leading to an ever smaller proportion of cooperative and pleasant players in the Dungeon Finder system. At the same time, it broke both the existing emergent system of normative enforcement and the incentive to engage in ongoing social behavior through membership in a guild, as one of the major benefits of guild membership, the ability to readily form dungeon groups, had been usurped by the new feature.

e. Social Engineering 3: Reinventing Guilds

In January 2011, Blizzard released Patch 4.06, which modified the HUD yet again, to repair the social disaster inadvertently caused by Patch 3.3. The core of Patch 4.06 (Blizzard Entertainment, 2011b) was the instantiation of a hard-learned, if obvious-sounding, lesson: the effective way to incentivize group behavior is with group rewards. The patch instituted a set of screens related to a new system of guild progression, to parallel the character-progression experience of leveling up. Guilds could advance in rankings, unlocking benefits for their members, by undertaking dungeon content with a majority of guild members. This system, rather than just enabling the return of the chat-channel policing mechanism, internalized it to an even smaller group with greater consequences for normative violation: the guild, and members' access to the benefits of membership in a high-ranking guild. While many guilds have an open-admissions policy, guilds seen as more prestigious or more skilled have an extensive interview process, which often includes collecting reference from previous guild officers (another example

of the re-enactment of corporatism in a medieval-fantasy space), thus codifying in software the previous informal mechanism of normative enforcement, a developer preference noted by Malaby (2009) as ideologically grounded and common among game software developers.

The solution was not a perfect one: Dungeon Finder random groups continued to encourage the lowest possible standards of social behavior, as they remained the most efficient means of character advancement to endgame raiding. For example, when my small guild of close friends ran dungeons in all-internal groups, we would take our time, enjoying narrative details and small touches within the environment, or set additional challenges for ourselves (running the dungeon in the worst possible gear, or with fewer than five people), and chatting and joking around through the process. By contrast, effectively every pickup group took place in silence, punctured only by an impatient “go go go” from someone at the beginning and at best a “gg” for “good game” at the end, and at a maximally efficient route from the starting point to the most worthwhile loot, by players who ran the same content several times a day, hundreds of times in total, to accumulate gear and currency to prepare for raiding.

While the “Guild Advancement” system reinstated incentives for pro-social behavior, the tensions described by Chen remained: between an experience highlighting social interaction within an environment and one highlighting the efficient pursuit of wealth. In practice even the most dedicated socializer (such as me) would need to use the Dungeon Finder hundreds of times if they wanted to prepare for raiding, which continued to be valued by the most vocal and norm-setting players as the main, if not sole, reason to play WoW, with the experience of being a particular sort of person in a particular sort of place reduced to a minimal if necessary barrier.

Section 12: The Science Guild: Challenging Privilege and Legitimacy

The first (and perhaps only) academic conference in WoW was the site of conflict between metropolitan and heterotopic values, a conflict sharpened by the events of its aftermath. Three published perspectives cover the spectrum of responses to changes in technology and their associated social values.

a. Zomgscience: an Orcish Dialectic

On May 9-11, 2008, *Science* magazine sponsored an academic conference held in WoW, billed as the first of its kind. The events of those three days, and the subsequent fallout, can be read as another instance of the dialectic between heterotopic and metropolitan ways, one in which heterotopic identity and *connaissance* scored a qualified victory, but which pointed to a subsequent cultural transformation of metropolitan practice. Contrary to the implications of its organizers, “Convergence of the Real and the Virtual” was far from the first academic conference in a virtual world; rather, it indicated the extent to which academic players and analysts of game MMOs and users of social virtual worlds were ignorant of, if not openly hostile to, each others’ environments. The conference title, of course, is also suggestive of precisely the heterotopic/metropolitan dialectic it generated, and very much a product of its time: today, after the completion of that cycle of the Resilience Engine, such a title would be unthinkable, as it is almost universally believed that there is no distinction between real and virtual (Juregenson (2012b)’s “strong augmented reality”), the metropolitan order having destroyed or absorbed the heterotopic, Turkle’s (2011) continuing strong digital dualism notwithstanding.

The conference in fact delivered a “convergence of the real and the virtual,” exemplifying an early stage in the dialectic between those with tacit knowledge of the

new places and those with privileged status in the dominant order. The list of conference participants, an almost complete “Who’s Who” of virtual-worlds scholars (Bainbridge, 2008a), confronted an audience of practitioners, many apparently invited by a blogger and activist from Second Life (Stenvaag, 2008a). Yet it was a pseudonymous heckler, “Zomgscience,” who, in the conference’s chaotic and confrontational first session, directly challenged the metropolitan assumptions of the conference organizers and session co-chairs. This initial confrontation across the membrane sharpened in subsequent weeks as participants revisited the day in blog posts, and attendees sought ongoing connections. For those attendees, the outcomes included some heat, a good amount of light, and all too typically, re-segregation and an end to the dialectic among participants (for a similar process playing out over a year in SL, see the following section). Yet, the practices developed over the three days of the conference, already the norm for professional and educational conferences in Second Life, would come to be the new norm for many academic conferences associated with internet practices. The norming of the backchannel and leveling of audience and podium was one of the few clear products of virtual heterotopia to be taken up by, and generate greater resilience in, the metropolis.

b. The Privileged Podium: an Organizer’s Perspective

Initial notice of the conference appeared in *Science* in April 2008. (Bohannon, 2008a) The specific language of the announcement bears close attention for its framing of the event. The initial paragraph links an interest in fantasy literature and games to the scientific potential of virtual worlds. The second frames the event as a conventional scientific conference, but with ease of access: “This will not be your typical conference. Sure, there will be sessions devoted to various research topics involving virtual worlds,

panel discussions, social activities, and those conference goody bags that we've all come to love. But to attend this conference, you don't have to splurge on grant money or add to global warming by flying to another country. And in the goody bags, you won't find brochures, pens, or those quickly lost notebooks." It continues, "anyone with an internet connection can participate from anywhere in the world," and that the event is "the future of scientific research envisioned by the conference organizers." The theme is that of fun and novelty as a gloss on a conventional event, the scientific conference. Yet, it hints at a level of access ("anyone...can participate") that, as much as the "raid on an enemy city" would distinguish this event from others of its genre ("take that, Gordon conferences!"). The author is attempting to frame the event as simultaneously novel and traditional, emergent and establishmentarian. He grounds it in the context not of other virtual-world events but of other physical academic conferences, and suggests that both ease and breadth of access would be advantages of the format. Doing so is consistent with the author's message to the periodical's imagined (and likely actual) audience: "scientists" in the first instance, rather than platform or subject matter experts, credentialed or otherwise. What precisely a "scientist" or an attendee would become a point of controversy.

Three accounts of the conference triangulate on the events of the three days: that of the co-organizer in *Science* (Bohannon, 2008b), of virtual worlds activist Sophrosyne Stenvaag on her blog (2008a, b) and my own on my academic blog (McKnight, 2008a, b). The perspectives were, respectively, highly establishmentarian and strong digital-dualist, highly heterotopic and also strong digital-dualist, and somewhere in between, and weak augmented-realist. The first half of Bohannon's article is "color," or establishment of the environment, and a description of preliminary logistics: where within WoW to meet, how to fund the conference swag items. Midway he notes

that his “major concern was how people would communicate,” noting that on the one hand, WoW users employed a range of technologies, both intrinsic and extrinsic to the platform, to communicate (various text chat channels built into the HUD, and external Voice Over Internet Protocol (VoIP) services for voice chat, which at the time the WoW client did not natively support), yet on the other hand, an authentic experience of the environment should use native communications channels exclusively. He notes that MMO text chat is an acquired and difficult skill: “if you can’t touch-type 50 words a minute, you’re effectively mute.” He lists counterbalancing advantages: you can still participate if you show up late (I’m not quite sure what this means: I’ve never been at an academic conference where late attendees were excluded as if it were the Metropolitan Opera), text chat is slower and thus easier to follow than spoken conversation (entirely contrary to my experience), and an entire transcription of everything said is immediately available. Bohannon describes the beginning of the conference, in which co-chair Bonnie Nardi put a question to panelists, observing that “What’s remarkable about the hourlong discussion that ensued is not how exotic it was but how very familiar.” Yet, he proceeds to contradict that statement at length: “yet, when was the last time you’ve seen members of an audience interrupt a speaker almost immediately to share their thoughts?” Stenvaag and I would answer, several times a week at business, journalistic and academic events in SL, so both Bohannon’s and the session co-chairs’ opposite answer to that question indicates the extent to which this was not an internal-heterotopic event but one across the membrane. Nardi tried, but failed, to police physical-conference protocols; the audience participated as if it were a virtual event, “interrupt(ing) a speaker” repeatedly.

Bohannon doesn’t follow up on this point, but spends the second half of his article, beginning under the sub-heading, “Who Are You, Colleague?” on “the

fundamental question of identity.” He begins with the issue of avatar identification, or “how much of yourself is in your virtual character,” but discards it directly in favor of the question, “is a scientific conference an appropriate place for anonymity?” He quotes Dmitri Williams to the effect that “the traditional environment” (of an academic conference) “imposes traditional rules of social hierarchy” that the virtual environment does not. Bohannon notes that “nearly half” of the 200+ conference attendees did not provide real-world identity markers, “even many who were enthusiastic and clearly well-informed contributors to the discussion.” Two things stand out here: one, a point Stenvaag would make, that Bohannon paints an opposition of “real-world” identity on the one hand and “anonymity” on the other, not seeing a third element, of heterotopic, or pseudonymous, identity (more on this point in the analysis of Stenvaag’s posts below); and two, that while he considers the issue of identity “fundamental,” and related both to hierarchy and collegiality, he does not articulate what the problem might be. Presumably, it is so self-evident as to not merit statement, let alone deconstruction.

c. Portfolios or Credentials: an Emergent Radical Perspective

Stenvaag, writing immediately after the conference, which she attended on the last day, begins with a discussion in conference guild chat the night after the first session, “the best exploration of the idiosyncrasies of virtual worlds events I’ve ever had.” (2008a) Her impression of the format from the discussion was “that the early moderators tried to run the event the way they would have conducted something in a college lecture hall,” with a stage demarcating “privileged speakers” from “an audience expected to be subordinate consumers of broadcast wisdom.” She argues that “That does **not** work in virtual worlds events, as veterans of those events know. Virtuality shatters broadcast and privilege. Hard as that may be for corporate marketers to

understand, it may be worse for academics, who only have the elevated stage, the podium, the "sheepskin," to claim privileged broadcaster status." She draws a distinction between "academics" and "practitioners," framed as between "gnosis and techne," claiming that practitioners, drawn by a conference notice on Facebook (presumably from her, as other sources suggest), formed an unexpected and significantly numerous presence at the academic event, leading to conflicts in tone and expectations. She concludes with what would become a key point of dialectic: observing that "there's been a lot of talk in the Guild about continuing it," that SL users "representing about 10% of the Guild," created and submitted a proposal to conference co-organizer William Bainbridge the same evening. Stenvaag here observes similar dichotomies to Bohannon, but focuses on tacit knowledge of the environment and its social consequences from the other side: like Bohannon, she sees the medium as hostile to hierarchies, but focuses on the medium of communication, rather than identity, as the enabling feature: implicitly, as all text chat is equal in a virtual environment, the broadcast model is simply impossible, and thus no speaker is privileged. Interestingly, she doesn't mention identity as a factor at all, focusing entirely on affordances of the platform and tacit knowledge of them as the key distinction. She states that she wasn't at the conference that day; thus she missed what I saw, a clash not of affordances but of attempts to socially enforce competing norms in the open chat channel as academic traditionalists squared off against virtual world veterans for the right to speak.

A participant, Chimera Cosmos, observed in the blog comments to Stenvaag's post that she was drawn to the conference by the prospect of observing "a clash between academic researchers and education technologists." She notes that the second day of the conference "had the moderator and some of the gnosis-types and speakers trying to shush the SL-style backchat. That contradicted with the stated aims for dialog,

so I'm glad to hear that progress was made on Sunday.” Stenvaag had noted that while attendees had complained of the difficulty of getting to the conference, the simplicity of its directions was vastly greater than all the transportation and navigation steps involved in getting from one’s home to a remote physical conference. Cosmos commented on conflict over the nature and value of tacit knowledge, “The idea of taking the required TIME to get up to speed on a "video game" and seeing that as valuable skill would not occur to many academics ☺ ”

Stenvaag’s later post, discussed above, (2008b) dealt with the aftermath of that SL-user proposal to organize the conference guild. She writes not of the conference guild but of a spinoff created by the SL veterans, and teases out what she sees as a set of “core principles underlying what the founders have done with the guild.” She repeats her previous point about the social consequences of communications media: hierarchical social structures at physical events are reinforced by “the raised stage and podium, the single-point microphone;” while attempting to transfer hierarchical social structures to virtual environments “fail(s) to use the digital medium fully,” which she analogizes to using a movie camera to film a stage play. In consequence, “digital worlds free us from the fixed point of the silent spectator, allowing the collaborative, multi-threaded creation of knowledge and meaning.”

She proceeds to tell a story of dialectic across the membrane within the conference guild. She describes a guild member (presumably Bohannon) “with a set of values from science and academia” who “took the principle ‘the scientific community requires full disclosure in experiments in order to verify claims of results’ and wanted to apply that to identity in digital worlds,” an analogy she describes as comparing “apples and Tuesday.” She says that “anonymity or digital personhood are *rejections* of claims based on status in the atomic world.” She argues that if one supports a factual claim with

a status claim, others have the right to call for proof of that status, but if the support is another factual claim, there's no legitimacy in asking for status in support of it. In one of the clearest statements of frontier identity possible, she goes on to say, "In the digital world, you don't get to dismiss my arguments because the atomic person behind me might be a part-time clerk at a game store, or accept them because that person is "actually" a professor. You have to engage with my ideas - and with me - for what we are in *this* space, by the values of *this* culture." She adds a specific example: she was asked to divulge "real world credentials" in support of her application for guild leadership. Instead she provided a portfolio related to virtual-worlds event organizing and a list of references. The other person "was angry and upset that I'd violated reciprocity:" he'd divulged his physical identity associated to a claim of high status. She described the matter at issue as "the legitimate things we need to know about each other: have they done a number of digital worlds events before? were those events satisfying for the participants and the audience? what are they like to work with? [sic]" She argued that she had presented materials to answer those questions while he "told me you have an unrelated job in an unrelated space. Who provided full and useful disclosure and who didn't?" Proceeding into a discussion of internet reputation systems, she argues that what was at issue was the source of legitimacy - actions or credentialing. One commenter argued that Stenvaag, rather than her interlocutor, had more correctly used evidence: "In science it's irrelevant who put forward the idea, the only thing that counts is the evidence," adding that that principle had been corrupted by an "education system [that] doesn't teach people how to argue rationally."

d. A Challenge to Branding: a Professional's Perspective

My post directly after the conference focused on the role of the heckler “Zomgscience” as an example of the value of democratizing discussion: after attempts by the moderators to maintain physical-conference structures “allow[ed] an increasing amount of blurting until the system broke down.” The heckler “on balance actually added to the discussion, another instance of the value of trust and open discourse in virtual worlds,” and was “actually more interesting” than one of the academic speakers who took WoW as synecdochic for all virtual worlds, “misapplying game psychology to the whole of virtual worlds.”

In my post following Bohannon's and Stenvaag's second posts, I described Bohannon's as “very entertainingly written, but point[ing] at a significant culture clash between the online world and the scientific community.” The author “shows no recognition of the fact that he was on well-trod territory. His “lessons learned” are commonplaces for the most casual attendee of a virtual worlds meeting.” I attributed this to the “academic stovepiping” of games studies and virtual worlds anthropology. I focused on Bohannon's discussion of identity and status, describing how credentialing is used in the legal profession and speculating on the difference in science. For a virtual worlds conference I saw identity as playing a role in speaker selection, looking first at publications, then institutional affiliation, with the acknowledgement that not all scholarly work is performed by people with institutional ties. Credentialling was a threshold to establish a rebuttable presumption of expertise, which would be demonstrated or not in actual performance. Bohannon, I claimed, “seems to lose that thread of utility as he grapples with the issue. Much of his discussion focuses on the credentialling *of the audience*” But, there's no need to credential the audience, I argued: “The question the author seems to be struggling with is, “How should we know whether to listen to these

members of the audience?” He’d like to know their professional affiliations and academic backgrounds in order to make that decision. I’d posit that a better solution would be to *listen*. If their comments are intelligent, welcome them.” I state that I’m fully identity-transparent in virtual worlds, as I’m looking to build a professional reputation tied to my virtual worlds work, but wonder whether if I weren’t looking to build that reputation but participated pseudonymously “if I get the same level of recognition for my contributions without the brand names [of Columbia and NYU, from which I hold degrees] attached.” I describe the egalitarian affordances of virtual worlds as a challenge to the branding function of universities. Acknowledging that they could challenge those who built their sense of identity and value out of the credentialing system, I portrayed the virtual alternative “as liberating, and as promising to empower many more bright minds than the old system could ever accommodate.” What I didn’t describe was my *schadenfreude* the first day watching academic speakers shouting ever more shrilly in text chat to claim their privilege, while being ignored by the “frontierspeople” in the audience, who used them as the beginning, not the end, of inquiry.

e. Coda: Separate but Equal?

I attended a meeting in WoW of the Science Guild shortly after the blog posts above, in which the conflict between reputational systems was resolved, in a way that would become familiar through my further experience with virtual-worlds communities: splitting and segregation. This outcome should not be surprising: it is implicit in the Nozickian (1974) structure of virtual communities: negligible barriers to exit existing groups and low barriers to establishing new groups logically lead to a proliferation of micro-communities (however, network theory predicts a power-law distribution of community size: while this may have been the case in Second Life, with the steampunk

“nation” of Caledon and greater Gor being between them as large as all the other self-defined communities combined, it is distinctly not true in WoW, as group size was strictly limited by arbitrary decision of the designers and coded into the user interface (even so, workarounds including those of the LGBT-friendly “Taint” guild constellation (The Spreading Taint, 2011) indicated that in an environment unconstrained by software limitations, WoW might show a power-law distribution as well) distributed close to a minimum viable size.

The session began with one of the Science Guild founders launching a sharp attack on Stenvaag, challenging her presence in the Guild on the grounds that her character name, “Extropia,” was also that of a commercial business, the SL community she represented. In response, three other members of the guild, two corporate consultants and a Microsoft employee, walked out and announced they were launching a rival guild, open to all with an academic or professional interest in virtual worlds, “Metaverse Explorers.” Shortly thereafter, Bainbridge, who had spoken at events in Extropia, formed another spinoff guild, “Cosmic Engineers,” with a large SL contingent and substantial overlap with Metaverse Explorers. Cosmic Engineers was short-lived, but Metaverse Explorers became “Future Tense,” (72 listed members as of August 6, 2012: World of Warcraft ,2012b) where I was Guild Master from 2008 through 2010, and along with Science Guild, (318 listed members as of August 6, 2012: World of Warcraft, 2012a) continued to be active for several years. Future Tense was effectively abandoned by February 2011; given that I couldn’t find a member of Science Guild who had been active since 2010 to interrogate on the guild’s status, it may be safe to assume it met a similar entropic death.

Carse (1986,p. 24) states that “what one wins in a finite game is a title,” and that the “effectiveness of a title depends on its visibility, its noticeability to others.” While

sharing a common ideology, that of hard digital dualism, Bohannon and Stenvaag – and by implication their guilds – were playing two different kinds of games, finite and infinite, and titles only mattered in one. A core assertion of the Resilience Engine model is that resilience is the product of a meaningful exchange of information across the borderlands between heterotopia and metropolis. What happened in the Science Guild case was an iconic virtual worlds experience: an incompatibility of social axioms across that borderlands followed by the ghettoization and eventual extinction of the heterotopic. What distinguishes the Science Guild case from that of Al Andalus below was the reflexivity of the parties to the dispute and to the people around them. They were able to interrogate their own assumptions, articulate them, and defend them in explicit terms. This clarity enabled the Resilience Engine to cycle in a matter of weeks, from Bohannon’s first metropolitan framing of the WoW conference to Stenvaag’s discussion of Metaverse Explorers’ heterotopic principles. The Resilience Engine’s cycle broke down over the failure of the metropolitan advocate to assimilate heterotopic lessons, and over both sides’ reinscription of an impermeable membrane, a ghetto wall, around the heterotopia.

That said, the practices of virtual-worlds conferences: the audience backchannel, the real-time conversation among speaker and audiences, the end of the podium as privileging a sole legitimate voice, have begun to spread to physical academic conferences, if primarily in fields associated with the study of new media. Here one sees an ongoing Resilience Engine exchange: procedures are tested and refined or abandoned, customs spread to adjacent fields, a dialectic tension between broadcast reading of prewritten papers and technologically enabled conversation of peers continues in a range of disciplines. Twitter backchannels are not a revolution. Jurgenson 2012(a) argues that they’re not a “backchannel” at all: from a soft augmented reality

perspective, he sees them as not something separate, not an “escape” from the “real conference” into a virtual one, but an inextricable part of the mangle of what an academic conference now is. The notion would likely appall the Bohannon and Stenvaag of 2008 in equal measure from opposite sides of the digital-dualist divide. Its assertion in 2012 is a descriptor of just what a resilient outcome looks like: a mangle of once-heterotopic and once-metropolitan practices in a new creative synthesis. The integration of social media sociotechnical practices with broadcast sociotechnical practices in the contemporary academic process is an outcome of a full, effective cycle of the Resilience Engine.

Section 13: A Failure of Convivencia: Conflict and Collapse in SL’s Citizenry

A failed merger of two of Second Life’s only communities based on a citizenship model provides another example of the Resilience Engine breaking down over a failure of post-dialectic synthesis across the membrane. Unlike the Science Guild case, where the representatives of heterotopia and metropolis were able to clearly articulate their positions and reject consensus, here we see the deep and invisible inscription of metropolitan politics into heterotopic space theorized in Chapter Two leading to a long political crisis of mismatched assumptions grounded in national-political cultures of origin.

a. Mangles: The Evolution of Two SL “Democracies”

Malaby (2010) argues that LL developers, in accordance with a techno-libertarian ideology common among California programmers, believed that sociopolitical problems were best dealt with either by laissez-faire or by regulation via software code and fiat decisions. He reiterates (pp. 52-53, 97-98, 101) that LL had no expectation of emergent social phenomena, no clear acknowledgement of their legitimacy, and no means of

response other than inaction or, in a string of controversial actions in SL's growth phase, broad and simple bans on broadly-defined activities (gambling, banking, sexual roleplay involving child avatars, and more (Au, 2008a). LL thus reigned but largely did not rule, and there were no mechanisms for self-governance by SL Residents (the Terms of Service created a legally enforceable relationship between each user and LL; it did not give rise to lateral obligations between and among users (Lastowka, 2010). Thus SL saw groups of humans engaged in the broad range of human interactions from sex to commerce to cohabitation, with authority to regulate those interactions usurped and unused by an absentee lord.

This situation may have been invisible, and later surprising, to LL developers. It was not, however, to many early users. As far back as 2004, SL's official web forum hosted a discussion of the prospect of users creating institutions to fill the vacuum left by LL. (Llewellyn, author interview, 2010) In response to an LL call for proposals to develop an under-used region, a group of the forum members, predominantly European, jointly submitted a proposal for a community to be managed pursuant to an electoral, constitutional system. The proposal was approved, and the project members collectively (via a single land-holding avatar whose RL owner received the bills, but whose RL identity was known only to a few) were awarded a lease to 1/3 of a mainland sim in late 2004. (Second Life Wiki) After withdrawal of official LL support amidst accusations of favoritism, the group moved from LL-owned mainland to a private island in 2006, and named the project the "Confederation of Democratic Simulators." Participants hoped that their model of a constitutional, elected government would prove popular enough to spread to 5% of the Second Life grid (Llewellyn, author interview, 2010). Instead, the CDS stabilized at five sims out of a total of 31,426 as of April 2011, (Shepherd, 2011)

the “land baron” real estate property management/subleasing model proving vastly more popular.

As of 2009, the CDS constitution provided for a Representative Assembly (RA), elected to six-month terms by all those owning property within the five sims. The number of seats in the RA was equal to 10% of the voting population, as of a date set prior to each election. The 10th Representative Assembly, elected in January 2009 and which was to vote on the merger with the community of Al Andalus described in this section, consisted of seven persons. (Ecksol, 2009) Electors did not vote for individuals, but rather for “factions,” or political parties, who then named members to fill the seats won. Determination of election results was by a system called Single Transferable Vote, memorably described by a professor emeritus at Yale as “too complex to describe” in a short work on democratic systems. (Dahl 2000, p. 190) For the 10th RA, the first-place faction ran two candidates but won three seats, while the last-place faction ran four candidates but won two seats, indicating the complexity of the system, especially for an electorate of 70 persons. The faction with the most votes then selected from within its membership a Leader of the Representative Assembly, who chaired the typically biweekly sessions. The RA also elected a Chancellor, an executive with primarily administrative, land-management, functions. A “Scientific Council,” with members appointed by current members, subject to RA confirmation, acted as a constitutional court, its name underscoring the technocratic premises of the whole complex structure.

In 2008, the Al Andalus Caliphate, covering two sims, opened in SL. The brainchild of Michel Manen (SL name), a former member of the CDS RA, the Caliphate was intended to be “a community of individuals willing to explore the modalities of interaction between different languages, nationalities, religions and cultures within a political and juridical space shaped by authentic Islamic principles.” (Manen, quoted in

Duranske, 2007) The Caliphate, with Manen as caliph, would embody “leading edge research of how authentic Islamic legal principles can be applied in a 21st Century context, and be compatible with universal ideals of dignity, equality, democracy, participation and human rights.” (Id.) However, by the Fall of 2008, various troubles prevented Manen from logging into SL, and management of the project fell to his assistant, Rose Springvale (SL name), also a former CDS RA member.

Springvale removed the “Caliphate” designation, and upon consensus decision of the AA citizenry, ended the role of religious law. Ownership of the land, which had grown to seven sims by 2009, was transferred to a Texas nonprofit corporation, Virtual Democracy, Inc. (VDI), formed to manage the property and to sponsor events and projects related to democracy generally online. (Springvale, author interview, 2010) AA was run like a land baron project, with Springvale as property manager in addition to being one of three members of the VDI Board of Directors. Informal “town hall” meetings with interested landholders and other SL users, drawing in part on the Islamic concept of the *umma*, or community physically gathered, provided a source of legitimacy. (Springvale, author interview, 2010) The project was thus transformed from an attempt to rebuild an abandoned political model of the physical world into one embodying the emergent “best practices” of SL, legitimizing them through analogies to historical, arguably heterotopic, practices: medieval Andalusia was chosen as a model for its practice of *convivencia*, or peaceful coexistence of Christian, Jewish and Muslim communities during a time marked by the Crusades.

As of 2009, then, the CDS had replicated hegemonic practices and endured for five years, numbering it among SL’s longest-lived communities. AA, by contrast, was a new mangle of managerialism and participatory-democratic heterotopianism, while both defined themselves in similar language of democracy and self-governance.

In early 2009, Springvale began discussions with the CDS about a merger of the projects. She believed that merger would bring more activity to the CDS, put AA on a stronger financial footing, and enable a fit between a surplus of management in the CDS and a surplus of projects in AA. (Springvale, author interview, 2010) The proposal was controversial in both communities, however. Some Andalusians disapproved of CDS formalism, factionalism, and the historic viciousness of its politics, and disapproved of the loss of AA's identity, as the merged entity would simply be an expanded CDS. (Palisades, author interview, 2010) Similarly, some in the CDS were concerned that AA would be a financial drain, and that its members, accustomed to "ad hoc" management, would prove hostile to the bureaucratic formalism of the CDS. (Murakami, author interview, 2010) The merger agreement was eventually approved by both groups in May 2009, after inclusion of a modification proposed by Andalusian Wasp Thor (SL name) and known as the "Wasp Clause:" both communities would have the option to terminate the merger on the anniversary of the conjoining on the SL map of the sims. (Ecksol, 2009b, Section 8)

The merger took effect in July 2009. The 12th RA, elected in January 2010, was the first to include AA representatives, who took six of 11 seats in the legislature. (Lake, 2010) That legislative session, leading up to the July 2010 Wasp Clause deadline, was one of growing conflict between CDS and AA partisans in the RA, though non-political members of the two communities socialized frequently and amicably through this period.

As the date of decision on the Wasp Clause neared, there was significant uncertainty as to whether either group would terminate, or whether popular moderate pressure for finalizing the merger would prevail. Immediately prior to the beginning of debate in the RA, Board members of VDI announced that the Board had voted unanimously to terminate the merger on behalf of AA.

After termination of the merger, both communities went into significant decline. In the next CDS election, though the RA had been decreased from 13 seats to 7, fewer candidates ran than there were seats, as citizenship dropped from 131 in May to 70 in October. (Lake, 2010c) The CDS has continued to run on its extensive financial reserves, while the AA project was terminated in June 2012 after being moribund for a year. It cannot be clearly concluded that the year of acrimony crippled both communities: while SL use overall has remained mostly steady, non-commercial and community-focused projects have been in profound decline, and particularly burnout of long-time managers, including AA's Rose Springvale was widespread after 2010. Nonetheless, exhaustion and disillusionment after the termination of the merger had notably taken their toll.

b. Engine Troubles: Discourses and Civic Epistemologies in Conflict

The CDS/AA merger involved two of approximately five of SL's experiments in community self-governance between 2006 and 2010, a group including Chilbo (a co-op managed by a university administrator), Vulcano (a short-lived Italian arts co-op) and Extropia (a utopian experiment turned standard land-baron managerial community), of which only Chilbo retained a self-governance model by the time of the merger. Of the five, only the CDS was a clear departure from the pattern of community dependence on a founding charismatic figure committing full-time work or more to the project. Even so, one of the divisive issues of the merger was the role of the CDS's co-founder and treasurer, who held tens of thousands of US dollars of the project's funds, but whose RL identity was known only to one or two members, and who almost never was present in SL (I served a term as a legislator and was present in the CDS approximately 20 hours a week for eight months of the year of merger: I never met her). Nonetheless, the CDS

was intended as an alternative to charismatic leadership in order to ensure long-term stability. What happened in the year of merger, however, was a mangle of values and practices reflecting a true heterotopic dialectic, which resulted in the collapse of the heterotopic alternative and the continuance of the CDS's odd experiment in reinscribing the territorial nation state in a virtual world.

The year of merger was one of increasingly bitter verbal conflict across a range of media. The CDS and AA experienced what Sheila Jasanoff refers to as a conflict of "civic epistemologies." (Jasanoff, 2005) In observing divergent civic responses to innovations in biotechnology in the United States and Western Europe, she notes that "[h]ow democratic polities acquire communal knowledge for purposes of collective action emerges in my telling as a particularly significant feature of political culture." (Jasanoff 2005, p. 9) Cross-national studies of regulatory policy historically had been "constrained by a number of unspoken assumptions that cast doubt on the utility of comparison," including the meaning of such terms as "science," "the state" and "the gene." Thus, "one has to ask how diverse actors use and understand the concept, how it is articulated through formal and informal practices, where and by whom it is contested, and how it reasserts itself in the face of challenges to its integrity or meaning." (Jasanoff, 2005, p. 19) In the context of the merger, no one asked those questions until I began actively interrogating community members in December 2009. What emerged from my work was a pair of Discourses, defined below, built upon divergent civic epistemologies.

Linguist James Paul Gee defines "Discourses" as "ways of combining and integrating language, actions, interactions, ways of thinking, believing, valuing, and using various symbols, tools and objects to enact a particular sort of socially recognizable identity" (Gee, 2011, p. 29), particularly relevant to conflicts over social goods, the stuff of politics, and distinct from "discourses," or particular slices of interaction.

For our purposes, both the concepts of civic epistemologies and Discourses are orthogonal to the metropolitan/heterotopic or *savoir/connaissance* binaries, though both tend to fall on the metropolitan/*savoir* side. While Gee focuses more on how fluency in a Discourse is acquired, stressing the primacy of a “home” or early-acquired Discourse over those learned later (e.g., working-class values or ethnic speech patterns over those of the dominant culture, giving rise to troubled dialectics on encountering dominant alternatives) than Jasanoff does on the origins of civic epistemologies, implicit in both is the notion that while a default set might be acquired early, later substitution is possible.

One of the most striking features of the merger was the discovery that the participants with the most vigorously asserted heterotopic values distinct from that of their dominant culture were all American lawyers, and, as well as could be ascertained within CDS/AA practices of identity disclosure, arguably the most privileged; while those most tightly attached to their epistemologies/Discourses of origin were all European social democrats. Intriguingly, an interrogation of the two Discourses suggests an answer: the anti-statist values common among privileged Americans contain at least a seed of frontier heterotopianism framing the state as removed, grasping, and out of touch with local practice, while Western European foundational narratives framed the state as the people’s institutional defense against the capricious use of monarchical power. Nearly every political statement on both sides – and they ran in total to the better part of a million words during the period of merger – never left those frames, but never articulated them either.

Elements of the AA and CDS Discourses were largely inchoate among community members during the period in question. That the communities did things differently, that some of each group’s practices were distasteful or incomprehensible to the other, was abundantly clear and widely discussed. However, as both communities

stated that their core values were “democracy” and “participatory self-governance,” a majority believed that there were sufficient grounds for merger. Yet during the merger year, discourse across the wings of the legislative hall became steadily more shrill and incomprehensible to the other side. The CDS accused AA of being a dictatorship, when its members saw it as a managerial near-anarchy. AA members accused CDS politicians of being out of touch and potentially criminally secretive; the CDS saw itself as engaged in a universal, not local, politics and of asserting privacy as the bulwark of freedom. Literally neither could understand what the other was saying, leading to increasing assumptions of individual ill will.

As an elected legislator during the merger period, I was part of the problem: my “participant engagement” (Pearce and Artemisia, 2009) involved my playing an active role as Assembly member from Al Andalus in precisely the same way that hers involved being an active member of raiding and social groups in her communities of study: CDS/AA politics, like a WoW raid, was not truly meaningful as a spectator sport. In many ways I was the average AA political activist: an American lawyer of middle years with nonprofit management experience and a libertarian bent: I was able to authentically perform my role. What I did bring to it, however, was an academic toolkit for reflexive analysis and description, and three years’ experience with heterotopic failures in virtual worlds. I began by blogging my own assumptions and analyses, using those as a starting point for dialog across the political divide. Through individual interviews, essays on my blog which were publicized within the community, and threads on the active official forum, my interrogation began a process of participants articulating the elements of their own Discourses.

One forum thread in particular, “Love Me, Love My Friends,” (Bagheera et al., 2010) spanning the week in which the merger was terminated, evolved across 44 posts,

many 2500 words or more in length, to evince a growing recognition that the conflict grew not from personalities or factional politics, but from an incommensurability of Discourses. Some articulation of this notion had begun in previous weeks, in part in response to my discussion of the work of legal scholar Beth Simone Noveck, (Murakami et al., 2010) but it was only here that critical assumptions were brought to light. In retrospect, after performing discourse analysis on the forum thread, the two Discourses could be defined as including the following critical elements.

The CDS: We are Western European Social Democrats, on the Left in our national political cultures. We believe that individual liberty is protected only by strong state institutions, and that a weak state, along with direct democracy, leads to tyranny. Conflict and rudeness are a sign of a robust democratic politics: politeness is identified with fascism. As human nature is the same everywhere, politics is the same everywhere. Therefore, there is one ideal set of institutions, and that is those of the contemporary European nation-state, with a strong legislature and a weak executive. Also therefore, there is no particular reason to privilege time spent in the “physical” community of SL: the web forum is a better site for the lengthy verbal give-and-take that comprises politics. “Community” is not a meaningful unit of analysis; the state is, and the state is serious business. Deep pseudonymity – the refusal to disclose RL identity – is a core element of freedom. We are a small island of democracy in SL in a sea of unpleasant capitalism: we have nothing to learn from the rest of the SL grid. We believe strongly in democracy, freedom and justice. Politics is our purpose.

Al Andalus: Place matters. Al Andalus is a recreation of a specific place at a specific time, Medieval Spain prior to the *reconquista*. Identity derives from place and community, and RL and SL identities are inextricably linked, though privacy is important. Self-governance happens through the *umma* of believers or the town hall, where all can

Speak: if you don't speak, you don't count. We are American and Eastern European, with a Middle Eastern contingent which largely keeps to itself. We tend to a mild libertarian capitalism, and see a strong state as the primary threat to individual liberty. We believe in consensus, which is indicated by mutual respect and politeness. We are a part of the SL grid, and a center of many overlapping but distinct social groupings, from fans of Flamenco guitar to Islamic conservatives. We believe strongly in democracy, freedom and justice. Providing a safe space for members of diverse cultures to meet and interact is our purpose.

Thus, the Discourse roots of the conflict were fairly subtle: both groups articulated their core values with the same words. Both found the other's manifestations of those values strange, unappealing or incomprehensible. Both responded by accusing the other of not in fact having the values they possessed, and indeed of betraying those values. The conflict grew to be more intense, bitter and personal the more those core values were invoked.

In a key post within the thread, CDS co-founder Gwyneth Llewellyn linked her experiences growing up in Salazar's Portugal to the notion that rudeness is a sign of a healthy democracy. This was the turning point of the "Love Me, Love My Friends" thread, and perhaps of political discourse in the CDS, as for the first time the key elements of the CDS Discourse were all discernible and contextualized. While Llewellyn was apparently alone in growing up under fascism, the thread indicates that her views resonated with a key Swiss member of the CDS conservatives as much as they appalled two American lawyers (myself and Jamie Palisades) who weighed in in opposition.

Jasanoff describes how debates over biotechnology, while often framed as ordered by a rational ethics, were in fact driven by "broader, more powerful national narratives." (Jasanoff, 2005, p. 201) Here, debates ostensibly about personalities and

finance were similarly driven by powerful narratives about the nature of freedom, rooted in national culture and experience, that were almost never articulated by any of the participants. It required both a year of extensive and informed conflict plus deep theoretical analysis after the fact to find the root of the problem, one practically identical to that driving the differences between political debates over biotechnology in Jasanoff's study. This obscured conflict suggests the value of a warning to cross-cultural engagement with the politics of technoscience: participants would be well advised to check their assumptions at the door, as it were. There may be a role for persons trained in anthropology, linguistics and dispute resolution in advising and preparing such teams prior to their work and on the first signs of disputes driven by mutual incomprehension.

c. Membranes and Pseudonymity: Responses to Socio-Technical Innovation

The activists from AA articulated the notion that the specifics of communications technologies affect the shape of political discourse, that place matters, and that what needs to be governed should influence what tools of governance are chosen. They saw the SL medium as enabling the *umma*, or synchronous, co-present, consensus decisionmaking, while generating a particular set of issues requiring governance. One set involved the use of SL's property-management tools, analogous to issues of municipal governance, including nuisance abatement and use of common property; while another set came from the multicultural nature of the community: Should non-Islamic members be required to dress modestly? Should visitors be required to remove their shoes on entering the mosque? After Springvale assumed the primary management role, AA ended explicit modeling of RL political structures (Manen's attempt to create an electronic caliphate). While hosting numerous events related to RL politics from academic conferences to current-events chats, its politics remained local.

AA had a semi-permeable membrane: it was a space distinct from that of the dominant order, with emergent processes developed in response to local conditions, yet acknowledging and interacting with that order, with an explicit mission to export its own practices into metropolitan practice in time.

By contrast, most all of those notions were opposed by the CDS conservatives, who were willing to acknowledge that their experiences in their national-political cultures of origin shaped their views, but rejected the notion that the dichotomy between SL and RL (very hard augmented reality in Jurgenson (2012b)'s terms): online versus offline, very low barriers to entry versus very high barriers, an economics of natural scarcity versus one of artificial scarcity, strong and legitimate means of resolving disputes and punishing wrongdoers versus weak to nonexistent institutions and tools – would merit different conclusions. The structures of the dominant order were optimal, universal and exclusively legitimate: there was nothing of value outside the impermeable membrane encompassing their own values and practices. This approach had delivered extraordinary stability: what the failure of the merger proved was that it had come at the cost of even the conception of systemic resilience as a positive value.

As discussed extensively above, a foundational notion in the study of games and virtual worlds is that of the “magic circle.” (Huizinga, 1938; Lastowka, 2010; Nardi, 2010) This concept holds that game spaces, and by extension, both game- and non-game virtual worlds, are “places apart,” in a legal, cultural and psychological bubble separate from “real life.” The strong pseudonymity of the CDS conservatives follows in the magic circle tradition: real life identifiers are largely obscured, and to ask for them from others or show off one’s own is considered a significant breach of propriety. This approach also follows from the maintenance of an “iron membrane” generally: nothing outside is important or valuable. Ironically, in this respect the CDS in the period of the merger was

among the last bastions of frontier identity in SL: from the time of the CDS's founding to 2009, values had inverted: while in 2006 few identity-transparent active participants in SL could be found, by 2009, some substantial level of transparency had become the norm, and total transparency nearly universal when non-trivial sums of real-world money were involved.

While the political discourse of the merged community was extensive and sophisticated (despite holding three university degrees related to governance processes, I struggled to understand the Single Transferable Vote system in use in the CDS), until its final days it was marked by CDS members' lack of recourse to personal RL experience or status, despite their powerful adherence to RL institutional models, while AA members did invoke their professional qualifications and experience in challenging their own, and the CDS's, dominant structures. At one level, this is purely a mangle (Steinkuehler, 2006; Pickering, 1995): identity politics and institutional politics manifested contradictory valences. The mangle can be ironed out, though: what emerged from the "Love Me, Love My Friends" thread was assertions by activists on both sides that their *savoir* and their *connaissance* within the dominant realm of action informed their civic epistemologies, even when those epistemologies were internally inconsistent. Thus, the Americans asserted the role of civil society against the state in terms straight out of Tocqueville while justifying dominant practices of identity transparency; the Europeans asserted the sole legitimacy of the nation-state while believing that a key value, freedom, lay in anonymity vis-à-vis each other as well as the state. These values were contradictory in SL, but they were importations of contradictory civic epistemologies from members' national-political cultures of origin.

d. Democracy, Not Parties: a Values-Conflict Microcosm

The odd antinomy of “democracy, not parties,” a campaign slogan of the CDS conservatives during the campaign for the 13th RA (referring to dance parties, rather than political parties), and repeated in the “Love Me, Love My Friends” thread, captures the dialectic between emergent heterotopic and external, dominant values and practices. The CDS saw all issues through the lens of the state apparatus: thus non-state action was at best a distraction: as the conservatives said, the CDS was a community about politics, and citizens should commit to that, while they could attend parties anywhere. AA, however, focused on interpersonal relations and community – lacking as it did any actual political, as opposed to managerial, structure at all. The condemnation of dancing also points up differences in the membranes of each community. As Llewellyn’s “I don’t want to change” post indicates, the general view in the CDS was that they had nothing to learn from the larger world of SL, and thus no particular need to be open to it. AA, by contrast, actively solicited people with interests other than politics, primarily through weekly live flamenco concerts and other social events, and a good number of its citizens came for the quality of the architecture and the social diversity, never participating in governance in any way, and were welcome to do so.

AA was thus a civil society, like most any: disparate, occasionally overlapping groups and social roles, largely composed of people pursuing their interests and living their lives, with no particular interest in politics. That this was the case under Springvale’s management, after Manen’s failed attempt at creating a polity, is an instance of the general failure of political communities in SL and the universal dominance of property management models. AA was not a political entity: at most it was a locus of cross-cultural encounters, which diminished steadily as first the radical jihadists left, then the Islamic conservatives, and finally the Islamic moderates, to

communities of homogenous Discourses. Yet it was clearly heterotopic: it attempted to use the affordances of the medium – architectural construction, synchronous avatar-to-avatar communication, global access – to accomplish something substantially different, a global space of culturally-tolerant discourse. The CDS attempted to reinscribe the nation-state upon a new space, an act of pure colonialism, little different from the dominance of the planned-community model except in its unpopularity. AA was an experiment in technologically-assisted direct democracy, of a kind with the experiments of Italy's Five Star Movement, or Pirate Parties International, in an explicit break from state-supported capitalism.

The CDS, however, fought against its own emergent civil society, defining itself as a political thing, not a public thing. In practice, all but about 10% of the CDS electorate was as apolitical and social as anyone in AA: a popular nightclub in the heart of CDS drew a nightly crowd equally drawn from both communities during the period in which the handful of activists were slagging each other on the forums. That the CDS perspective parallels that of LL: a refusal to acknowledge the legitimacy of emergent, uncontrollable, random civil society is no coincidence. Both were agents of aspects of the metropolitan global order, in twin shadings of the same technocratic core. The CDS leadership explicitly rejected resilience: it was perfect and could only be corrupted by exchange across the membrane. Malaby (2010, p. 133) claims that LL implicitly did the same thing: his thesis is that LL managerial practices were an application of the idea that “such complex systems [as emergent SL culture] can be contrived, in their entirety.” This is of course the fundamental belief of technocracy, whether the contriving instrument is state regulation or software code. The CDS/AA acrimony, split and resegregation was simply a local manifestation of the global clash between metropolis and frontier in SL, and as shown above in the cases from WoW, virtual worlds as a whole.

Chapter 6

ABSENT OR UNDONE: AGENCY AND IDENTITY IN PLACE

As described in Chapter One, models of innovation and social change include as a crucial element, explicitly or implicitly, a certain sort of person, someone seeking agency outside the dominant system. These people were certainly present in virtual worlds in the 2008-2010 period, forming Castronova's (2007) "exodus to virtual worlds" and in a broad range of SL's communities. The conventional narrative of innovation and exploration has been told repeatedly, yet it is misleadingly incomplete. There is another story, one of a desire to shed agency, to be commanded, to experience more severe strictures than one's ordinary life provides. In WoW this manifested in pyramidally-structured guilds in which the lower ranks were by far the most popular. In SL, D/s relationships and slave roleplay were among the platform's predominant uses. This chapter argues that these phenomena emerged from the often-unexpected interplay of unmet desire and software affordances. The pioneers of virtual worlds, then, were in no small part seeking to use the technological innovation to create a space outside the dominant order in which they could express an aspect of themselves in a manner in which they otherwise could not, but that expression was one of submission rather than agency as generally theorized.

Two generations of technology before the 2003-era platforms, both academic and popular literature suggested two contrary narratives of identity: the extensive literature on MUDs divides into stories of utopian exploration of identity (e.g., Dibbell, 1999) in the vein of Vinge's (2001) "True Names," on the one hand, and on the other, readings of the platform as merely enabling synchronous, geographically dispersed socializing (e.g., Cherny, 1999). In those cases, one of the distinguishing factors was context of use: Cherny's "inhabitants" of a text-based replica of an actual Minnesota

house were primarily programmers who accessed their MUD from work, using it as a later generation would use chat clients: a means of embedding isolated corporate work within a social environment of their distributed peers. By contrast, the well-documented LambdaMOO was largely accessed outside the work environment, at home or by students after hours in university computer labs, physical setting alone shaping a more playful and experimental set of uses. A decade later, the same tensions were discussed and negotiated among users, in a divide generally expressed among SL users as between “immersionists,” who manifested deep pseudonymous identity and held strong views of heterotopic place, and “augmentationists,” (drawn from Bennetsen, 2006) who used the platforms as extensions of their physical identity, particularly in a context of the corporate workplace: a simplified version of Jurgenson’s (2012b) schema of soft and strong digital dualism and augmented reality. The 2003-era platforms were the site of a complex dialectic between work and play, between hegemonic practices of the dominant means of production and emergent heterotopic *connaissance*, with each side manifesting in unexpected places and means. Given the platforms’ roots in both entertainment and work, and with the overlap of those two categories through their presentation in corporate media, a dialectic was unsurprising. What did prove surprising was the extent to which users not only reinscribed hierarchies, but actively sought out experiences of subordination, and built emergent cultures in which the dynamics of dominance and submission were more explicit than in daily life. Where Castronova (2010) saw “the virtual” as a rival good to the corporate workplace, the picture that emerges is one of simple and transparent performative hierarchies as a rival to the complexity of self-definition and status in a global mass culture.

Section 14: Mutual Shaping of Code and Consumers

The feudal/corporate social pyramid, both forced by software and desired by most users, became the universal social structure: egalitarianism and self-governance were perhaps the least popular applications within the worlds. Unquestioned assumptions that such things were the antithesis of fun – often in an environment grounded on repetitive tasks – highlight the general triumph of consumerism over citizenship as a dominant ideology.

a. Cracking the Black Box of Fun

No concept has been more problematized in games studies than “fun,” (e.g., Koster, 2004; and systems of player typologies such as Bartle, 1996) yet it seems to remain a black box for many, uninterrogated at the personal level and unseen as a cultural construct with transitory content. What fun is seems self-evident to us, but it is not. Over the past half-century American fun has lost many of its elements of egalitarian self-organization in favor of becoming a managerially delivered commercial product, in exactly the same way as towns and public spaces have, documented in Section 5 above. Conversely, activities seen in mid-century as if not outright fun, at least a necessary component of social life – those of organizational management and civic participation – have come to be seen as the antithesis of fun, to be left to hired managers. While the pyramidal structure forced by software upon MMO social organizations both constructed and was constructed by the rarity of active governors and the popularity of submission to authority, the unexamined cultural underpinning of these phenomena was a changed definition of fun.

Salter (2012) succinctly describes the evolution of modern adult fun out of a European-American culture shaped by Protestantism and Rationalism in which it was

deeply suspect. A combination of bourgeois leisure time and disenchantment with the values and spaces of industrial modernity led to a tentative opening of room for adult play – as always, with the caveat that it be kept from the weak-minded: women, children, and the working classes. Saler describes how a certain sort of intellectual, ironic playfulness arose around Sherlock Holmes and later pulp characters (although his analogizing them to virtual worlds is deeply flawed – he falls into the same trap as Bainbridge (2010) of interpolating into them his own love of narrative, despite the predominance of contrary evidence), a species of the genera of fun assumed by Huizinga (1938): precious (in both senses of the term), sheltered and distinct from “real life.” According to Saler, the emotive and cultural content of fun, its permitted agents and boundaries, were tentatively and carefully negotiated by the Edwardian generation. He stresses the social and (relatively) egalitarian nature of pulp proto-fandom in a case to which the Resilience Engine beautifully applies. Most permissible fun was either under greater institutional control, as a bulwark of the modern state as in the formal organization of play into sport, often with nationalist overtones (Lewis, 1992), or more cautiously segregated, as in Olympic sports. Meanwhile, new entertainment media, from ubiquitous and cheap newsprint (which enabled the cross-class popularity of the Holmes stories, per Saler), to the paperback book and movies challenged the class boundaries of permissible fun, in yet another case of the Engine at work.

American fun, while cross-fertilized with its Anglo-European counterpart, was less broadly transformed during the turn of the last century, aside from the impact of new entertainment media: it continued to be egalitarian and social, as described by observers from Toqueville to Lessig, reflecting on John Philip Sousa’s insight into the early professionalization of American fun. (Lessig, 2008) Putnam’s 1950s bowling leagues, technology aside, would be immediately recognizable by Americans of the 1780s and

1900s alike: self-organized, egalitarian, governed by formal procedural rules. Yet, the professionalization and commodification of fun pointed towards by Warren and Brandeis (1890) and Sousa's 1906 Congressional testimony (cited in Lessig, 2008) was about to reach its tipping point into predominance, as Putnam (2001) documents.

The 1990s saw a counter-hegemonic rise of online communities of fun, in which a sort of fandom remarkably similar to Saler's early 20th Century cases played a crucial role (e.g., Bury, 2005). The tale of empowerment of users creating content in *The Sims* told by Gee and Hayes (2010) has essentially the same narrative line as Bury's account of early Usenet *X-Files* fanfiction writers and Sousa's streetcorner musicians. The forces encouraging new communities of fun closely paralleled those of the previous century; that they arose when they did and migrated from text-based, asynchronous technologies into those of the MMO is not surprising: what is surprising is that their moment was so brief. The developers of the platforms studied here shared the values of those communities, as documented in Section 11's case study. WoW's lineage as an electronic game, and particularly as the multiplayer successor to a popular series of solo-player computer games, positioned it at the fulcrum of a new tipping point into asociality, managerialism and consumer entitlement: SL's more radical California Ideology, manifest as a refusal to assume an activist social engineering role (Au, 2008a), along with its conceptual origins in the Burning Man festival (SL had its parallel, Burning Life, from 2003 through 2008 (SL Wiki)) positioned it as more heterotopic and less metropolitan, yet its designers have struggled with a customer base of consumers, quite different from their imagined users, amateur designers of software objects. (Malaby, 2009)

Both platforms reached a point between 2008 and 2010 where users' conceptions of fun differed as profoundly as those of democracy did in the SL

communities discussed in Section 13, and for similar reasons: what fun is seemed self-evident prior to long conflicts over contradictory assumptions. Virtually all this shift was driven by demographic changes: much has been written about the social culture of early WoW (e.g., Ducheneaut et al., 2006; Nardi, 2009; Chen, 2011) as well as that of SL (Au, 2008a; Boellstorff, 2010): the “frontierspeople” of those platforms largely shared the Turnerian views and practices of the designers; while the greater numbers of later adopters, in SL after the 2006-2007 hype peak and in WoW after the nerfing of the *Burning Crusade* expansion were largely not veterans of the “Internet frontier” of the previous decade: the *savoir* they brought with them was bound to clash with the designers’ and early adopters’ *connaissance*, and it did.

b. SL’s Group System: Coding for Feudalism

The SL and WoW HUDs, discussed generally in Chapters 4 and 5 above, included both communication and social-organization tools. Unlike other elements of their HUDs, neither could be altered in ways that would transform the organizational structures implicit in their design: both mandated an all-powerful leader with certain non-delegable powers, and a pyramidal structure of levels of authority and access. Both platforms had fairly standard chat clients, enabling face-to face “speech” carrying some limited distance in the world, and private individual and group instant messaging.

WoW’s social-organization tools, and most of its social engineering, as discussed in Chapters 4 and 5, were built around the social institution of the “guild.” Player self-organization into collaborative groups to manage common-pool resources was seen as emergent behavior as far back as the late 1980s graphical virtual world *Habitat*. (Morningstar and Farmer, 1991) Guilds became the standard, codified tool for organization in virtual worlds, “guild” being the generic term, while some worlds used lore-specific equivalents: “fleet” in *Star Trek Online*, “kinship” in *Lord of the Rings Online*.

The mangle of designer assumptions and expectations, contrary user desires, software patches, user mods and social hacks associated with guilds through WoW's history could be a book-length work. Suffice it to say here that the software mandated a single Guild Master with some non-delegable powers, who could not be replaced by members. The software provided for a pyramidal structure of up to six layers of management, each with powers enabled or disabled via a checkbox by people in the layers above. The feudal/corporate pyramid was a fair fit for large raiding guilds, the ideal type in the social hierarchy – noting that “large” was subject to a cap of 2000 members, forcing hacks by truly large guilds, such as the Taint complex (The Spreading Taint, 2011). Yet most players, most all players by percentage of the total, played with a small number of close friends, often known offline. While these social groups may have tended to be less plagued by disappearing GMs than high-activity, high-burnout raiding guilds, the pyramidal structure could be an awkward and artificial imposition. My guild, Future Tense, tried not to have a king, but to create an autonomous collective: we came close by putting everyone but the GM in the immediately lower tier, but it was impossible to create a coequal power structure.

Needless to say, this structure drew academic attention, both favorable and not: A Harvard Business Review article lauded WoW as a source of training for young corporate managers; (Reeves, Malone and O'Driscoll, 2008) a left-wing academic indicted it as capitalist brainwashing. (Rettberg, 2008) The corporate analogy extended beyond inscribed management structures, however: the structure of MMO gameplay at its foundation is a model of Taylorist work: one performs routine solitary (Ducheneaut et al., 2006) tasks over and over in order to rise a level, which enables one to perform nearly identical routine tasks, but in shinier gear. This process iterates to the “level cap,” at which point elite players begin raiding: performing routine tasks collectively in order to

obtain shinier gear to qualify for higher level raids built around the same tasks but giving yet shinier gear. There are mitigations of this core mechanic, primarily through the use of narrative or lore (Bainbridge, 2010), but narrative elements add to, not supplant, the core “grind.” Given this sort of labor as the core activity of MMOs, layering a corporate management pyramid on top of it is sensible by extension of the analogy: it was not otherwise necessary, and subsequent iterations of the guild system in WoW and other MMOs have, while retaining some very strange socio-political customary mechanisms, have introduced flexibility into the pyramid model.

While the logic of WoW’s social-organization tools, to the extent there is any, follows from analogy from its gameplay mechanic, the logic of SL’s structure followed from its ties to its revenue model and billing system, which quite literally encoded feudalism in a way that user innovation could not overcome. SL, on the analogy to Burning Man, was initially envisioned as a space of communal creation, rather than a social network: building tools were foregrounded, and communication and social organization designed in support of building. The software enabled the creation of membership groups, but they were and remain tied to a structure which assumes the purpose of the group is to enable (and delimit) common access to land. The group tab in the HUD of the Version 1 client had four tabbed panels, two of which focus on property rights. However, from SL’s early days, members wanted to organize around issues other than land management: to provide event notices and commercial advertising in particular. Additionally, any avatar was limited for years to twenty groups: with the land-management assumption, this seemed entirely excessive, but with groups used for nightclub event announcements, retail sale and new product notices, declarations of affinity and identity (SL Republicans, Sexy In Glasses, WoW Players, ASU Faculty), many users found twenty a burdensome limitation resulting in constant pruning of their

membership lists. That users had adapted the groups function to different ends than the designers intended was long obvious, and while the limitation was arbitrary and the fix simple, the delay of many years before raising the cap to 40 in 2010 may be seen as one of many manifestations of the designers' reluctance to come to grips with a user base more social, and less focused on building, than they intended or wanted (Malaby, 2010; but cf. Au, 2012, who has long maintained the contrary).

LL's revenue model is based on "land sales" of two sorts: property rental on the mainland, which is "owned" directly by LL, and the "sale" of private islands. This requires a fair bit of clarification before proceeding into an analysis of the limitations of the group system, as, to paraphrase Inigo Montoya, in the SL context "owned," "sale" and "land" do not mean what one thinks they mean. To begin with, "sale" actually means rental: unlike conventional land sales, there is no fixed price, which, after being paid, gives the purchaser ownership in fee simple or equivalent: for SL land purchases, the monthly fee must be paid ad infinitum, and the property remains subject to owner limitations – minimal in the case of mainland "purchased" directly from SL, more extensive in the case of subleasing private islands. (Au, 2008a; Lastowka, 2010)

"Land," of course, involves acceptance of the metaphor: a reductionist argument, particularly given the pricing structure, would be that what is actually being paid for is a rental of server space at an exorbitant markup over current (though not 2003) market price: a purchaser of a private island rents $\frac{1}{4}$ of a standard server for a US\$1000 setup fee and US\$295/month ongoing – a price point at which one could buy a full server and throw it away each month, which may contribute to the decline in SL land rentals over time. Further, the constraining factor is not the square meter count of a parcel, but rather its "prim count," the number of objects it can hold. A 512 square meter parcel, while more than large enough spatially to support a virtual suburban home or shop, can only

contain 117 prims – and quite a few single pieces of furniture in 2008 would have a higher prim count. The low ratio of prims to square meters has been one of SL’s key design constraints: dense urban environments were effectively impossible to re-create, for this and other software features driven by LL’s “Burning Man” assumptions, including the inability to control parcel music on an apartment-scale basis, the inability to exclude an avatar’s camera gaze, and the spread of general text chat over a 20 meter radius. The software coded in favor of desert islands: vast empty spaces with a single-user residence. Given that prim count is independent of size (a one-meter box being made of the same number of prims as a 20-meter box, and far fewer than an intricate end table), and that land users had a lot of space to fill with a few prims, the “McMansions” so decried by a range of observers (Stenvaag, 2007; Au, 2008a) cannot be attributed entirely to unimaginative bourgeois fantasies, but also to unintended consequences of the software’s design limitations.

With this background (see the SL Knowledge Base, “Buying Land,” for a more confusing explanation), we’ll turn back to the group interface in the SL HUD. LL did envision the holding of land in common for group building; however, its billing system allowed only for individual liability. Even as LL sought, and achieved, significant corporate use, land regions could only be held by an individual, the only exception being one for US not-for-profit corporations in place between 2008 and 2011. The group interface thus stood as an intermediary between the individual billed by LL and the other users of the land, who logically were effectively subtenants, as the owner of record retained all liability. The owner thus simply could not delegate a range of responsibilities to anyone else, nor was any form of collective liability (including corporate ownership) even possible.

c. Patriotic Nigras: Making the World Safe for White Boys

The anthropology of grieving is far too complex a subject to be explored in a subsection, as it's a social phenomenon with ramifications far beyond virtual worlds, and indeed beyond the internet environments it happens in. My interpretation here of grieving as the wellspring of backlash by the privileged against those newly empowered by heterotopic internet groups and practices is controversial; nonetheless, I hold to it as an example of a predictable dialectic within the Resilience Engine, one which has lasted past the virtual worlds cycle into its successor discussed in Part Three below.

For our purposes, we can define grieving as a specific sort of disruptive behavior within a virtual world: pseudonymously undertaken, often exploiting features of software design or user interface settings, to disrupt a virtual community with the intent to cause offense, and based in an explicit, articulated ideology which rejects the possibility of heterotopia. Griefing is distinct from trolling, which is a speech act designed to provoke controversy, and does not necessarily have an ideological underpinning. While trolling was and is commonplace in WoW, grieving was not, in part due to technological constraints. By contrast, grieving was pandemic in SL in 2006-2008, declining to near zero in the 2008-2010 period and subsequently, as SL lost its hype-driven popularity and griefer groups found a welcoming home in the MMO Eve Online.

Technologically, grieving in SL was aided by several features of the platform. First, single-use avatars could be created for free in moments. Creating an avatar in WoW entailed purchasing the software for \$US 20-50 along with a monthly subscription fee of about \$US 15, after which avatars could be created quickly and anonymously. Creating an avatar, as explained in Section 10 above, was essential for any act of agency within the environment, even disruptive ones. After creating a free, anonymous and disposable avatar, typically either an aesthetically repulsive one, or one with

exaggerated, racially stereotypical features, a griefer was fairly free to act within the environment.

While the user interface included security tools, they were only accessible by region owners or their direct delegates, given the feudal structure of land powers in SL, and thus only usable when an owner or manager was online and present in the region. An owner could disallow the creation, or “rezzing,” of any objects or the execution of software scripts, as a standing setting, which would prohibit most griefing, but at the price of rendering the regions effectively unusable. Owners and managers could also eject, temporarily or permanently, any avatar. However, this ability was limited to a few individuals who had to be present at the time and place of an event, and could be effectively bypassed simply by creating another avatar and returning, in a matter of minutes. The griefer would then typically rez a simple object with a script that enabled itself to replicate endlessly – essentially a simple von Neumann machine. The objects would quickly multiply to physically fill the volume, unless the number of simultaneously running scripts crashed the server first. Additionally, the object would typically be offensive itself in some way: either bearing a racist or graphically sexual image.

Unfortunately, one of SL’s defining moments, in the press and in popular impression, involved a griefing incident which could and should have been prevented with routine attention to security. Anshe Chung, touted as the first dollar millionaire in SL as a result of her land-baron operations, was featured on the cover of *Business Week*, marking the peak of SL’s hype cycle (Hof, 2006). In December of that year, she gave a press conference in SL sponsored by the technology business publisher C|Net (Terdiman, 2006). The event was disrupted for 15 minutes by a griefer who created a self-replicating object, in this case, a flying penis, which filled the area and forced the conference to relocate, where it was attacked again in the same manner. Limiting both

object creation and script running during an event would become standard practice not long thereafter, but tacit knowledge had yet to evolve. The incident was widely reported, giving the impression to many in the business and education communities that SL was full of sexually explicit disruptions, making it unsuitable for use.

Griever targets, while occasionally random, typically focused on high-profile events by mainstream, RL, institutions, such as the C|Net press conference, or low-status minority communities, particularly “furries,” or anthropomorphic-animal avatars viewed by some as sexually deviant. Homophobic and racist imagery on self-replicating objects was commonplace. The choice of targets reflected the demographic makeup and ideology of griefers. Griefers are heirs to what Huizinga (1938, p. 11) defined as “spoilsports,” as distinct from cheaters. Cheaters, he said, respect the premises of the game and the boundaries of the “magic circle,” but break its rules. Spoilsports, by contrast, reject the premises of the game and the existence of a magic circle: they act to make its continuance impossible. In the virtual worlds context, the magic circle or membrane separated heterotopic community from the dominant power structure: according to the model of the Heterotopic Engine, persons inside the membrane would be those lacking or rejecting metropolitan status, and asserting identity and power in a place and means opposed to the dominant order – in short, uppity minorities. The breaking of the magic circle was thus literally an act to “put them in their place,” by destroying the coherence (or in the case of sim crashing, the literal existence) of heterotopic place, returning them to the place of the dominant order, in which the griefers held superior power. Thus, unlike the dialectics described in the previous sections, grieving was a negation of, rather than challenge to, heterotopic place, personhood and power.

A 2008 article in *Wired* magazine by veteran online-communities journalist Julian Dibbell (Dibbell, 2008) provides a comprehensive account, and performance, of grieving as reactionary counterstrike by the privileged against assertive minorities. The article begins with a photo of members of a grieving group shot to appeal to the *Wired* demographic: chino-clad plumpish white twenty-somethings, in a red velvet bar booth, drinking beer and smoking cigarettes. By contrast, one of their victims is presented later, photographed in her nondescript, definitely not posh, kitchen, with her back to the camera, a heavy-set, gray-haired woman literally presented in the most unattractive light. The boys have faces, and are having fun; the faceless woman is doing kitchen chores: each is “put in their place” by photographic construction: the men in upscale leisure, the woman in anonymous domestic labor.

The article continues to describe a concerted grieving attack by a group called the “Patriotic Nigras” against a Gorean community. While acknowledging that likely none of the group members are African-American, Dibbell states that “their blackface shenanigans, they say, aren't racist in any heartfelt sense,” but rather designed to induce outrage in their targets. After a detailed analysis of the origins and ideology of griefers, including favored targets of vampire fans and self-described Asperger's Syndrome sufferers, Dibbell says “griefers' fun might have something like a point.” Why? Because SL users regard it as “not a game,” and it had become popular with furies, “a specimen of online weirdo.” Not coincidentally, as the membrane of SL thinned, and heterotopic elements disappeared, so did the griefers, moving on to a congenial ideological home in the capitalist Social Darwinism of EVE Online.

While grieving and trolling have declined in SL and WoW, along with the platforms' heterotopic nature and an increase in tacit knowledge of effective countermeasures, they have passed into the larger internet culture, and are particularly

resurgent in 2012, with common targets being women involved in gaming and comics fandoms, “territories” claimed as the exclusive domain of middle class young white men. They are the shock troops of counter-revolution, working to exclude newly-vocal and – empowered minorities from the leisure spaces of the dominant class, and to disrupt heterotopic spaces.

d. Coding Limits on Design, Identity and Sustainability

SL’s property-management software enforced a feudal structure of pyramidal sub-tenancy and obligation, while its hardware-driven ratio of prim count to square meters selected in favor of low-density, large-size structures. In combination with broad uptake of the metaphor by which SL customers were called “Residents” and land purchase as LL’s predominant revenue source, the period prior to 2008 saw a transformation of the landscape of SL into highly touted but unpopulated design wonders on the one hand, and mansions on desert islands on the other. Both were mangles of conflicting designer and user intent and unintended consequences of hardware and software design.

The “beautiful but empty” phenomenon can be attributed to two attributes of SL’s designers: a misunderstanding of the consequences of the differences between spaces of carnival and spaces of heterotopia, and having designed a product for fellow designers that had been kludged into service as a social networking platform. SL at the beginning of the hype cycle was the product of an initial userbase conforming to the designers’ expectations: fellow designers, acting on the “Burning Man” model of mutual admiration of exotic creations. Designers created showpieces intended to appeal to fellow creators who would appreciate the craft involved in the first instance, and only secondarily to a general public. In the Burning Man environment, a participant would

travel around marveling at creative builds for a few days, and then leave. This was in fact the common experience of people drawn to SL by media accounts: LL had gotten the results it had designed for – just not results which fit to its business model, based on builders paying \$295 a month indefinitely for a few people a day to drift by for a handful of minutes, marvel, and leave. The “cool builds” model was unsustainable – which is why Burning Man lasts two weeks. Most people – and again, billing responsibility could only be vested in single physical persons – would want to minimize their ongoing costs if they sought to remain landowners. Revenue generation was necessary, and two revenue sources were available: retail sales of virtual goods and subleasing of property. Thus SL’s billing model influenced its users toward commercialism, which drew designers of retail goods rather than architectural wonders, and consumers to purchase all of them, users LL never envisioned nor arguably understood.

The other common observation about SL, the “McMansions” phenomenon, had origins as much in software as in limits of users’ imaginations, as discussed above, but the phenomenon was driven by more than the ratio of land dimensions to prim count described immediately above, which favored large simple structures on solitary islands. Two other factors had significant impact: LL having lost the ideological war for anarcho-capitalism, and management companies as a solution to feudal-lord burnout. Early SL was designed as an anarcho-capitalist paradise: erstwhile Linden employee and insider Au refers explicitly to Nozick and other libertarian philosophers in the context of SL’s early days. (Au, 2008a) Nozick’s (1977) model of minarchy is one of small contiguous self-organized communities, each experimenting with a theme, culture or system of governance, with no barriers to entry or exit so that people can sort themselves into the best possible fit. In theory it generates a checkerboard of twee little microstates; in practice it generates Houston, or early SL, in which a lack of zoning results in nearly

everyone having undesirable neighbors. In response to pressures from users who wanted a more coherent environment, in 2007 LL instituted private islands as an alternative to the mainland: these islands could be covered by a zoning ordinance (in SL parlance, a “covenant”), enforceable by the owner of record (Lastowka, 2010). Perhaps ironically, it was the private island/covenant system that enabled something much closer to Nozickian microstates: one of the first users was an immense steampunk community, able to enforce a consistent theme across dozens of regions. (SL Wiki, “Caledon,” undated) Roleplay and themed communities proliferated as investors purchased dozens of sims, landscaped them to theme, and sublet parcels subject to covenants much like those of a suburban Homeowners Association. While Asian themes were popular and snowy regions could be found, the big seller was the tropical beach. To be sure, tropical beaches figure prominently in many people’s imaginings of the good life, but there was an additional reason for their popularity: carving a 256 by 256 meter region into personal-sized islands in an archipelago effectively doubled the prim count owners could rent: if a sim was half water, and thus not hosting any prims at all, the sim’s full prim count would be available for use on the land spaces. Other designs used parkland or roads as “prim farms” to add to useful prim count, but the simplicity, attractiveness and popularity of the archipelago model made it a major seller. Again, with a big house not necessarily using more prims than a small one, aesthetic balance suggested larger structures, rather than a tiny structure on an empty island. In envisioning a large structure appropriate for a desert island, the luxurious mansion was about the only alternative, and as the use of software-coded vehicles was one of the more fun pastimes within SL (airplane squadrons and sailing clubs being on the short list of enduring institutions), finding a large mansion with helipad and dock on a desert island could be

attributed every bit as much to hardware and software affordances and constraints as to the Babbitry passing pundits tended to find.

This work generally attempts to unpack the distinct, if mangled, roles of code and ideology in generating social outcomes, resilient or entropic, in virtual worlds. Some cases are straightforward: WoW's social engineering via the dungeon finder was the sort of modernist central planning gone awry that Scott (1999) documents in his cases of technocratic state action. SL's basic structure, if not its social tools, was a logical product of its designers faith in laissez-faire and empowerment through software creation tools. Many ideological clashes resulted, simply enough, in retreat and closing of the membrane. Yet some, like the transformation of SL from Burning Man to Lifestyles of the Rich and Famous, are more complex than generally regarded, as code had counterintuitive social effects, which then fed back unpredictably throughout the sociotechnical complex of designers, users, code and ideology. Once again, Hodder's (2012) caution to return to the thing, Bogost's (2008) unit operations, Chen's (2011) software actants, along with the present cases, suggest that any analysis which fails to fully consider the material specificities of each sociotechnical assemblage may lead to a fatally flawed analysis.

e. Beyond Bowling: Burnout and Auto-Disenfranchisement

Meanwhile, anyone seeking co-present community, rather than the quiet anonymity of an archipelago home for one or a few people, came up against the limitations of the intersection of the feudal structure and a general unwillingness to share the burdens of management. There were few if any added technology-literacy burdens to sociality over solitude: the greatest challenges of the platform came from the quirky vocabulary of the interface itself and in interactions with inanimate objects: as the chat

client was nearly the only thing that worked like its non-SL analogs. SL generally followed the WoW pattern of “alone together:” (Ducheneaut et al., 2006) interacting with the world alone while chatting with friends over the built-in instant-messaging client. But unlike WoW, which was grounded in a Taylorist labor model, SL’s emergent model was one of consumerism, necessarily implying the display of conspicuous consumption (which WoW was by no means immune to, but it was not what the place was about, the way WoW was about the grind and SL about display, whether of architectural builds favored by the designers or of fashion and consumer goods favored by the users). Well over 90% of those who tried SL left shortly, primarily citing the apparent lack of social interaction. SL sociality was opaque to the locally illiterate, but it was the point of the whole thing, shaped by the need for retail income created by SL’s pricing structure and the original vision of the platform as a creators’ festival. The isolated island home appealed as a domestic, much more than solitary, locus: even island domesticism implied a publicly-made connection of someone to be domestic with. Thus, nearly everyone who stayed in SL, other than the dwindling number of original solitary builders, ventured into SL’s social life.

That social life, though it was not generally clear for some years, was almost inevitably the product of charismatic local leaders, whether nightclub hosts, community managers or book club organizers. Given that it was both hard to delegate, and few sought delegable powers, maintenance of a community - as many found in this period for internet-based communities broadly – required a major time commitment from, if not the feudal lord, an earl of events. Communities lived and died by the energy level of, typically, one person: Al Andalus only lasted to the end of its billing cycle after Springvale’s burnout, and the sci-fi-themed community of Extropia went into precipitous decline after Stenvaag’s departure. The “Events in Extropia” blog had twice-weekly

entries until Stenvaag's departure in early 2009, and none subsequently. The main Extropia website has not been updated since July 2010. I left SL after the collapse of a Minoan roleplay community I was involved with, sustained for four years on the energies of a schoolteacher who eventually found the time, effort and cost too much to bear. Despite the efforts of the Minoans, myself included, to collectively organize a new home, without the commitment of a single driving force, they came to nothing: ten people contributing two hours a week proved vastly less effective than one person contributing twenty.

This is a natural dynamic: by definition, few are leaders. Yet, the history of politics is one of transferring from a solitary individual to an institution the social costs of community: even absolute monarchs relied on a tightly-organized feudal structure for war, justice and tax collection, communist leaders sat atop a vast technocratic bureaucracy. With regard to the politics of fun, the process has been no different. Huizinga (1938) decried the institutionalization of fun into sport; the ancient Greeks would have considered him several millennia too late. Where in many countries sport became the state-approved canalization of adult fun (see Lewis, 1992 for a remarkable account of capoeira's transition from heterotopic/revolutionary slave art to Brazilian national sport), American play along the frontier took a different form. Tocqueville documents at length the propensity of post-revolutionary Americans to organize into a vast array of self-governing societies for various forms of socializing and play; this tradition remained strong up through Putnam's (2001) bowling leagues of the 1960s. Yet, as Putnam describes, a radical transformation took place over subsequent decades in American practices around social fun: as with Sousa's sharp observance of the transformation of music from pastime to product, (in Lessig, 2008), social fun in the 1980s transformed from pastime to product. Along with that transformation, the burden

of production and maintenance shifted from citizen/creators to professional managers. Management of the infrastructure of fun became practically and conceptually divorced from the consumption of fun. LL's founders and programmers, representative of early internet culture more generally (Dibbell, 1999; Rheingold, 2000; Turner, 2008), held old-school values of the democratic production and management of fun. Their users did not.

We Minoans wanted to continue what we thought was SL's best community, but where King Minos found the burdens of community sustenance fun enough to devote 20 or more hours a week for years to the Empire, the rest of us did not. Likewise, Al Andalus, despite its press coverage, steady significant turnout for weekly events, and relevance in the era of the Arab Spring, continued solely on Springvale's commitment: though I held the title of "Director of Communications," and other members of the VDI corporate board had responsibilities and commitments, none of us considered running a community fun, and those that did had an outside limit on the length of time in which it was. Extropia drew A-list authors and public figures – precisely as long as Stenvaag was its Director of Communications.

This observation, across the three communities I was actively involved with (Al Andalus, where I was Director of Communications; Extropia, where I was an advisor to the Board of Directors; and the Minoan Empire, where I was scribe to the King, though it also holds true for a fourth where I was an active attendee but had no position, The Savoy Jazz Club), offers an opportunity to interrogate the nature of social, or more accurately, civic, fun, with significant implications for democracy more broadly, at least for democracy in the heterotopic, frontier, Turnerian sense of the term.

Putnam (2001) extensively documents the decline of associational participation among Americans after 1960; Warren (2000) observes the strong consensus among political scientists that, *pace* Tocqueville, the strength of a democracy lies in the

“robustness of its associational life.” This line of thinking holds that, through American history from Colonial days until the mid-1960s, American democracy was a skill learned in practice – not, in the first instance, in local government, but in the mutual governance of voluntary associations, from religious to political to recreational. It was in these groups that Americans learned parliamentary procedure, negotiation, compromise, the arts of campaigning and governing. Some would choose to enter into the formal institutions of government; most would have *connaissance* by which to judge the performance of those who did. At a more fundamental level, participatory self-governance was reinforced as a norm, both expectation and obligation, which then extended into more state-focused participation such as voting and jury duty.

Putnam documents the extensive transformation in American participation in the period from roughly 1965 to 1985; he ends by speculating that only the new realm of online communities might counter the trend of decline. We saw above that early internet activists shared Putnam’s view: from fannish communities on Usenet (Bury 2005) to MUDs (Cherny, 1999) to the WELL, source of the term “virtual community.” Rheingold (2000) and Turner (2008) trace a desire to reinvent participatory civic culture from the hippie commune movement directly – via a handful of common activists – to early internet culture. By way of the Electronic Frontier Foundation and Burning Man, SL is in direct lineal descent of this Bay Area-based movement to reimagine the egalitarian construction of new forms of community to serve the old ends of building democracy through practice.

We’ve shown how LL intended Burning Man but wrote code for Lifestyles of the Rich and Famous; nonetheless, the affordances of the platform were just that – they were not deterministic. Yet SL only produced a small handful of participatory communities, and only one with an elective, albeit entrenched, leadership cadre. The

experience of those communities answers why: while there were some democratic aspirations, there were profoundly few practicing democrats.

That observation, one of the surest things to be said about 3D online communities, if not online communities generally, points to the flaw in extant models of innovation and social change, from Toqueville through Turner to Boyd and Spar; they all assume a critical mass of those who would “rather rule in hell than serve in heaven.” (Milton, 1667 – read a book!) Even among a population seeking community – it was after all one of the few things SL affirmatively offered to retail, as opposed to corporate and educational, customers – both will and skill were so rare as to have been found in a bare handful of persons in SL’s middle years. There was no shortage of highly skilled designers of retail goods: SL’s fashion creators generated the vast bulk of \$1million a day in peer-to-peer transactions among SL users throughout the period. Likewise, millionaire land barons made the cover of Business Week magazine (Hof, 2006). The only thing in short supply was people willing to provide the infrastructure of fun.

Thus, even as SL’s demographic skewed heavily towards the flower-granny hippie demographic most likely to seek virtual community (Au, 2008d) what proved missing was not only the how-to of self-governance *connaissance*, but a concept of fun which included the obligations of management of the social. The same mechanism underlies the popularity of planned communities in the once-frontier West: they provide the reassuring framing of pre-mass community while outsourcing the responsibilities to corporate management. This is also symptomatic of a sort of democracy in which the symbols of an age of popular self-governance are bought and sold, but actual practices are outsourced willingly by a populace trained to think of governance as distasteful and worth paying to be rid of.

This conditioning and lack of experience (the “lack of time” my friends and I complained about as we failed to resuscitate the Minoan Empire, was, as always, a red herring: one makes time for priorities: not having time takes us back to my point about not valuing the activity) run so deep that even among SL users, selected for a taste for community, and the subset of those drawn to one of the handful of actual self-governing communities, including a disproportionate number of American lawyers, only the CDS, stable at approximately 70 voters, has endured or escaped the trap of exhausting a single charismatic organizer. I would claim that it has done so by achieving perfect entropy early and not deviating from that state. Regardless, it remains the sole example on a platform actively used by millions for nearly a decade.

Section 15: SL’s Killer App: Cultures of Submission

BDSM-related practices were among Second Life’s most popular applications: the largest single group in the 2008-2010 period was users of an open-source slave collar, the largest assemblage of communities based on slave roleplay. While some theorized that the sensory constraints of the medium drove more extreme expressions, SL’s vast D/s infrastructure, and the shortage of Dominants, points to an unmet need for submission which found expression in SL.

a. An Introduction to D/s in SL, and Other Initials

The “democratic deficit” of tacit knowledge of self-governance demonstrated in virtual worlds is even greater than the previous section indicated. I believe my most significant observation of four years of ethnographic fieldwork was that, rather than empowering participatory governance, the killer app of SL in particular, and of MMOs indirectly, was submission. As early as 2006, Reuters columnist Warren Ellis observed that the most observable behavior in SL was the practice of D/s, in public as well as in

private. (cited in Jurie, 2007: the Reuters SL site he wrote for is long gone from the web) Group membership statistics back this up: by 2011, the SL group with the largest membership, nearly 80,000, was OpenCollar, an open-source software group which scripted avatar slave collars for D/s practice. (Au, 2011) Unfortunately, there has been no comprehensive study of D/s in SL, and little work done, in part for methodological reasons discussed below. What D/s is and is not merits explanation before turning to its prevalence and implications in SL.

D/s stands for Dominance/submission: capital vs. lower case is used to designate roles: thus one is a Dom/me or sub; Dom/mes and subs tend to refer to themselves in the appropriate case (e.g., “this is My will”). Overlapping with D/s is BDSM, for bondage, dominance and submission, and sadomasochism; a related term to D/s indicating more extensive practices is Total Power Exchange (TPE). Commonly considered a form of “kinky sex,” D/s practice need not involve sexual conduct, and often does not; rather it is about power exchange, the give and take of will. D/s and its close affiliates are consensual, and practices are typically carefully negotiated in verbal contracts. (Wiseman 1998 is a dated but comprehensive introduction to this community of practice) By contrast, Gorean practice (discussed in the next subsection) is founded on a notion of the impossibility of submissive and female consent, beyond the initial decision to enter into the culture of practice; once in, anything goes.

b. Gorean Exceptionalism

Gor is the fictional world of a series of pulp novels by John Norman, about a contemporary world sharing Earth’s orbit, but populated by a range of pre-modern cultures sharing an ideology of absolute female inferiority and the naturalness of slavery. (e.g., Norman, 1966 (2010)) Gorean roleplay, as well as “lifestyle Goreanism,” full-time

living by Gorean principles, existed prior to the internet, while forums and bulletin boards sprang up in the early internet era. However, it was in SL that Gorean practice exploded: in 2008 it was estimated that fully 1/3 of SL's private regions were Gorean communities. SL Gor is the exception to that which is generally experienced and discussed about SL, and sexuality on the internet generally, including this work on community. Gor is impermeable to outsiders, particularly researchers. Many Goreans, particularly veterans and community leaders, believe that Goreans and academics are natural ideological adversaries. In my attempts to conduct ethnographic research in SL Gor, I encountered, and was unable to overcome, a common set of beliefs: that academia was liberal and feminist, and thus inherently hostile to Gor's core beliefs in women's subhumanity; that previous researchers had entered Gorean communities, SL and otherwise, on false pretenses, and misrepresented what they experienced. Additionally, Gorean ontology is founded on essentialism, not just in its conceptions of gender, but generally. Amusingly, this was best explained to me in SL by a nine foot tall blue demon – but consistency is the hobgoblin of small minds. In their conception, a researcher taking on the role of a Gorean, master or slave, is ontologically incoherent and thus wrong: one *is* master or slave, the "roleplay" term typically a label applied by outsiders to what members see as an expression of inherent, undeniable and un-alterable nature.

I spent the better part of a year in email negotiations with an SL community leader and Gorean RL veteran: sympathetic to my research agenda, he advised me to lie about my agenda and gender if I wanted to study the Gorean slave experience. I found his suggestions and conditions incompatible with an ethical research agenda, and we failed to reach an accommodation. This was not an unusual outcome, explaining why, despite the vast scope of internet research on sexuality only Bardzell's work (Bardzell and Bardzell, 2007; Bardzell and Odom, 2008), and a superficial overview

(Sixma, 2009) have been published in an academic context. A few non-academic accounts have been published, from SL's heyday (e.g., Mistral, 2006) to the present .(Eulenberg, 2012a, b)

One noteworthy thing can be said, and was well-documented: in the 2006-2008 period SL experienced a normative clash between Gorean and mainstream practices, which resulted in the Goreans' disappearance behind an iron curtain of autarkic distance. An analogy to Al Andalus's experience with its Muslim contingents may well be offensive to both groups, but the parallels are strong. In 2006-2008, Gorean practice in SL was exploding, along with SL's general growth, and related to but distinct from other D/s practice in SL, as discussed in more detail in subsection (c). Goreans shared "the grid," the general SL environment, with the SL-dominant culture, but frictions ensued. Numerous retailers objected to Goreans on their premises with naked slave women in chains; confrontations over values were commonplace. Interestingly, while D/s practice became normative, Gorean practice was excoriated. For example, the OpenCollar (see subsection (c) again) was a common and generally accepted fashion accessory: it was not at all unusual to see panelists and audience members at corporate and academic events wearing them: I made a point of doing so at my numerous speaking events; the only comments I ever received were favorable ones from other users. Similarly, the primary academic conference in SL, Virtual Worlds Best Practices in Education, has frequently included a session by the founder of one of SL's many D/s schools, with a daily course schedule and certificates of curriculum completion. (Silverspar, undated) Meanwhile, around 2008, Goreans retreated to their extensive archipelago of private islands, and disappeared from general view on the grid.

That Gorean ideology and the California Ideology dominant in SL were incommensurable is unsurprising: nothing could be farther from techno-libertarianism

than slavery grounded in a pastiche of pre-modern societies. Not immediately obvious is why D/s became mainstreamed in SL. D/s bridged the two most powerful ideological/ontological expressions in SL: a libertarianism particularly grounded in a constellation of values in which freedom of contract was prominent, and SL's technosocial ability to meet a great unmet need for the expression of submission. The contractuality of D/s practice cast the submissive desire in a comprehensible, even ideologically laudable, light, while Gor's absolute rejection of consent was fundamentally antagonistic.

c. Restrained Life: Open-Source Agents in the D/s Public

Users discovered early on, as Ellis noted, that SL's object creation and scripting tools were ideal for facilitating D/s virtual practice. The "code is law" shibboleth (Lessig, 2006), the culture of open source software, and that of D/s found a perfect synthesis in and around the SL platform. The primary distinction between D/s and Gor was the contractual nature of consent in the former, and the ontological negation of consent in the latter. Yet this only covers the "legislative" level of the cultures; the "executive" remains. For Goreans, this is utterly unproblematic: might makes right, and demonstrates its dominance physically. Coercion is impossible, as it implies a will and agency on behalf of the slave, which the Gorean ideology explicitly rejects. Thus, the collar, the nudity, the casual violence are not executive tools but ontological statements of the proper nature of things. D/s is quite the opposite: the whole point of D/s, arguably, is encompassed by the "total power exchange" (TPE) label: it is the act of transferring agency from the submitting agent to the dominating one. Absent that transfer, there is no D/s. In physical D/s, the executive mechanism is the combination of the negotiated acts of the Dom/me with the veto power of the sub through exercise of a "safeword," revoking

consent (Wiseman, 1998). D/s also is inherently “heterochronic, “ to use Foucault’s term: a temporally bounded heterotopic space of the negotiated scene (though TPE effectively removes the heterochronic, but not the contractual, element, thus lying between conventional D/s and Goreanism).

Thus, in the physical D/s scene, the surrender of agency is a performative act or a performative withholding of the act of invoking the safeword: from moment to moment the sub exercises agency by allowing the contractual scene to continue. SL provides an interesting twist on the agency of the sub, by introducing code as a mechanism of “executive” enforcement of the contract: the use of open-source-developed scripted objects and modifications to the HUD interpose another agent between Dom/me and sub: that of the software. The software suite effectively executes the contract between Dom/me and sub. This does not remove or negate the agency of the contracting parties, any more than enforcement of a judicial verdict by the sheriff negates the power of the judge, but it does interpose another agent into the process.

As LL enabled user modifications to the UI, (as discussed in Chapter 5) an open-source team created the “Restrained Life Viewer,” (RLV) designed to extend the D/s experience in SL across the membrane, not just constraining the avatar, but constraining the sub’s experience across the interface between eyeballs and digital environment. RLV extended the range of negotiated power exchange: it enabled the Dom/me to garble or mute entirely all incoming or outgoing IM communications for a set period of time, even to blank the user’s screen entirely. Where scripted objects like that ubiquitous piece of furniture, the St. Andrews Cross, enabled the Dom/me to place the sub’s avatar in a variety of positions, and early scripted collars, cages and gags did the same, in the case of gags adding the garbling of “speech” (typed content visible by all within a 20 meter radius, as distinct from IM chat, visible only to the group or individual recipient

regardless of avatar distance), these restraints were all “within the membrane.” RLV permeated the membrane by enabling control of the sub’s – the physical person’s – sensory perception of the virtual space. With RLV, the user would not be experiencing submission at a remove through the avatar, but directly through the Dom/me’s control of the user’s monitor and keyboard: they could be restrained from visual and verbal interaction with the space of SL.

While a broad range of commercial D/s products were available in SL ,by far the most popular were those of the OpenCollar group. (Au, 2011) OpenCollar was an open-source software collaborative which made its products available for free in SL. The OpenCollar system had three components: the scripted collar, the sub HUD and the Dom/me HUD. Collars were available in a range of styles, from the plain metal Gorean “Turian” collar to spiked dog collars to subtle pendants only recognizable as a sub collar by cognoscenti. Whatever their style, they contained the same package of scripts, updated frequently to add functions or remove bugs: a collection of walking and sitting poses (in itself a real boon and part of the OpenCollar’s broad popularity: the SL default walks were atrocious, and custom overrides could be substantially expensive within the SL pricing system), including a range of submissive poses drawn from the Gorean tradition, the ability to generate a leash for the Dom/me, enabling them to drag the avatar around, to teleport the avatar to the Dom/me’s location without consent, and a variety of other functions. The HUD provided complementary controls for the collar: for the sub, to authorize Dom/me permissions or to leave it open to all, and to use the animation features outside of D/s control. Likewise, the Dom/me HUD enabled the user to enforce commands on authorized subs.

OpenCollar was an element of the RLV ecosystem: as noted above, RLV enabled control of both the sub’s avatar experience and their sensory interface. In 2011

RLV, which had been a standalone HUD, became available as an element of the open-source Phoenix viewer, which was more widely used than the official LL viewer: prior to the release of the official Viewer 3, upward of 75% of SL users and SL minutes logged were on Phoenix and its Firestorm successor. (Au, 2012) By checking a single tickbox, any user of the Phoenix viewer had access to all the RLV functionality without having to commit to a purpose-exclusive viewer. RLV added the ability to access the sub's entire inventory, allowing the Dom/me to dress and undress the sub, change their hairstyle, and teleport them from place to place. One IBM employee told me that the company had seriously examined the use of RLV for its employees: with a single click, a manager could outfit all their employees in appropriate suits and teleport them to a meeting venue: the scripts would be embedded in a watch bracelet rather than a sub collar, but to the same effect. (author interview, 2010)

But was the RLV/OpenCollar system qualitatively different from a physical flogger, ball gag or cross, such that independent agency can be attributed to it, rather than seeing it as an extension of the Dom/me's will? Yes, as the system was an exemplar of the distinct nature of law enforcement, in the broad sense, within software environments generally. The D/s contract creates – not enables, but creates – a microcosmic polity in a way that reflects contractual theories of state formation. While whatever the explicit manifestation of “consent of the governed” may be, its revocation is clear enough: the Declaration of Independence's right of revolution directly analogizes to safeword use. In both cases, consent exists because agency exists: consent may be revoked within the common frame of reference. Consent, and thus agency, separates the totalitarian from the democratic state as it separates Gor from D/s. Yet the interposition of the RLV/OpenCollar system transforms the nature of consent to something rather indistinguishable from that of Gor – agency lies solely in the initial

decision to enter into the environment or accede to use of the software. (however, it should be noted that the RLV-using sub exercises more agency than a software user does in a clickthrough “Terms of Use” “contract:” refusal to click makes access to the software experience impossible; refusal to use RLV or to grant RLV “keys” to any particular person just limits the nature of a specific D/s encounter, not the practice of BDSM in SL generally)

e. Harm, Agency and Things: Resilience in an Object-Oriented World

Having established that SL’s open-source D/s software acts as an executive agent interposed between Dom/me and sub, why does this matter? As a work of social engineering through software, it stands in contrast to WoW’s designer-created Dungeon Finder, discussed in Section 11. The Dungeon Finder was a case of object agency as Sorcerer’s Apprentice, and of unintended consequences of an error in common-pool management. The D/s software constellation, again, user-designed, shaped SL’s D/s practice in perhaps unintended ways, but not ways contrary to the intent of designers/users; rather by giving rise to an emergent hyper-clarity of heterotopic design. Nearly every case examined here has exemplified the alienation (in the legal sense) of agency, and been problematized by the shortage of agents willing to accept it (the SL D/s scene has its own widely known but un-documentable equivalent, the Great Dom/me Disappearance of 2009). Al Andalus, Extropia and the Minoan Empire all presented failed attempts to either distribute or sustainably centralize political agency; SL’s open-source D/s teams solved the problem by transferring agency to a non-human, software, agent.

The modern state attempted to do this via bureaucracy, by removing agency, at least rhetorically or performatively, from the executive to the codified rules. Planned

residential communities privatized the process, transferring agency from an active process of participation in municipal government to a Homeowners Agreement (HOA) executed by corporate employees under color of an explicit social contract. Similarly, D/s necessitated the active exercise of agency by both Dom/me and sub; the designers of the D/s software assemblage transferred not just exercise of agency, but agency itself, to an abstract intermediary code, not just analogical to an executive governmental agency's codified rules, or the privatized equivalent of the HOA, but identical to them.

Where even the most weak sauce conceptions of contemporary democracy envision the sort of ongoing manifestations of consent through formal and informal channels (particularly via pushback mechanisms which, while seeming to be challenges to authority, actually serve both Dom/me and sub as reaffirmations of it) common to D/s, the voluntary alienation of agency to code has proliferated – e.g., zero-tolerance policies, mandatory sentencing laws and the like, see McKnight (2011b).

This voluntary alienation of agency beyond the negotiated context of D/s or the political social contract to a nonhuman, code-based agent captures the failure of the Resilience Engine in virtual worlds. Innovation theory, and much political theory, assumes a desire to maximize agency: what manifested again and again in both SL and WoW was the desire to minimize agency, the difficulty in finding anyone willing to take it, and eventually the consensual transfer of agency to self-executing code.

Section 16: The Borg At Disneyland

Specific changes in corporate policy within virtual worlds and on their successor platforms generated a broad change in user values, which, among other things, despatialized the platforms. A resultant exodus from heterotopia removed the necessary critical mass of agency-maximizers. Without either element required for heterotopia, the

platforms lost their ability to sustain the operation of the Resilience Engine. SL became a marginalized heterotopia of deviance, too trivial to merit further action against it after LL corporate policies encouraged the departure of enterprise and education customers. WoW became Disneyland, a place of play within the system reinscribing, rather than challenging, the dominant order.

a. True Names, Real Names –From Radical Pseudonymity to Hegemonic Transparency

This analysis will begin with a pair of quick, if idiosyncratic, definitions. For our purposes, “identity” will be a composite bundle of information, which, taken together, defines or identifies a unique self. “Privacy” will be the ability to prevent alienation of identity components without express prior consent. These definitions are not standard in law, anthropology or sociology (I can’t speak to psychology), but for social relations mediated by computer-managed information systems, they should be concise, comprehensive and accurate. Privacy and identity in and around virtual worlds and their successor platforms have been dealt with superbly elsewhere (for privacy/identity, Solove (2004) and (2007), legal disputes Au (2008) and Lastowka (2010) in monographs, as well as scores of excellent journal articles, and Malaby (2010) in a producer-side STS analysis of LL culture). Section 13 described in detail the workings of the dialectic around identity and privacy at a microcosmic level in its analysis of the AI Andalus/CDS conflict; this subsection will step back to survey the dialectic as a whole, its outcome and consequences.

At the beginning of our research period, two broad sets of views on identity and privacy contested, in the abstract and over specific platform features and their cultural implications. One camp, exemplified by Sophrosyne Stenvaag in Section 12 and the

CDS conservatives in Section 13, held what Jurgenson (2012) calls “hard digital dualism,” or the belief in (or advocacy of) a strong membrane separating virtual heterotopias from the metropolis. Then and after, Castronova (2005, 2007) was the principal scholarly advocate of this position. In this view, the composite bundle of information called “identity” generated within virtual worlds was both substantially privately controllable and a distinct bundle from that generated elsewhere. Thus, a digital identity could be asserted separately from others. This view had its origins in early computer culture, itself with roots in American frontier notions of identity (Vinge et al., 2001; Turner, 2008) and a branch in the CB radio culture of the 1970s, with its broad use of “handles,” a term carried over into an early online context. It was also supported academically through the notion of the “distributed self,” (Wetherell and Maybin, 1996; Wortham, 1999) in another case of the dominant technology serving as a psychological metaphor, TCP/IP replacing the steam engine. Interestingly, despite its deep roots in the California Ideology, for complex contingent ideological-legal-cultural reasons, one of digital dualism’s last online bastions was in the European Social Democrat enclave of the CDS.

One of the reasons for the transcontinental shift of digital dualism’s center was a growing notion in California Ideology circles that effective corporate marketing required both the effective destruction of privacy and the joining of all bundles of self-defining information into one, linked to the identity markers of the physical body. If this sounds like Scott’s (1999) case of the modern state assigning last names to make a legible populace, or the wide body of work on the institutionalization of body-attached data (e.g., Cole 2001), it should: both were biopolitical (Foucault, 1997) assertions of control by the emergent hegemon. Spar (2000) documents the recurrence of this pattern across cycles as innovators, first seeking to overthrow the regulatory order in which they were

outsiders, later reinscribe it to protect their emergent dominance against upstarts: this is the subsection 8(b) case of triumph of the emergent order. The United States' patchwork of privacy laws and upholding of "clickwrap" contracts, by which users had to agree to an impenetrable and ever-changing Terms of Service document in order to use a piece of software, enabled companies to demand broad access to user data for marketing, if not outright resale. Meanwhile, European law granted much greater control of the indicia of identity to the persons generating them, consistent with a legal regime somewhat less shaped by the agents of the dominant means of production.

What was at issue was more than control of certain kinds of data: identity in a more familiar sense was at stake. Section 12 documents one such conflict, which was not about control of data so much as valuation of it. The introduction of voice over internet protocol clients into the standard software of both WoW and SL was widely seen as, and proved to be, a challenge to emergent virtual identity: Thompson (2007) documents the shift in social dynamic when voice software use revealed that a powerful WoW raid leader was an 11 year old boy, one of his troops a 38 year old man. Meanwhile, augmentationists rejoiced, along with Madison (2007), that voice in SL would "flush out" people whose SL and RL genders didn't match. The 2010 announcement by Blizzard that the WoW forums would require the use of RL, rather than account or character, names (quoted in full in Holisky, 2010a), indicated that they had gotten out a bit ahead of their userbase: 11,000 comments were posted on the forums within a few hours, mostly criticizing the move. (Holisky, 2010b) Blizzard relented, and made its "RealID" system optional. (Stickney, 2012)

SL, typical for its fate generally, split into voice- and text-only camps. (Au, 2008e) As Au records, there was so little overlap that each camp thought they were indicative of the totality. LL, however, acquired a startup company, Avatars United, which was

attempting to be a social media aggregator for cross-platform consistent pseudonymous entities: one could link accounts across multiple virtual worlds to a single point of reference without that point being a physical body. The service languished under LL control: they never evinced a strong software or cultural understanding of the rise of social media and closed down the service within less than a year of acquiring it. Pseudonymous avatars, like everyone else, took accounts on Facebook, though doing so was contrary to its Terms of Service, and the company would occasionally undertake purges of avatar accounts (though not those of pseudonymous celebrities). When Google+ launched, it forbade avatar accounts, in a move challenged vocally by the SL community. (Au, 2011b)

The ReallID case stands out as an occasion on which a very significant portion of the user base – as opposed to a small but vocal core of immersionists and privacy advocates – did not support the thinning of the membrane, although similar instances were common with respect to Facebook’s hegemonic restrictions on user privacy through the same period. Typically, a large majority of users welcomed tools that thinned the membrane, particularly in MMOs, where immersive identity creation was extremely rare (RP servers constituted about 5% of WoW’s total, and even on them, a majority were not active roleplayers, but sought out the servers in belief that they fostered a more mature culture – for precisely the opposite reasons assumed by Penny Arcade).

It bears mentioning that few if any such corporate actions were undertaken out of power-grabbing motives, but rather, arguably, from hegemonic/patriarchal privilege or a social-engineering attempt to solve emergent social problems in a new environment. Blizzard’s ReallID system was designed to address perhaps the primary problem of internet governance, maintaining civility on forums. The problem came to be defined as one of anonymity, typically conflating pseudonymity with anonymity. Penny Arcade’s

cartoon of the “Greater Internet Fuckwad Theory” (Penny Arcade 2004) epitomized the general view, that obscene and hateful speech was the mechanistically-determined, inevitable outcome of environments which did not use “real names.” The dismissals of counterarguments, not least by Penny Arcade, particularly that real name features left women more open to harassment, did have a strong grounding in patriarchal-hegemonic privilege, rather more than corporate information control. (boyd, 2011) In Au’s analysis of the “nymwars” with Google, he concisely sums up the matter at issue in Section 12’s case. Noting that Google preferentially hires heavily from elite educational institutions, he concluded “When you place such a high value on an identity based on real associations from elite, recognizable institutions, pseudonyms probably seem irrelevant, ridiculous, or even fraudulent.” (Au, 2011c) From the other side, boyd (2011) [n.b., danah boyd, like bell hooks, eschews capitalization of her name] claimed that “The people who most heavily rely on pseudonyms in online spaces are those who are most marginalized by systems of power” – in short, the makers of heterotopia, who were steadily pushed to the margins from 2010 on.

b. A Cataclysm of Literacy and Place – Riding the Rails in WoW

The undermining of pseudonymous identity described above happened for reasons of the unexamined privilege of developers, executives, and male game bloggers, and corporate control of information – but primarily, for the large bulk of users, their convenience, as the opposite of Castronova’s (2007) “exodus to virtual worlds” accelerated after the 2007-2010 period. Convenience supported both user retention and a broadening of the user base, or, an immense influx of people with the values of mainstream culture and neither the desire nor now the need to change. This was an inevitable step in Turner’s cycle of frontier settlement: first the trappers and soldiers,

then the homesteaders and fortune-seekers, then the bankers and schoolmarms, at which point the would-be fortune seekers would pick up and move on elsewhere.

What distinguishes the post-2010 period from other frontier closures is precisely the lack of an elsewhere, as discussed below. Just as the challenges of mastering the UI described in Chapter Four were critical in creating a heterotopic identity through the development and valuation of local knowledge developed within communities of practice, the revolution in UI design ushered in by the iPhone obviated it. Babies can use iPads, where my co-taught classes of PhD students struggled, and often failed, to achieve basic proficiency with the WoW and SL UIs. While most social software interfaces are yet to be as “intuitive” as the physical interface of Apple touchscreens, WoW led, and most MMOs followed, in consistently, intentionally simplifying gameplay to “faceroolling” during leveling, and a matter of learning choreography, rather than reacting to emergent situations in raids. SL’s 2010 “Viewer 2” was an attempt to follow the trend, although it was so poorly executed that a majority of users switched to third-party open source viewers. (Au, 2012)

This dichotomy –the successful simplification of WoW to draw an unskilled mass audience along with SL’s simultaneous failure to do the same – may have marked a turning point in the fates, not only of the two platforms, but of the genres (MMOs and social virtual worlds, respectively) they represented. They also stand as an excellent marker for the end of the heterotopic period in virtual worlds. SL’s failure and the death of social virtual worlds will be discussed in subsection (c) below. WoW’s Cataclysm expansion, released at the very end of 2010, subverted the “worldness” of Azeroth, introduced extensive “on rails” play which undermined player agency, narrative coherence, and the last vestiges of social play within the world.

Jaime Banks' doctoral dissertation (in progress) examines the effect of the Sundering, a radical transformation of WoW's land of Azeroth in preparation for the release of the Cataclysm expansion, on its players' perception of Azeroth as a viable (though she does not use the term) heterotopia. The Sundering ruined the mighty capital cities of the Horde and Alliance and split in half two zones which figured prominently in players' stories – not official lore – of their experiences in Azeroth: the Barrens and Stranglethorn Vale. Banks tells a story (author communication 2012) from one of her interviewees who had met the person who would become his RL wife at a particular mailbox in WoW, which came to symbolize their relationship. The Sundering erased it from the world of Azeroth, removing a token of a major aspect of identity.

When leveling from beginning to level cap took some 20-40 days total time logged into the game in early WoW, that number dropped down to something like six (hard number comparisons are surprisingly hard to come by: a question on the official forum elicited responses like "light speed now compared to walking," "compared to Classic no time at all," etc. (World of Warcraft Forums, 2011)). Early players had spent weeks of calendar time in those zones, often repeatedly with alts (secondary, and subsidiary, avatars), and the zones developed distinct player cultures. With the Sundering, those zones as players remembered them were radically transformed, along with the experience of the world generally. With the Cataclysm expansion, experience points were allocated so generously that players would level up out of zones long before experiencing all the associated quests (for example, if a zone was rated for players from 20-30, a player would reach 30, the zone then providing little benefit for leveling, long before the quests were completed; whereas earlier rewards and zone levels were tightly coupled, so that one would tend to experience everything in the zone before moving on). Cataclysm completely redid the content of classic WoW's levels 1-60, replacing a

somewhat freeform environment with a compelling, but “on rails” narrative of fixed linear progression – yet broke that progression with the decoupling of XP and zone levels. Players would begin a narrative chain, level up quickly, skip some significant part of the narrative to stay in level-appropriate zones, where they would pick up the narrative thread later on, having effectively missed several “episodes.”

The lockstep progression of narrative in place of exploratory choice also subverted what little social play remained in the world. In classic WoW, and marginally through later expansions, questing with a friend was, if not advantageous in gameplay terms, more or less neutral. In Cataclysm’s new content, if one partner took even one quest the other didn’t, the two would be permanently out of step, and unable even to see each other, as much content was “instanced,” or generated for a few particular players, rather than being actually massively multiplayer and open to all.

Cataclysm thus severed land and memory, land and lore, and land and player culture. With these changes, the “worldness” of Azeroth was significantly, and for some players, fatally undermined. What was left was a game, not a place.

c. “Does Anybody Still go There?” – the Re-Marginalization of Deviance

Where WoW’s designers, part in the name of making gameplay much easier and more accessible to players without local knowledge and skills, part inadvertently, undermined a range of critical aspects of what made Azeroth a virtual world, a heterotopic space, rather than a gameboard, 2010 saw LL take a set of actions which sealed SL’s fate as a marginal, not transformative, platform. In November 2010, LL terminated the 50% discount on land extended to 501(c)(3) nonprofit corporations, effectively doubling their operating costs with two months’ notice. (Harrison, 2010) Two months earlier they announced the closing of the SL Teen Grid, a space used heavily by

educators. Together, the two measures effectively ended the viability of SL for educational use. Similarly, in August 2010, LL closed Second Life Enterprise, intended to provide a suite of tools useful for business, such as Microsoft Office integration into the SL client: as it was, to give a slide presentation, each slide had to be converted into a .jpg image and uploaded separately into a scripted viewer, a cumbersome process. Beta clients were charged between \$50,000 and \$100,000 annually to participate in the program, which provided “two servers and access to an online help desk.” A corporate client claimed that it was “obvious that Linden Lab’s proverbial heart was never really in the whole endeavor,” and that they “knew or cared little for” corporate clients. (Ravensoft, 2012) However, by April 2011, even IBM, “[o]nce Second Life’s largest corporate booster,” ended its presence in SL. (Au, 2011d)

IBM’s engagement with SL exemplified the sort of dialectic across the membrane which generates resilience. IBM examined the technology’s potential to transform global workplace collaboration, replacing physical commuting to offices and international travel. They engaged with the heterotopic community officially, sponsoring art and fashion experiments, and providing guests for talk shows and conferences (and the courses taught by certain graduate students). Its users were active, and well-known, on the grid outside of work contexts, acting as full “Residents” to develop extensive local knowledge. Where many large corporations, particularly retailers, failed spectacularly in SL, largely due to blindness to local expertise, customs and desires (Au, 2008), IBM’s staff immersed themselves in the local culture and lasted years longer. Its departure can best be read as a determination that there was no value left in the innovation, nor in continued dialectic with those who remained inside the membrane.

While there was a significant exodus of educators, corporations, longtime community managers and general Residents from SL, (to the extent that Au ran a

regular feature on the New World Notes blog, SL's equivalent to the newspaper of record, entitled "Sim Deathwatch") usage statistics dropped significantly from a 2008 peak, but remained comparable to those of "successful" MMOs: average concurrency around 50,000 and average monthly users around 1.5 million. Yet SL completely dropped from elite attention, which to the extent it noticed these platforms after 2010, focused on EVE Online, an MMO of almost identical age, usage and founding ideology to SL. (McKnight, 2012) EVE became a media and academic favorite, the subject of full panels at conferences where SL went almost entirely unacknowledged (e.g., Association of Internet Researchers ir12, 2012). The distinction can be accounted for simply: EVE was a hypertopic site of performance of exaggerated dominant values: capitalism and masculinity (Lissanna, 2010), where SL was a feminized heterotopia of deviance. The academy and games industry have consistently devalued platforms generally perceived to have a large female demographic, from Facebook games (Cuppycake, 2010) to The Sims. (c.f. Gee and Hayes, 2010) SL never shed the reputation it acquired in the 2006 "flying penis" incident (Hof, 2006), and griefers' labeling it as a refuge of deviants (Dibbell, 2008) had strong cultural resonance: the consensus narrative became one of SL being effectively abandoned, but for a handful of furies.

Foucault (1967) treats heterotopias of deviance briefly, almost in passing. From his speech, it is unclear just how a heterotopia of deviance, such as his example of the brothel, actually is heterotopic by his own criteria. "Ghettos of deviance" seems a more accurate term, places allowed to exist to both contain and identify deviance as a safety valve for the dominant order. The ghetto of deviance is distinct from theme parks and vacation communities, which, rather than being oppositional to the dominant order, are integral to it. Thus Baudrillard's (1983, p. 25) Disneyland is not an alternative to America but exists "to make us believe the rest is real," by providing a set of illusions reinforcing

complicity with the order of which one is a part. Similarly, the ghetto of deviance is not the space of neglect discussed in subsection 6(b), though the distinction is more in the nature of its inhabitants than that of the space itself. A space of neglect can give rise to a true heterotopia of deviance, an unseen realm of the unimaginable. An example might be the space, in the non-place sense, of lesbianism within the USSR. Male homosexuality was recognized as deviant and punished severely; lesbian sexual expression was not illegal because it was unimaginable. Thus male homosexuality gave rise to “heterotopias of deviance” in Foucault’s sense, or “ghettos of deviance” in mine: physical sites known to the authorities and closely monitored: bars, parks and suchlike. Meanwhile, lesbians, invisible within the dominant ideology, had something of an internal New World, their customs, cultures and sites membraned by a one-way cloak of invisibility that allowed them, if not agents of the dominant system, to pass back and forth across an unseen borderlands. This seems much more a true heterotopia by Foucault’s list of elements than his examples of the heterotopia of deviance.

SL after 2010 provides an odd case: unlike the heterotopia/ghetto of deviance, no one in power was watching to identify deviants or particularly cared about their segregation from the metropolis. Neither was it a heterotopia: SL after 2010 differed from SL in 2008-2010 not primarily in its software or its regulations, but in the absence of its pioneers. Those who came seeking agency were gone, leaving nightclubs full of silent submissives waiting fruitlessly for the Dom/mes to return.

Part Two Summary: Engine Failure

Part Two took the Resilience Engine model developed in Part One and tested it against a range of cases drawn from SL and WoW between 2008 and 2010. In examining the Engine’s feedstock, a sociotechnical innovation and a critical mass of

persons seeking agency outside the dominant order, we examined specifics of the innovation and of the creation and exercise of agency in virtual worlds. We argued that the user interface and its composite elements, whether created by corporate designers or modded by users, was a powerful force for creating and shaping emergent heterotopia and its agents.

Comparing another scholar's ANT-framed analysis with a case study employing the Resilience Engine model, we saw how software changes intended for modernist control could generate complex, emergent, unintended consequences which taxed the ability of modernist corporate software designers to manage social relations within their spaces. Both cases exemplified Engine failure: the outcome of both was a steady transformation of WoW from heterotopic space of emergent social play to the board for a game mirroring, if not magnifying, heterotopic values and practices.

We looked at two cases of dialectic across the membrane, between agents of heterotopia and those of the dominant order: one over the value of local knowledge versus credentialing, and one over the content of political discourse. What united the two cases was, again, a pattern of Engine failure: both dialectics resulted in a hardening of the membrane surrounding the heterotopia, leading quickly to its entropic collapse.

We then teased out elements often treated in ethnographic accounts of emergent social behavior in virtual worlds as parts of a single mangle or network: platform affordances and ideology. Within SL, we demonstrate how the ideological clash between heterotopians and griefers, and two widely noted cultural features – a penchant for giant mansions and luxury toys, and BDSM practice – were driven as much by software design as by values and ideologies.

Finally, we surveyed the end of the Resilience Engine's cycle in virtual worlds: the ghettoization and entropic stagnation of SL driven in no small part by a failure to

create a state of the art UI appealing to either its heterotopic actual users or imagined conventional ones; and the erasure of heterotopia from WoW as local identity, expertise and spatiality were undermined or removed altogether.

Some elements of the heterotopias which did arise in the 2008-2010 period were assimilated, leading towards greater resilience of the dominant order: a democratization of speech at certain kinds of conferences, and user modifications of the interface through which computer-mediated actions pass. However, overall, what happened in this period was not assimilation for resilience, but a dialectic of polarization: either the ghettoization and collapse of heterotopias, or their dissolution back into the space of the dominant order from which they had emerged.

Chapter 7

THE RESILIENCE ENGINE STOPS?

We have two final questions. First, of the three possible outcomes of the cycle: collapse, cadre change within the dominant order, or resilient assimilation, what did we end up with? And second, if the Resilience Engine's cycle in virtual worlds ran to an end by 2010, what if anything comes, or can come, next? This conclusion argues that, aside from certain small cases, the general answer is the sort of assimilation described in subsection 8(b): an attempt to colonize the heterotopic space for the metropolis while attempting to enforce maximum order, a recipe for entropic collapse and for preventing new heterotopias from arising under the current dominant means of production.

a. The 2008-2010 Cycle

This work argues that during the core period of my fieldwork, from 2008 to 2010, a cycle of the Resilience Engine generated by the sociotechnical innovation of virtual worlds ran to completion. The model establishes three possible types of outcomes, called resilient, entropic, and cadre change. Aside from the minor case of the conference backchannel, an emergent practice which has continued to spread through certain areas of academic and business conferences, democratizing and broadening discussion and somewhat de-privileging authority in those spaces, the cycle generated only entropic outcomes. Subsection (b) below argues that those entropic outputs became feed stock for a new innovation cycle from which the prospect of heterotopia formation was entirely suppressed by design (in both senses of the phrase). This work has stayed as close to specificities of software and community as possible, but is one small aspect of a broader transformation of values, practices and platforms across the internet in that period.

In mid-decade, avatar-based interaction was widely seen as the future of computer-mediated encounters with information and other people, both in business

(Gartner, 2007 predicted that by 2011, 80% of internet users would have an active SL account; the actual percentage turned out to be effectively zero) and in academia (e.g., Balienson, 2006 pp. 257-260, on why virtual technologies would necessarily remain superior to videoconferencing). There was more to these predictions than the blind following of hype, though the extent to which these predictions were conditioned by cyberpunk fiction is profound: as Section 6 (c) argued, the generally imagined future of “cyberspace” was spatialized and avatarized. Pseudonymous interaction via avatars was a logical extension of early net culture which privileged the use of Vinge’s “true names” (2001) or internet handles over given names, a practice intentionally seeking to undo the legibility work of the nation-state described by Scott (1999). Popular communications applications stressed synchronous interaction, from AOL chatrooms early in the decade to instant messaging clients in mid-decade. The decline of AOL and the limited market share of Apple, with its emphasis on constraint, was taken as a sign of an end of “walled gardens,” or non-heterotopic spaces of firm corporate control. The internet was to be open, uncensored, administered by the non-governmental ICANN, modifiable, and avatarized. SL would either assume the role Western Union did in the telegraph era as the predominant power of the predominant communications medium (a “cadre change” outcome) or as the nucleus for a “grid” including a constellation of worlds with open boundaries, running on common protocols.

By late 2010, however, the internet was organized along very different lines. Walled gardens were resurgent, with Facebook, Google, and Apple operating competing silos whose design encouraged users to use one complete kit of information technologies rather than to mix and match. Crucially, values and norms around privacy and trust reversed themselves, in no small part to the ideological drive of Facebook’s Mark Zuckerberg, who announced at a conference in early 2010 that privacy was no

longer a “social norm.” (Johnson, 2010) Zuckerberg’s statement was both descriptive and prescriptive: Blizzard’s attempt to mandate a real-names policy on the WoW forums met with vociferous opposition, but was supported by advocates of online democracy, marking a turning point in the conception of trust online. (Arthur, 2010). Similar changes in social norms accompanied the rise of asynchronous communications: text over voice (Turkle, 2012), and the 2010-2012 fad of Facebook games, although the growing use of Twitter as a synchronous platform was a contrary factor. As Chapter Four documents, virtual technologies were difficult to learn to use, and avatar-based interaction never achieved the invisibility of effective tools. The next technological generation, however, built upon touch screens and “intuitive” gestures, required virtually no learning, no local knowledge, nothing to separate the master user apart from others.

The internet landscape of late 2010 was thus becoming a siloed, proprietary, gesture-driven, “participatory panopticon.” (Cascio, 2005) This sociotechnical assemblage rendered impossible the formation of a space-apart, an emergent place outside the entertainment-capitalist order, in which alternate practices were at best marginalized, as in SL’s ghetto of deviance, or entirely impossible, as in the case of Apple’s strictly censored App Store.

b. Further Research

This work addresses one sort of community, now marginalized: that based in virtual worlds. Other kinds of online communities, however, have thrived in the absence of the spatial metaphor of cyberspace, now a quaint relic of a past age. Reactionary masculinity dominates on the popular platform, Reddit, as do similar voices on such culturally influential sites as 4Chan. Yet there are loci of diverse and dissenting voices and practices: Tumblr has taken over SL’s role as the home of sexual, fannish, and

feminist expressions. Robust discussion continues as to the extent to which civility should be valued or enforced online. Good ethnographic and other social-science work is being done on many of these communities. What remains unclear, however, is the extent to which online community practices matter, other than as merely another form of expression within the dominant order – interesting, but incapable of generating anything different or transformative. Without an “outside,” without a membrane separating off some viable community from the dominant culture, it is hard to envision the contemporary online cultural landscape being anything but a subset of the totality of entertainment capitalism.

The desire for submission noted here merits further exploration. BDSM has become a powerful mainstream cultural trope in the wake of *50 Shades of Gray*; the book’s emergence out of fanfiction is not coincidental, but exemplary of the forces described herein. Its popularity should encourage more scholarship addressing the social and political implications of mediated and non-mediated BDSM practice. In this work I have drawn connections between the popularity of BDSM in SL and the dominance of the managerial model of community over the civic model. SL was created as an economic and cultural model and microcosm; work on the mutual shaping of the continuing professionalization of actions once self-performed, from governance to entertainment, and attitudes towards agency generally and democratic participation specifically is warranted.

There is a debate underway as to whether innovation broadly is continuing, in linear or faster progression, or is in fact dropping off: this question pits the assumptions of linear models of progress against cyclical ones such as the Resilience Engine. This work predicts a dropoff in innovation, however measured. If there is such a dropoff, it further suggests the prospect of systemic collapse. If, however, innovation continues

apace, either the model is wrong or there is some heterotopic source to be found. While a significant literature has been developed on collapse, extending well beyond Diamond's (2004) focus on environmental factors, interdisciplinary work which includes perspectives from research on innovation and change in sociotechnical, political and macroeconomic systems would add greatly to our understanding of these processes and ideally provide some insights into the future and fate of the currently dominant global order.

c. Turner 2013: Is the Frontier Now Closed?

In 1893 Frederick Jackson Turner declared closed a 300 year long cycle of the Resilience Engine, fed by the sociotechnical innovation he called "free land:" the laws, ideologies and technologies which encouraged Europeans to settle the North American continent. In 2008 Mitch Kapor, a founder of the Electronic Frontier Foundation, tried to declare, rather than describe, the closing of the SL frontier. (SL Wiki, 2008) That, I argued, came two years later, when in quick succession LL closed Teen Second Life, doubled fees for nonprofits, terminated its Second Life Enterprise service, and released a failed Viewer 2, its bid to take SL into the next generation of social media platforms. But did more close than a brief heterotopic experiment in place-based online community that ran in fits and starts from the launch of TinyMUD in 1989?

Writing prior to those places becoming widely known, several postmodernists (e.g., Baudrillard, 1983, 1994; de Certeau, 1984; Lefebvre, 1971) argued that no space remained outside the dominant order of contemporary global capitalism. Robinson (1997) and others have argued that Antarctica was such a space; Antarctica and outer space provide negative examples supporting the Resilience Engine model: whether capitalist or not, both were state-controlled spaces, neither was capable of generating a

heterotopia, and neither did. Zubrin (1994), writing in explicitly Turnerian terms, argued for Mars as the only possibility for such a space in the foreseeable future: twenty years on, sociotechnical innovations but no persons seeking agency can be found there. So the prospect of heterotopic place now seems foreclosed.

Yet Turner was able to find hope in a cycle quite different from one of land settlement, education in land-grant colleges. Surely, universities have long performed a heterotopic function, often to the dismay of their neighbors and agents of the dominant order generally. Turner arguably was right, despite an ideological shift which attempted to define away heterotopic potential: subsidized education in land-grant colleges worked for several generations to generate resilient outcomes of the assimilative type, taking into the dominant order different sets of persons with different values, transforming that order from a closed elite of WASP easterners to one which acknowledges, sometimes values, and sometimes practices, a resilient diversity. That such an engine is failing in America is both readily documented and beyond the scope of this work: suffice it to say that the socially level America of Turner's pre-robber baron world and of the GI Bill is no longer.

There has been no shortage of boosters of various emerging technologies making heterotopic claims, from artificial intelligence to nanotechnology to genetic engineering – to the video games of which MMOs have become but one minor genre. All those technologies may indeed have revolutionary potential, but when fed into the Resilience Engine seem not to generate a cycle. The model suggests that they have failed, and will continue to fail, to deliver social transformation, because they do not give rise to heterotopia, to a place to stand sufficiently outside the dominant order to build something new and autonomous enough to enter into a dialectic with that order without being swamped, if they ever inscribe a membrane at all.

The pioneering dreams of Zubrin and the California Ideologues of the entrepreneurial space movement may yet come true: it does not seem *prima facie* impossible that someplace off Earth entirely might allow a critical mass of persons seeking agency – freedom or fantastic wealth – to inscribe a sufficient circle around themselves. Yet, the experience of virtual worlds suggests that such efforts will likely be doomed before they start, even a newly-created heterotopic space so filled with global entertainment capitalism that it will lack the room to develop its own local knowledge, that those spaces will face only the alternatives of being overrun or consigned to a quick, ghettoized, entropic death. Turner was able to end on a note of optimism he sustained through decades of later writings: this work cannot support such a tone.

REFERENCES

- Amdahl, K. (2008-2011). "The winged girl blog." Retrieved from:
<http://kateamdahl.livejournal.com/>
- Anderson, B. (1983). *Imagined communities*. London: Verso.
- Anzaluda, G. (1987). *Borderlands/la frontera: The new mestiza*. San Francisco: Aunt Lute Books.
- ArgentSun et al. (2008). "Exposing armor!" Wowhead Forums. Retrieved from
<http://www.wowhead.com/forums&topic=58651/exposing-armor>
- Arthur, C. (2010). "Blizzard retreats from forcing real names in Warcraft forums." *Guardian Technology Blog*, July 12, 2010. Retrieved from
<http://www.guardian.co.uk/technology/blog/2010/jul/12/blizzard-warcraft-real-names-retreat>
- Au, W.J. (2008a) *The making of Second Life: Notes from the new world*. New York: HarperBusiness.
- _____ (2008b). "How is Second Life like Burning Man? Rosedale reflects." *New World Notes* October 5, 2008. Retrieved from <http://nwn.blogs.com/nwn/2008/10/from-burning-ma.html>
- _____ (2008c). "Inkwell: Authors and artists topic 322." The Well. Retrieved from
<http://www.well.com/conf/inkwell.vue/topics/322/W-James-Au-The-Making-of-Second-page01.html>
- _____ (2008d). "Generation why: Is the Second Life experience fundamentally Gen X-centric?" *New World Notes* August 22, 2008. Retrieved from
<http://nwn.blogs.com/nwn/2008/08/generation-why.html>
- _____ (2008e). "Half-listening: voice adoption now 50% Second Life users." *New World Notes* July 14, 2008. Retrieved from <http://nwn.blogs.com/nwn/2008/07/half-listening.html>
- _____ (2011a). "Top 20 Largest Second Life Groups Now -- No. 1's for Open Source BDSM Collars, Only a Handful From 2009's Top Remain, & None Larger Than Facebook's Second Life Group" *New World Notes*, February 15, 2011. Retrieved from <http://nwn.blogs.com/nwn/2011/02/top-20-second-life.html>
- _____ (2011b). "Google confirms: Non-real name Google Profiles risk suspension (i.e., Google still doesn't get social." *New World Notes*, July 11, 2011. Retrieved from
<http://nwn.blogs.com/nwn/2011/07/google-profiles-pseudonym-avatar-names-suspension-policy.html>
- _____ (2011c). "Google's real names policay an 'abuse of power'(which probably stems from Google's elitist culture." *New World Notes*, August 4, 2011. Retrieved from
<http://nwn.blogs.com/nwn/2011/08/google-plus-real-names-policy.html>

- _____ (2011d). "Sim deathwatch: IBM closing second life exhibition art sims next month, continuing larger SL withdrawal by Big Blue." *New World Notes* April 18, 2011.
- _____ (2012). "Second Life Usage Dominated by Third Party Viewers -- Linden Lab's Own Software Only Used by "Minority" of SLers" *New World Notes*, May 16, 2012. Retrieved from <http://nwn.blogs.com/nwn/2012/05/second-life-viewer-usage-dominated-third-party-.html>
- Bailenson, J.N. (2006). "Transformed social interaction in collaborative virtual environments." In Messaris, P. and Humphreys, L. (Ed.) *Digital Media: Transformations in Human Communication*. 255-264. New York: Peter Lang.
- Bainbridge, W.S. (2008a). "Conference participants." Retrieved from <http://convergentsystems.pbworks.com/w/page/16444377/Conference%20Participants>
- _____ (2010). *The Warcraft civilization: Social science in a virtual world*. Cambridge: The MIT Press.
- Bakhtin, M. (2009). *Rabelais and his world*. Bloomington: Indiana University Press.
- Bardzell, S and Bardzell, J. (2007). "Docile avatars, aesthetics, experience, and sexual interaction in Second Life." In *Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI...but not as we know it - Volume 1 (BCS-HCI '07)*, Vol. 1. British Computer Society, Swinton, UK, UK, 3-12.
- Bardzell, S. and Odom, W. (2008). "The experience of embodied space in virtual worlds: An ethnography of a Second Life community." In *Space and Culture* August 2008, vol. 11 no. 3 239-259.
- Bartle, R. (1996). 'Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs'. *The Journal of Virtual Environments*, (1) (1). Retrieved from <http://www.brandeis.edu/pubs/jove/HTML/v1/bartle.html>
- _____ (2003). *Designing Virtual Worlds*. New York: New Riders.
- Baudrillard, J. (1994). *Simulacra and simulation*. Ann Arbor: University of Michigan Press
- _____ (1983). *Simulations*. Semiotext(e), distributed by The MIT Press.
- Benkler, Y. (2007). *The wealth of networks: how social production transforms markets and freedom*. New Haven: Yale University Press.
- Bennett, J. (2010). *Vibrant matter: A political ecology of things*. Durham: Duke University Press.
- Bennetson, H. (2006). "Augmentation vs. Immersion" Retrieved from http://slcreativity.org/wiki/index.php?title=Augmentation_vs_Immersion

- Berkman, P.A. (2009) "President Eisenhower, The Antarctic Treaty, and the Origin of International Spaces" In Berkman, P.A., Lang, M.A., Walton, D.W.H., and Young, O.R., eds.(2009). *Science Diplomacy: Antarctica, Science, and the Governance of International Spaces*. Washington, D.C.: Smithsonian Institution Scholarly Press.
- Blascovich, J., & Bailenson, J. N. (2011). *Infinite Reality - Avatars, eternal life, new worlds, and the dawn of the virtual revolution*. New York: William Morrow.
- Blizzard Entertainment (2011a). "Guild advancement and you" Retrieved from <http://us.battle.net/wow/en/blog/2113741>
- _____ (2011b). "Patch 4.0.6 Official Notes" Retrieved from <http://us.battle.net/wow/en/blog/2166872>
- _____ (undated). "Patch Notes, 3.3" Retrieved from <http://us.battle.net/wow/en/game/patch-notes/3-3>
- Boellstorff, T. (2010). *Coming of age in Second Life: An anthropologist explores the virtually human*. Princeton: Princeton University Press.
- Boesel, W.E. (2012). "Toward a more inclusive backchannel: An unusual call to action." *Cyborgology* blog. Retrieved from <http://thesocietypages.org/cyborgology/2012/08/15/toward-a-more-inclusive-backchannel-an-unusual-call-to-action/> August 15, 2012.
- Bogost, I. (2008). *Unit operations: An approach to videogame criticism*. Cambridge: The MIT Press.
- _____ (2012). *Alien phenomenology: Or what it's like to be a thing*. Minneapolis: University of Minnesota Press.
- Bohannon, J. (2008). "Scientists, we need your swords!" *Science* 18 April 2008: Vol. 320 no. 5874 p. 312.
- _____ (2008). "Slaying monsters for science." *Science* 20 June 2008: Vol. 320 no. 5883 p. 1592
- boyd, D. (2011). "'Real Names' policies are an abuse of power." *Apophenia*, August 4, 2011. Retrieved from <http://www.zephoros.org/thoughts/archives/2011/08/04/real-names.html>
- Brand, S. (undated). "Photography changes our relationship to our planet." Smithsonian Photography Initiative. Retrieved from <http://click.si.edu/Story.aspx?story=31> last accessed May 8, 2012
- Bury, R. (2005). *Cyberspaces of their own: Female fandoms online*. No city: Morehouse Publishing.

- Bush, V. (1945). "Science the endless frontier." Washington: United States Government Printing Office.
- Callon, M. (1986). "Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay." In Law, J. (ed.), *Power, action and belief: A new sociology of knowledge*. London: Routledge.
- Carse, J.P. (1986). *Finite and infinite games*. New York: The Random House Publishing Group.
- Cascio, J. (2005). "The rise of the participatory panopticon." *Worldchanging*, May 4, 2005. Retrieved from <http://www.worldchanging.com/archives/002651.html>
- Cassandri (2010). "Dealing with jerks & dungeon finder." HoTs & DoTs. Retrieved from <http://www.hotsdots.com/2010/04/dealing-with-jerks-dungeon-finder/>
- Castells, M. (2000). *The rise of the network society*. New York: Wiley-Blackwell.
- Castronova, E. (2001). "Virtual worlds: A first-hand account of market and society on the cyberian frontier." In Salen, K. and Zimmerman, E., eds., (2006). *The game design reader: A Rules of Play anthology*. Cambridge: The MIT Press.
- _____ (2005). *Synthetic worlds: The business and culture of online games*. Chicago: University of Chicago Press.
- _____ (2007). *Exodus to the virtual world: How online fun is changing reality*. New York: Palgrave McMillan.
- _____ and Fairfield, J. (2007). Dragon Kill Points: A Summary Whitepaper (January, 2007). Available at SSRN: <http://ssrn.com/abstract=958945> or <http://dx.doi.org/10.2139/ssrn.958945>
- Chaisson, E.J. "Cosmic Evolution: State of the Science" in Dick, S.J. and Lupisella, M.L., (2001). *Cosmos & culture: Cultural evolution in a cosmic context*. NASA SP-2009-4802.
- Chalk, A. (2010). "Only 30 percent of WoW players get past level 10" *The Escapist*, February 11, 2010. Retrieved from <http://www.escapistmagazine.com/news/view/98245-Only-30-Percent-of-WoW-Players-Get-Past-Level-10>
- Chen, M. (2011). *Leetnoobs: The life and death of an expert player group in World of Warcraft*. New York: Peter Lang Publishing.
- Cherny, L. (1999). *Conversation and community: Chat in a virtual world*. CITY: Center for the Study of Language and Information.
- Cuppycake (2010). "Facebook games and the privileged people who oppose them." *Border House*, November 17, 2010. Retrieved from <http://borderhouseblog.com/?p=3204>

- Davis, D.Z. (2008). "Getting around in Second Life." University of Florida. Retrieved from <http://iml.jou.ufl.edu/projects/Fall08/Davis/html/secondlifebasics.html>
- de Certeau, M. (1984). *The practice of everyday life*. Berkeley: The University of California Press.
- Deadly Boss Mods (2011). Retrieved from <http://www.curse.com/addons/wow/deadly-boss-mods> Last accessed January 31, 2013.
- Dewey, J. (1927). *The public and its problems*. New York: Henry Holt.
- Diamond, J. (2004). *Collapse*. New York: Viking Adult.
- Dibbell, J. (1999). *My tiny life: Crime and passion in a virtual world*. New York: Holt Paperbacks.
- _____ (2006). *Play money: Or, how I quit my day job and made millions trading virtual loot*. New York: Basic Books.
- _____ (2008). "Mutilated furies, flying phalluses: Put the blame on griefers, the sociopaths of the virtual world." *Wired*, January 18, 2008. Retrieved from http://www.wired.com/gaming/virtualworlds/magazine/16-02/mf_goons?currentPage=all
- Dubner, S.J. (2007). "Philip Rosedale answers all your Second Life questions." Retrieved from <http://www.freakonomics.com/2007/12/13/philip-roosedale-answers-your-second-life-questions/>
- Ducheneaut, N. et al. (2006). "Alone together?" Exploring the social dynamics of massively multiplayer online games." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems 407-416, 2006.
- _____ (2009). "Body and mind: A study of avatar personalization in three virtual worlds." Proceedings of the SIGCHI Conference on Human Factors in Computing Systems 1151-1160, 2009.
- Einstein, A. (1920). *Relativity: The general and special theory*. Retrieved from <http://www.bartleby.com/173/31.html>
- Ellickson, R.D. (1994). *Order without law: How neighbors settle disputes*. Cambridge: Harvard University Press.
- Eulenberg, E. (2012) "There's no fake tits in Gor." In Busted Magazine, June 2012, 38-47.
- "Extropia" Community website: http://core.extropiacore.net/Main_Page
- Extropia Board of Directors (2007-2009). "Events in Extropia" Retrieved from <http://eventsinextropia.wordpress.com/>

- Ezrahi, Y. (1990). *The descent of Icarus: Science and the transformation of contemporary democracy*. Cambridge: Harvard University Press.
- Faragher, J.M., ed. (1994). *Rereading Frederick Jackson Turner*. New Haven: Yale University Press.
- Feenberg, A. (2001). *Transforming technology: A critical theory revisited*. Oxford: Oxford University Press.
- Foucault, M. (1967). "Of Other Spaces." Retrieved from:
<http://foucault.info/documents/heteroTopia/foucault.heteroTopia.en.html>
- _____ (1997). *Society must be defended: Lectures at the Collège de France, 1975-1976*. New York: St. Martin's Press.
- Gartner (2007). "Gartner report says 80 percent of active internet users will have an active 'Second Life' in the virtual world by the end of 2011." April 24, 2007. Retrieved from <http://www.gartner.com/it/page.jsp?id=503861>
- Gee, J.P. (2007). "Cultural models: Do you want to be the blue Sonic or the dark Sonic?" in Gee, J.P. (2007), *What video games have to teach us about learning and literacy*. New York: Palgrave MacMillan.
- _____ (2011). *An introduction to discourse analysis: Theory and method, edition 3*. New York: Routledge.
- _____ and Hayes. (2010). *Women and gaming: The Sims and 21st Century learning*. New York; Palgrave Macmillan.
- Gibson, W. (1982). "Burning chrome." *Omni Magazine*, July 1982.
- _____ (1984). *Neuromancer*. New York: Ace Science Fiction.
- Grossman, D. and deGaetano, G. (1999). *Stop teaching our kids to kill: A call to action against TV, movie and videogame violence*. New York: Crown Archetype.
- Harrison, D. (2010). "Linden Lab to end Second Life educational discounts." THE Journal Magazine, November 3, 2010. Retrieved from <http://thejournal.com/articles/2010/11/03/linden-lab-to-end-second-life-educational-discounts.aspx>
- Hodder, I. (2012). *Entangled: An archaeology of the relationship between humans and things*. Chichester, UK: John Wiley and Sons Inc.
- Hof, R.D. (2006). "My virtual life." Businessweek, April 30, 2006. Retrieved from <http://www.businessweek.com/stories/2006-04-30/my-virtual-life#r=related-rail>
- Holisky, A. (2010a). "Official forum changes, real life names to be displayed." WoW Insider, July 6, 2010. Retrieved from <http://wow.joystiq.com/2010/07/06/official-forum-changes-real-life-names-to-be-displayed/>

- Holisky, A. (2010b). "Blizzard's responses on the Real ID situation." *WoW Insider*, July 6, 2010. Retrieved from <http://wow.joystiq.com/2010/07/06/blizzards-responses-on-the-real-id-situation/>
- Huizinga, J. (1950 [1938]). *Homo ludens: A study of the play element in culture*. Beacon.
- Jasanoff, Sheila. (2005) *Designs on nature: Science and democracy in Europe and the United States*. Princeton: Princeton University Press.
- Jenkins, H. (1992). *Textual Poachers: Television fans & participatory culture*. New York: Routledge.
- Johnson, B. (2010). "Privacy no longer a norm, says Facebook founder." *The Guardian*, January 10, 2010. Retrieved from <http://www.guardian.co.uk/technology/2010/jan/11/facebook-privacy>
- Jurgenson, N. (2012a). "Twitter isn't a backchannel (#ASA2012)" *Cyborgology* blog. Retrieved from <http://thesocietypages.org/cyborgology/2012/08/17/twitter-isnt-a-backchannel-asa2012/> August 17, 2012.
- _____. (2012b). "Strong and Mild Digital Dualism." *Cyborgology* blog. Retrieved from <http://thesocietypages.org/cyborgology/2012/10/29/strong-and-mild-digital-dualism/> October 29, 2012.
- Jurie (2007). "Warren Ellis on sex in Second Life." *Intelligent Artifice*, March 1, 2007. Retrieved from <http://impertinentness4.rssing.com/browser.php?indx=3691264&item=4>
- Juul, J. (2005). *Half-real: Games between real rules and fictional worlds*. Cambridge: The MIT Press.
- Kapor, M. (2008). "Closing Keynote." Retrieved from <http://wiki.secondlife.com/wiki/SL5B/Transcripts>
- Kennedy, J.F. (1960). "Democratic National Convention nomination acceptance address." Retrieved from <http://www.americanrhetoric.com/speeches/jfk1960dnc.htm>
- Klastrup, L. and Tosca, S. (2009). "Because it just looks cool! Fashion as character performance: The case of WoW." *Journal of Virtual Worlds Research* Vol. 1, No.3, pp. 3-17.
- Koster, R. (2004). *A theory of fun for game design*. No city: Paraglyph Press.
- Kurzweil, R. (2005). *The singularity is near: When humans transcend biology*. New York: Penguin.
- Lake, D. (2010a). "Election results for the CDS 12th RA term." Retrieved from <http://forums.slcds.info/viewtopic.php?f=3&t=2677>. January 31, 2010.

- Lake, D. (2010b). "Election results for voting for the 13th RA of the CDS" Retrieved from <http://forums.slcds.info/viewtopic.php?f=3&t=2883>. May 23, 2010.
- Lake, D. (2010c). "Citizens of the CDS." Retrieved from http://spreadsheets.google.com/pub?key=tl_tVA1c70VN8vxU50g6K2w&output=html. October 19, 2010.
- Lastowka, G. (2010). *Virtual justice: The new laws of online worlds*. New Haven: Yale University Press.
- Latour, B. (1995). *Reassembling the social: An introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Lauren (2011). "The novice player's guide to the dungeon finder." The Vengeful Polyglot. Retrieved from <http://thevengefulpolyglot.wordpress.com/2011/08/20/the-novice-players-guide-to-the-dungeon-finder/>
- Lefebvre, H. (1994 [1971]). *The production of space*. Oxford: Blackwell Publishing.
- Lessig, L. (2006). *Code, And other laws of cyberspace, version 2.0*. New York: Basic Books.
- _____. (2008). *Remix: Making art and commerce thrive in the hybrid economy*. New York: The Penguin Press.
- Lewis, L. (1992). *Ring of liberation: Deceptive discourse in Brazilian capoeira*. Chicago: University of Chicago Press.
- Limerick, P.N. (1987). *The legacy of conquest: The unbroken past of the American West*. New York: W.W. Norton & Co.
- _____. (2000). *Something in the soil: Legacies and reckonings in the New West*. New York: W.W. Norton & Co.
- Linden Lab, undated. "English knowledge base: Buying land." Retrieved from <http://community.secondlife.com/t5/English-Knowledge-Base/Buying-land/tap/700043> Last accessed: July 19, 2012 .
- Lissanna (2010). "Why I don't play EVE Online." Restokin, April 24, 2010. Retrieved from <http://www.restokin.com/2010/04/why-i-dont-play-eve-online/>
- Lyotard, J-F. (1984 [1979]). *The postmodern condition: a report on knowledge*. Minneapolis, University of Minnesota Press.
- Madison, J. (2007). "Voice beta in First Look." Mean Girls Guide to SL, July 6, 2007. Retrieved from <http://slmeangirls.blogspot.com/2007/07/voice-beta-in-first-look.html>
- Malaby, T.M. (2009). *Making virtual worlds: Linden Lab and Second Life*. Ithaca: Cornell University Press.

- Malone, K-L. M., (2009). "Dragon Kill Points: The economics of power gamers." *Games and Culture* July 2009 vol. 4 no. 3 296-316
- Manstan (2012). "Forum thread: It's only a game?" Lord of the Rings Online Forum. Retrieved from <http://forums.lotro.com/showthread.php?481752-It-s-only-a-game>
- McCurdy, H. (1997). *Space and the American imagination*. Washington: Smithsonian Institution.
- McGonigal, J. (2007). "Why I love bees: A case study in collective intelligence gaming." *The Ecology of Games: Connecting Youth, Games, and Learning*, Pages 199-227.
- _____ (2011). *Reality is broken: Why games make us better and how they can change the world*. New York: The Penguin Press HC.
- McKnight, J. (2008a). "Conference in WoW." Aporia, May 12, 2008. Retrieved from <http://www.johncartermcknight.com/blog/?m=200805>
- _____ (2008b). "WoW conference in Science magazine." Aporia, June 20, 2008. Retrieved from <http://www.johncartermcknight.com/blog/?p=36>
- _____ (2011a). "A surrender monkey in the war on fun." Aporia, September 24, 2011. Retrieved from <http://www.johncartermcknight.com/blog/?p=1178>
- _____ (2011b). "A government of zero tolerance and theorycrafting." Aporia, August 29, 2011 Retrieved from <http://www.johncartermcknight.com/blog/?p=1094>
- _____ (2012). "Space makes you bitter: The evolution of sandbox culture in Second Life and EVE Online." *Virtual Worlds Best Practices in Education*, conference presentation. Retrieved from <http://www.slideshare.net/kaseido/space-makes-you-bitter-sandbox-culture-in-second-life-and-eve-online>
- Miller, J.H. and Page, S.E. (2007). *Complex adaptive systems: An introduction to computational models of social life*. Princeton: Princeton University Press.
- Milton, J. (1667). *Paradise Lost*. Retrieved from http://www.dartmouth.edu/~milton/reading_room/pl/book_1/
- Mistral, P. (2006). "Beyond roleplay – a cult?" *The Alphaville Herald* November 29, 2006. Retrieved from http://alphavilleherald.com/2006/11/the_problems_of_1.html
- Morningstar, C. and Farmer, F.R. (1991). "The lessons of Lucasfilm's Habitat." In *Cyberspace: First Steps*, Michael Benedikt (ed.). (1991). Cambridge: The MIT Press.
- Murakami, P., et al. (2010). "The appalling Beth Noveck." CDS Discussion forum thread. Retrieved from <http://forums.slcds.info/viewtopic.php?f=1&t=2914>. June 6, 2010.

- Mutz, D.C. (2006). *Hearing the other side: Deliberative versus participatory democracy*. Cambridge: Cambridge University Press.
- Nardi, B.A. (2009). *My life as a night elf priest: An anthropological account of World of Warcraft*. Ann Arbor: University of Michigan Press.
- Nash, R.F. (2001). *Wilderness and the American mind*. New Haven: Yale University Press.
- National Commission on Space (1986). *Pioneering the space frontier: Report of the National Commission on Space*. New York: Bantam Books.
- Nino, T. (2007). "Peering inside – Second Life's user retention." *Massively*, December 23, 2007. Retrieved from <http://iml.jou.ufl.edu/projects/Fall08/Davis/html/secondlifebasics.html>
- Nitsche, M. (2008). *Video game spaces: Image, play and structure in 3D worlds*. Cambridge: The MIT Press.
- Norman, J. (1966(2007)). *Tarnsman of Gor*. E-reads LTD.
- Noveck, B. (2010). *Wiki government: How technology can make government better, democracy stronger, and citizens more powerful*. Washington, D.C.: Brookings Institution Press.
- Nozick, R. (1974). *Anarchy, state and utopia*. New York: Basic Books.
- O'Brien, N. (2007). "Spies watch rise of virtual terrorists." *The Australian*, July 31, 2007. Retrieved from <http://www.news.com.au/top-stories/spies-watch-rise-of-virtual-terrorists/story-e6frfkp9-1111114075761>
- Ondrejka, C. (2007). "Collapsing geography: Second Life, innovation and the future of national power." *Innovations* Summer 2007, vol.2, no.3, pp. 27-54.
- O'Toole, M. (2001). "The school shooter: A threat assessment perspective. Washington, D.C.: U.S. Department of Justice, Federal Bureau of Investigation.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge: Cambridge University Press.
- Page, S. (2011). *Diversity and complexity*. Princeton: Princeton University Press.
- Parker, T. (2006). "Make Love Not Warcraft." *South Park* Season 10, Episode 8. Retrieved from <http://www.southparkstudios.com/episodes/103797>
- Pearce, C. and Artemisia. (2009). *Communities of play: Emergent cultures in multiplayer games and virtual worlds*. Cambridge: The MIT Press.
- Perla, P.P. (1990). *The art of wargaming*. Annapolis: Naval Institute Press.

- Penny Arcade (2004). "Green blackboards (and other anomalies)" Retrieved from <http://www.penny-arcade.com/comic/2004/03/19>
- Phenixx (2008) "World of Warcraft BigBlueDress." Retrieved from <http://www.youtube.com/watch?v=vqO7zEWu0W0>
- Phoenix Firestorm Project. (2011). *Firestorm viewer*. Retrieved from <http://www.firestormviewer.org/about/> Last accessed January 31, 2013.
- Pickering, A. (1995). *The mangle of practice: Time, agency, and science*. Chicago: University of Chicago Press.
- Pinch, T.J. and Bijker, W.E. (1984). "The social construction of facts and artefacts: Or how the sociology of science and the sociology of technology might benefit each other" *Social Studies of Science* 14, 3, pp. 399-441.
- Polyani, M. (1967). "The republic of science: Its political and economic theory." *Minerva* 1:54-74, 1962.
- Post, D.G. (2009). *In search of Jefferson's moose: Notes on the state of cyberspace*. New York: Oxford University Press.
- Putnam, R.D. (2001). *Bowling alone: The collapse and revival of American community*. New York: Simon and Schuster.
- Ravensoft, C. (2012). "Second Life Enterprise was a costly mistake." *Hypergrid Business* March 21, 2012. Retrieved from <http://www.hypergridbusiness.com/2012/03/second-life-enterprise-was-a-costly-mistake/>
- Reeves, B., Malone, T., and O'Driscoll, T. (2008). "Leadership's online labs." *Harvard Business Review* May 2008 1-10.
- _____ and Read, J.L. (2009). *Total engagement: Using games and virtual worlds to change the way people work and businesses compete*. Cambridge: Harvard Business Press.
- Rettberg, S. (2008). "Corporate ideology in *World of Warcraft*" in Corneliussen, H. and Rettberg, J.W., eds. (2008). *Digital play, culture and identity: A World of Warcraft Reader*. Cambridge: The MIT Press.
- Rheingold, H. (2000). *The virtual community: Homesteading on the electronic frontier*. Cambridge: The MIT Press.
- Robert, A. (2011). "Making the dungeon finder suck less." *WoW Insider*. Retrieved from <http://wow.joystiq.com/2011/01/05/making-the-dungeon-finder-suck-less/>
- Robinson, K.S. (1992). *Red Mars*. New York: Bantam Spectra.
- _____ (1993). *Green Mars*. New York: Bantam Spectra.

- _____ (1996). *Blue Mars*. New York: Bantam Spectra.
- _____ (1997). *Antarctica*. New York: Bantam Spectra.
- Salen, K. and Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. Cambridge, The MIT Press.
- Saler, M.T. (2012). *As if: Modern enchantment and the literary prehistory of virtual reality*. New York: Oxford University Press.
- Scott, J.C. (1999). *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven: Yale University Press.
- Scully, T. (1999). "The Development of the Antarctic Treaty System." In Berkman, P.A., Lang, M.A., Walton, D.W.H., and Young, O.R., eds.(2009). *Science Diplomacy: Antarctica, Science, and the Governance of International Spaces*. Washington, D.C.: Smithsonian Institution Scholarly Press.
- Second Life Wiki. "SL5B/Transcripts." Retrieved from <http://wiki.secondlife.com/wiki/SL5B/Transcripts>. Last edited July 9, 2008.
- _____. "Confederation of Democratic Simulators." Retrieved from http://secondlife.wikia.com/wiki/Confederation_of_Democratic_Simulators. Last edited, July 24, 2009.
- _____. "Burning Life." Retrieved from http://wiki.secondlife.com/wiki/Burning_Life. Last edited, September 14, 2009.
- _____. "Release notes/Second Life release/2.00." Retrieved from http://wiki.secondlife.com/wiki/Release_Notes/Second_Life_Release/2.00 Last edited, April 27, 2010.
- Shachtman, N. (2008). "Pentagon researcher conjures *Warcraft* terror plot." *Wired* Danger Room, September 15, 2008. Retrieved from <http://www.wired.com/dangerroom/2008/09/world-of-warcraft/>
- Shepherd, T. Second Life grid survey. Retrieved from <http://www.gridsurvey.com/>. Last accessed April 14, 2011.
- Silverman, M. (2009). "Discipline and Dragon Kill Points in the power game" *Games and Culture* October 2009 vol. 4 no. 4 353-378
- Silverspar, F. (undated) "Forceme Silverspar" Retrieved from <https://sites.google.com/site/forcemesilverspar/> Last accessed February 6, 2013.
- Sixma, T. (2009). The Gorean community in Second Life: Rules of sexual inspired role-play. *Journal of Virtual Worlds Research*, 1(3).
- Soja, E.W. (1996). *Thirdspace: Journeys to Los Angeles and other real and imagined places*. Malden, MA: Blackwood Publishing.

- Solove, D.J. (2004). *The digital person: Technology and privacy in the information age*. New York: New York University Press.
- _____. (2007). *The future of reputation: Gossip, rumor and privacy on the internet*. New Haven: Yale University Press.
- Spar, D.L. (2001). *Ruling the waves: Cycles of discovery, chaos and wealth from the compass to the internet*. New York: Harcourt, Inc.
- Steinkuehler, C. (2006). "The mangle of play." *Games and Culture* January 1, 2011 6: 3-16
- Stenvaag, S. (2007-2009). "Sophtopia." Retrieved from <http://sophtopia.blogspot.com/>
- _____. (2007). "It's only a game: Architectural grieving and identity." Retrieved from <http://sophtopia.blogspot.com/2007/07/it-only-game-architectural-grieving-and.html>
- _____. (2008a). "The first academic conference in World of Warcraft." Retrieved from <http://sophtopia.blogspot.com/2008/05/first-scientific-conference-in-wow.html>
- _____. (2008b). "Warcraft, reputation and democracy." Retrieved from <http://sophtopia.blogspot.com/2008/07/warcraft-reputation-and-democracy.html>
- Stephenson, N. (1994). *Snow crash*. New York: Bantam Books.
- Stickney, A. (2012). "Now approaching two years of RealID – did it work?" *WoW Insider*, May 28, 2012. Retrieved from <http://wow.joystiq.com/2012/05/28/now-approaching-two-years-of-real-id-did-it-work/>
- Stone, A.R. (1996). *The war of desire and technology at the close of the mechanical age*. Cambridge: The MIT Press.
- Suits, B. (2005). *The grasshopper: Games, life and utopia*. Broadview Press.
- Sundén, J. (2003). *Material virtualities: Approaching textual embodiment*. New York: Peter Lang.
- Sutton-Smith, B. (2001). *The ambiguity of play*. Cambridge: Harvard University Press.
- Sydel, L. (2010). "Sci-fi inspires engineers to build our future." *National Public Radio*. Retrieved from <http://www.npr.org/templates/story/story.php?storyId=129333703>
- Syp (2009). "Three things I love about WoW's dungeon finder." *Bio Break*. Retrieved from <http://biobreak.wordpress.com/2009/12/28/three-things-i-love-about-wows-dungeon-finder/>
- Tainter, J. A. (1990). *The collapse of complex societies*. Cambridge: Cambridge University Press.

- Taylor, T.L. (2006). *Play between worlds: Exploring online game culture*. Cambridge: The MIT Press.
- Terdiman, D. (2006). "Newsmaker: Virtual magnate shares secret of success." C|Net, December 20, 2006. Retrieved from http://news.cnet.com/2008-1043_3-6144967.html
- The Spreading Taint (2011). "About Taint." Retrieved from <http://taint.rtg.org/guide.php?guideid=1>
- Thompson, C. (2007). "Voice chat can really kill the mood in WoW." Wired, June 19, 2007. Retrieved from http://www.wired.com/gaming/virtualworlds/commentary/games/2007/06/games_frontiers_0617#previouspost
- Tizzy, B., Auer, A., et. al. (2007-2009). "Not possible in real life." Retrieved from <http://npirl.blogspot.com/>
- Tramp, H. (2009). "Plate mail bikini." The Border House. Retrieved from <http://borderhouseblog.com/?p=541>
- Turkle, S. (1997). *Life on the screen: Identity in the age of the internet*. New York: Simon and Schuster.
- _____ (2012). *Alone together: Why we expect more from technology and less from each other*. New York: Basic Books.
- Turner, F.J.(1893). "The significance of the frontier in American history." In Faragher, J.M., *ibid*.
- _____ (1910). "Pioneer ideals and the state university." In Faragher, J.M., *ibid*.
- _____ (1914). "The west and American ideals." In Faragher, J.M., *ibid*.
- Turner, F. (2008). *From counterculture to cyberculture: Stewart Brand, the Whole Earth Network, and the rise of digital utopianism*. Chicago: University of Chicago Press.
- Vinge. V. et al. (2001). *True names: And the opening of the cyberspace frontier*. New York: Tor Books.
- Warner, J. (2007). "The Legend of Leeroy Jenkins." Denver News, March 8, 2007. Retrieved from <http://www.westword.com/2007-03-08/news/the-legend-of-leeroy-jenkins/>
- Warren, M.E. (2000). *Democracy and association*. Princeton: Princeton University Press.
- Warren, S. D. and Brandeis, L.D. "The Right to Privacy." Harvard Law Review, Vol. 4, December 1890. Retrieved from http://groups.csail.mit.edu/mac/classes/6.805/articles/privacy/Privacy_brand_war2.html

- Webb, W.P. (1951). *The great frontier*. Lincoln: University of Nebraska Press.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.
- Wetherell, M. and Maybin, J. (1996). The distributed self: A social constructionist perspective. In: Stevens, Richard, ed. (1996). *Understanding the Self*. London: Sage, pp. 219–280.
- Winner, L. (1980). “Do artifacts have politics?” *Daedalus*, Vol. 9. No. 1
- Wiseman, J. (1998). *SM 101: A realistic introduction*. No city: Greenery Press.
- World of Warcraft (2012a). “Science” Retrieved from <http://us.battle.net/wow/en/guild/earthen-ring/Science/>
- _____ (2012b). “Future Tense.” Retrieved from http://us.battle.net/wow/en/guild/misha/Future_Tense/
- World of Warcraft Forums (2011). “Time to level up compared to classic?” November 2011. Retrieved from <http://us.battle.net/wow/en/forum/topic/3558805872>
- Wortham, S. (1999). “The heterogeneously distributed self.” In *Journal of Constructivist Psychology*, vol. 12, No. 2, March 1999, pp. 153-172.
- Zeller, T. (2006). “Defending cruelty: It’s only a game.” *New York Times*, February 20, 2006. Retrieved from <http://www.nytimes.com/2006/02/20/technology/20link.html>
- Zimmerman, E. (2012). “Jerked around by the magic circle: Clearing the air ten years later” *Gamasutra*. Retrieved from http://www.gamasutra.com/view/feature/6696/jerked_around_by_the_magic_circle.php
- Zolli, A. and Healy, A.H. (2012). *Resilience: Why things bounce back*. New York: Free Press.
- Zubrin, R. (1994). “The significance of the Martian frontier.” In Zubrin, R. (1996). *The case for Mars: The plan to settle the Red Planet and why we must*. New York: Simon and Schuster.