Orcs, Ore, and Opportunity Cost: The Political Economy of Online Game Worlds

by

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1. Introduction and Justification

The modern relevance of video games can be saliently observed in a variety of contexts. In an increasingly technology-driven society, the medium often constitutes a powerful force for continued advancement and innovation. The NIMROD computer, for example, was developed in 1951 and could play a single rudimentary game; its unveiling at the Festival of Berlin marked a nascent appearance of the now-ubiquitous Graphical User Interface or GUI (Brookhaven). Modern GUIs continue to bear the imprint of gaming; sprites (basic two-dimensional images) were originally developed for early game processors such as the Signetics 2636 yet today play a prominent and quotidian role as a computer user’s mouse pointer (Hansen). Furthermore, the design of modern aircraft flight controls has been heavily influenced by video game joysticks – themselves traceable to the Atari 2600’s seminal game controller (Terdiman).¹

The inextricable link between video gaming and technological progression is not limited to hardware and software. The Internet, inarguably one of the most significant developments of the past few decades, shares an early history with electronic games as well. Online file sharing, for example,

¹ Sound cards, graphics acceleration, and CD/DVD-ROM drives are other technologies whose broad adoption owes much to the expanding demands of video gaming.
remains one of the most widely used and controversial functions of the Net. Its roots lie with Novell Netware, an operating system created in 1984 that allowed for geographically disparate users to jointly write files to a shared volume. Yet Netware was inspired by Snipes, a simple multiplayer combat game that required players to share a single network drive (“Definition of snipes”).

In spite of their early technological import, video games and the people who play them have long existed on the margins of society. Today, however, this is no longer the case. In 2008, the American video game industry reported net earnings of USD$11.7 billion, surpassing the domestic film industry for the first time (Entertainment Software Association, “Annual Report” 25). Gaming is no longer the stigmatized domain of the young, pimply-faced male nerd: while the predominant gamer archetype remains an 18-34 year-old man, other demographics are increasingly well represented (Entertainment Software Association, “2009 Essential Facts” 3). This trend has likely been encouraged by the proliferation of games and systems (such as the Nintendo Wii) targeting a more casual audience. Though the industry is often embroiled in controversy – consider the fallout of the 1999 Columbine tragedy – it is abundantly clear that gaming has gained widespread mainstream acceptance as an entertainment medium.
As electronic gaming has grown in cultural acceptance and profitability, the nature of the games themselves has also evolved. While early titles were often the product of a small development team working out of someone’s basement, the blockbusters of the modern era require hundreds of people and enormous investments in capital. Last year’s Call of Duty: Modern Warfare 2, one of the most (critically and commercially) successful games of all time, cost nearly USD$200 million to develop, market, and distribute (Fritz 1).

With increasing budgets comes greater sophistication. Early games were content to establish an austere arena of play; today’s programs often aspire to immerse the participant in (at least the façade of) a living, breathing world. Released in late 2008, Rockstar North’s Grand Theft Auto IV captivated players with its highly detailed portrayal of a fictional New York City. The artistic achievements of these games are not limited to graphics or virtual geography; Bioshock, developed by 2K Games, garnered near-universal praise as a philosophical rebuttal to Ayn Rand’s meritocratic normativity. Yet electronic gaming’s apprehension of the social sciences is not limited to conjecture or abstract sentiment. Indeed, notable economic precepts can be felt in many recent titles. Red Dead Redemption, also by Rockstar, allows the player to profit in a dramatized Old West by selling animal skins at a markup
in places where they are rare; recent additions to Lionhead’s *Fable* series permit the protagonist to obtain property and subsequently charge rent.

The aforementioned titles share one common trait: all are largely “single-player,” meaning that their universes are populated by the sole human participant and “non-player characters” or NPCs. While such games are worth mentioning, I will focus my research on another popular genre, the “massively multiplayer online game” (MMOG). MMOGs had roots in the early days of the Internet, where tech-savvy university students participated in collective, text-based adventures known as Multi-User Dungeons (MUDs). In 1991, *Neverwinter Nights* took the MUD concept further with the incorporation of a full graphical interface. Other games such as *Everquest* and *Ultima Online* further popularized the concept towards the end of the decade (Wood). By the turn of the century, the genre had garnered a substantial, ever-increasing following. In contrast with their largely offline counterparts, these titles take place almost exclusively online, in settings populated by both NPCs and human players. Because MMOGs logically involve (and are often centered upon) human-to-human interactions, their potential value to interested social scientists is tremendous. Where else can one so readily and easily observe such concentrated levels of social activity?
A compelling example of this potential occurred in September 2005 in *World of Warcraft*, a fantasy MMO created by Blizzard Entertainment. At this time, developers opened the gates to a new dungeon adventure that naturally culminated in an ultimate boss battle. Such content additions are routine in games such as *WoW*; because players are charged a monthly subscription fee, it is important to keep them interested. Yet this particular introduction yielded an unexpected result. The NPC antagonist of the dungeon’s final confrontation was able to cast a certain spell, “Corrupted Blood,” an ailment that drained the health of its victim and could be passed to his or her allies. Though this virtual disease was intended to be ephemeral and limited to certain locations, a software glitch resulted in its longevity and eventual migration to major population centers within the game. The result was nothing short of a digital pandemic as *WoW*’s cities became scenes of mass player-character death (Ward). Ultimately, the incident attracted the attention of several epidemiologists who compared the electronic plague to real-world pathogens such as SARS and avian influenza (Balicer). In light of this and other, similar events, I see MMOs as offering a fascinating domain for the study of human behavior.

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2 These titles are the progeny of aforementioned text-based games that sprang up almost concurrently with the nascent Internet.
In my research, I will focus on two prominent games that I believe will offer the most economic insight. I believe Blizzard’s aforementioned *World of Warcraft* merits such a close examination. Released in late 2004, the game is the unquestionable king of MMOs, with over 12 million subscribers and a stranglehold on more than 62% of the market (“MMOG Subscriptions Market Share”). It is not sheer size alone that makes *World of Warcraft* so compelling, however; its accessibility (featuring attractive, stylized graphics and relatively low hardware requirements) should also mitigate biases in the observed player population. The game’s fantasy world of Azeroth possesses an interesting dual-track economy: while items and materials (found or created by the player) can be exchanged with NPCs for currency at a fixed rate, they can be posted at market rates in a player-controlled Auction House as well. In actively moderating the game world, Blizzard employees often rely on contrivances akin to fiscal and monetary policy to keep the game’s economy within certain parameters. Facets of political economy can also be found within *World of Warcraft*; Veblen’s conspicuous consumption, for example, plays a large role in incentivizing late-game adventuring.
I will next turn my focus towards CCP Games’ *EVE Online*. Though it has neither the accessibility nor subscriber base of Blizzard’s title, *EVE*’s space opera setting (an extensive universe known as New Eden) possesses intriguing features of its own. Most significantly, *EVE*’s economy is almost entirely player-driven; price and supply levels are purely determined by a vibrant free market. Parallels between such a system and real-world economies have already been noted: recently, *EVE*’s community was rocked by a financial collapse not unlike our own (Cox). Indeed, CCP employs an in-house economist to analyze pecuniary activity within the game world. The comprehensive quarterly reports he publishes (for developers, players, and any other interested parties) undoubtedly comprise an invaluable and unprecedented source of information on the mechanics of virtual economies.

Throughout this paper, a particular focus of mine will be the nature of capital. The accumulation and employment of this factor, as Marx noted, is integral to the growth and sustenance of the market economy. According to Peruvian economist Hernando de Soto, it – or rather, its absence – is the cause of much struggling in newly-liberalized Third World economies. Contrary to popular belief, the “poor” in the Third World are not actually bereft of assets.
In fact, the wealth accumulated by these people is several orders of magnitude greater than what is typically received in foreign aid. However, the citizens of the developing world lack many of the tools – such as a formal system of property – necessary to employ their assets in the production of capital. Thereby unable to use such capital to generate new wealth, they are left with economies that possess few means of genuine growth.

Ensuring that such economic agents are not marginalized further, then, remains a task of many contemporary governments. In this regard, the authorities of MMOGs and developing nations seem to share a common agenda. Though the conditions (and stakes) are obviously different, parties can gain in either case by best facilitating growth through the expansion and control (direct or otherwise) of the formal economy. *WoW* and *EVE* achieve this by implementing well-regulated standards of capital creation, ownership, and exchange. As a result, the risks of a market economy – in *EVE*, for example, monumentally expensive starships can be lost in a matter of seconds – are in part offset by continued prospects for wealth generation.

The first few chapters of this thesis will focus on hermetic phenomena within MMOG environments. I intend to explore the nature of virtual markets and illustrate the manners by which they analogize or diverge from economies in the real world. After a brief explication of de Soto’s framework,
I will explore the nature of production and exchange in both virtual worlds, highlighting compelling economic phenomena as well as notable design decisions made by game developers. In the penultimate chapter, I will extend my analysis to the confluence of real and virtual worlds. Exchange between these two economies (the real world sale of digital goods, for example) is an increasingly noted phenomenon in contemporary MMOGs; I intend to further elaborate on its characteristics as well as the tremendous controversy in which it is currently embroiled.

Ultimately, the aim of this paper is to further realize the burgeoning realm of video and computer gaming as a legitimate subject of academic inquiry. Noting the abundant idiosyncrasies of virtual worlds, one may come to conclude that these economies are more disparate from than they are convergent on those of the real world. Such an observation, in my mind, would not discount the merit of this thesis. Through the course of my analysis, I hope to show that virtual worlds are complex, evolving entities whose operations are of interest to social scientists of all predilections. As electronic gaming becomes an increasingly predominant form of entertainment to millions, I would see it also develop as a compelling intellectual arena. This work intends to lend credence to such a postulation.
2. The Mystery of Capital: A Framework for Analysis

Peruvian economist Hernando de Soto’s second book, *The Mystery of Capital*, begins with a compelling paradox. The end of the Cold War venerated capitalism as “the only feasible way to organize an economy” (1). Nonetheless, the market economy now faces its hour of crisis: Third World and former communist nations across the globe have attempted to embrace capitalism, only to see their efforts result in disappointment. While those in the West continue to enjoy (mostly) unbridled prosperity and economic growth, their counterparts elsewhere encounter only corruption and stagnant progress. As the spread of globalization continues, capitalism is increasingly met with skepticism and even anger.

Why has a free market economy failed to take hold outside of the West? De Soto immediately rejects any sort of cultural explanation. Indeed, he notes, “the cities of the Third World and the former communist countries are teeming with entrepreneurs…the inhabitants of these countries possess talent, enthusiasm, and an astonishing ability to wring a profit out of practically nothing” (4). The entrepreneurial spirit is clearly alive and well outside of the West, the lack of a Protestant work ethic notwithstanding. Instead, argues de Soto, the difficulties these countries face stem from an inability to produce capital. Contrary to popular belief, the “poor” in the
Third World are not actually bereft of assets. In fact, the wealth accumulated by these people is several orders of magnitude greater than what is typically received in foreign aid.

There is, however, one critical difference between the wealth of the Third World and that possessed by the West. In the latter, all assets are carefully recorded and quantified in a comprehensive system of property. “Thanks to this representational process,” argues de Soto, “assets can lead an invisible, parallel life alongside their material existence” (6). Formally recognized property can, for example, be used as collateral to obtain credit from a bank, which is in turn employed to start a business. All assets acknowledged in this manner are thus useful for their secondary ability to produce capital.

Unfortunately, a sufficiently comprehensive system of formal property does not exist in the Third World or former USSR; it is this shortcoming that has thwarted the efforts of these countries to privatize their economies. At the end of the chapter, de Soto outlines the rest of his argument, which centers on the “five mysteries of capital.” Each mystery is the subject of a subsequent chapter in the book.

The first of de Soto’s mysteries regards the dearth of available information on economic activity in markets outside of the West. Indeed, claims de Soto, 80% of the populations of the Third World and former Eastern bloc
participate in markets entirely outside of documented, “legitimate” channels.

To better explain how such a situation might arise, he provides a brief historical account of modernization in the Third World. Prior to the 1950s, most economic activity in these countries was centered on agricultural organization, similar to Europe in the eighteenth century. Rapid industrialization, however, resulted in a massive and unexpected migration from rural areas to burgeoning city centers. These migrants faced what de Soto dubs an “impenetrable wall” of legal and social obstacles, ultimately relegating them to informal sectors of the economy.

To illustrate such a process, de Soto recalls his time spent doing research in Lima, Peru. The objective of his team, as with many rural migrants, was to open a legal garment business. After six hours a day for 289 days (and the equivalent of $1,231 in fees), the store was finally registered. Related endeavors were even more arduous: licensing a taxi or private bus took more than two years of bureaucratic wrangling, while authorization to build a house required almost seven years. Other research into the Philippines, Egypt and Haiti confirms the near ubiquity of these barriers to entry. In fact, notes de Soto, “we found that it is very nearly as difficult to stay legal as it is to become legal” (21).
Upon losing or failing to attain legality, these would-be entrepreneurs head to the only market they can utilize – the extralegal sector. In Brazil, for example, areas called *favelas* are home to a voracious, informal free market wholly apart from the heavily regulated official economy. Far from a refuge for the desperate, such “illegal” communities provide much of what is missing in the “official” market. “In fact,” observes de Soto, “it is legality that is marginal; extralegality has become the norm” (30). The problem with the illicit nature of these economies, however, is that they are incapable of producing capital. Outside of official systems of documentation and valuation, the assets owned by people in the extralegal sector cannot be readily identified; the informal economy thus remains undercapitalized. Just how valuable is this underreported economy? According to the calculations of de Soto and his team, the extralegal economies of the Third World and former Soviet Union have amassed a whopping $9.3 trillion in real estate. Such a figure is almost equivalent to the total wealth of major Western stock exchanges and more than twenty times the level of direct foreign investment in the area. The Third World poor, de Soto concludes, occupy veritable “acres of diamonds” just waiting to be utilized.

The book’s third chapter focuses on the nature of capital, a central facet of de Soto’s argument. As mentioned before, assets in the Western world lead a
dual existence; in addition to their material worth, they are integral to the creation of new capital. The undocumented assets in Third World informal economies, by comparison, lack this capacity of capital conversion. Stuck with “dead capital,” extralegal markets are thereby deprived of the chief means of growth.

To better illustrate this important disparity, de Soto offers an outline of the historical understanding of capital. In medieval Latin, the word came to denote a head of cattle or other livestock. From this relatively pedestrian definition one can already observe the characteristic duality found in modern capital: in addition to its intrinsic value as a source of food, livestock allows its owner to produce additional wealth (“surplus value”). Classical economists thus embraced the term, redefining capital as “that part of a country’s assets that initiates surplus production and increases productivity” (41). The creation of surplus value was incredibly important to these thinkers. For Adam Smith, it facilitated economic specialization, as individuals could focus on one activity and exchange their surpluses for other needed goods. Acknowledging Smith’s argument, de Soto concludes that capital is not the mere summation of a group of assets. Instead, it is the potential of these assets to facilitate further economic production.
How can this potential be realized? The answer, in de Soto’s mind, lies with the establishment of a comprehensive and effective system of property ownership. This factor, according to the economist, is the reason for the Western world’s pecuniary success; conversely, its absence in the Third World explains widespread economic shortcomings there. Formal property ownership is beneficial to the production of capital for six main reasons. First, it is capable of representing precisely all that is economically useful regarding an asset, allowing that asset’s most productive qualities to be identified. Next, it allows for this information to be integrated in a unified system, readily facilitating comparison and exchange. The linking of all assets makes all individuals accountable for their actions; the risk of forfeiture or seizure provides a powerful incentive against fraud or theft. Representations of assets promote fungibility, allowing them to be divided or combined to meet almost any demand. Furthermore, a unified system of property ownership allows individuals to broaden their economic interactions, leading to increased specialization and growth. Finally, all-encompassing formal property rights act to secure transactions, lowering the costs of exchange.

Without an efficacious system of property formalization, the Third World and former communist countries remain economically marginalized. De Soto concludes this chapter by turning to the French historian Fernand Braudel,
who saw Western capitalism as being stuck inside a “bell jar,” cut off from the rest of the world. Why, Braudel asked, has the bell jar of successful capitalism not been lifted? For de Soto, the absence of integrated property rights outside the West has maintained this condition of “capitalist apartheid.

De Soto next turns his attention to the problem of political awareness, which has thus far kept governments outside of the West from addressing the causes of economic marginalization. As mentioned before, the Third World and former USSR have undergone tremendous industrialization in the last half century. Unfortunately, their formal legal systems have thus far failed to keep pace. As a result, those migrating to the cities were relegated to the extralegal sector, where their assets cannot constitute anything but dead capital. Yet Third World governments remain largely unaware of the scale of this dilemma. Their ignorance comes as the result of two primary blind spots. First of all, Third World leaders fail to understand the reality of life outside of the bell jar. They “see only a massive influx of people and illegal workers and the threat of disease and crime…no one notices that the real cause of the disorder is not population, or urban growth, or even a poor minority, but an outmoded system of legal property.” Secondly, these authorities do not recognize the parallels between their situation and that of the West as it underwent its own industrial revolution.
De Soto hopes to further address the latter blind spot by expressly turning his attention to historical extralegality in the United States. As in Western Europe, the problems presented by informal economic arrangements in America were ultimately solved through the formalization of property rights. This integration was not based on new technologies, but instead occurred as the fledgling government fitted its legal system to pressing social demands.

In the early days of European settlement in the Americas, efforts were made to import British common law and its land system to the new world. However, it soon became apparent that the legal systems of the Continent were not sufficient. Unable to defer to English jurisprudence, “the courts often turned to local town customs and transformed them into a new body of law that would stabilize land dealings” (112). Squatting became commonplace, and was only encouraged by politicians eager to expand the borders of their colonies. Because the extant formal system was often too burdensome to be practical, squatters employed de facto mechanisms to secure their holdings. These “tomahawk” or “cabin” rights involved a rudimentary means of marking territories (by carving initials or building a cabin) for the purposes of showing ownership.

Nevertheless, squatting remained a significant issue for local governments and those responsible for enforcing colonial law. An early form of
amelioration came in the form of “preemption,” which allowed those who had settled on land owned by others to be compensated for any improvements they made to the property. The squatter was also granted the ability to purchase the improved land before it went on public sale. Preemption thus represented an implicit acknowledgement of cabin and tomahawk rights, marking a nascent step towards full formalization of property rights.

Yet squatting remained a contentious issue even after the widespread implementation of preemption law. The Northwest Ordinance, for example, “provided an elegant structure of formal law for the distribution of public lands,” but did little to “control nor maintain the increasing number of people migrating to the nation’s periphery” (122). Furthermore, the issuance of “land scrip” (land given to war veterans) only compounded matters, as many of its beneficiaries elected to sell their entitlements on a black market. In addition, much land was given by the federal government to the burgeoning railroads with the hope that it would be rapidly sold to private settlers at low prices. Instead, what resulted was a complicated mess of property holdings and flashes of violence between squatters and railroad authorities.

“At the beginning of the nineteenth century,” de Soto summarizes, “the property system of the United States was in a state of disarray” (127).
Extralegal settlement continued to frustrate the federal government, whose legal institutions simply could not account for the massive influx of migrants. Finding formal channels of property acquisition to be excessively cumbersome, settlers created instead their own system of “laws.” The result was a duality of legal and economic systems, “one sitting codified and in the statute books, the other operating on the ground” (129). Increasingly, the authorities recognized the need to reconcile the two, and greater efforts in this direction were finally made.

According to de Soto, attempts at property reform were made from three areas of American society. On the state level, pressures exerted by settlers caused extant legal institutions to be challenged. In Kentucky, for example, the state government passed a series of occupancy laws providing for “the right of occupants...to their improvements and the right of settlers...to a firm and clear title to their land” (130). Even when these new laws were struck down (as they were in Virginia), the resulting backlash made it clear to politicians that the extralegal sector of American society was no longer a presence to be ignored.

The federal government also acted to “lift the bell jar.” Though federal courts continued to oppose occupancy laws, they began to see widespread adoption, particularly in the newer states of the West. Cognizant of the
interests of their constituencies, congressmen from these states pushed for greater recognition of extralegal Americans. In 1830, the fundamental mechanism of preemption was universally extended to all settlers; this legislation was readily renewed in subsequent years. Extralegal sectors, such as claim associations and miner districts, played an important role in the eradication of the bell jar. Most significantly, they demonstrated a “law-mindedness rooted in the conviction that…‘the people’ have a greater right to define and interpret the rules than legal experts” (136).

Gradually, the United States was able to integrate the realities of rapid Western settlement into a formal legal system. The Homestead Act, passed in 1862, provided a final legitimization of settlers’ activities; the problem of extralegality was thus more or less resolved. But how, asks de Soto, is the American example important to struggling capitalist economies today? “In passing laws to integrate the extralegal population,” he explains, “American politicians expressed the revolutionary idea that legal institutions can survive only if they respond to social needs” (150). Reform-minded leaders outside of the West might do well to consider such a concept.

In chapter VI, de Soto tackles his last mystery, the failure of Third World and former communist countries to adequately integrate their formal legal systems. Indeed, he observes, many of these nations have previously
attempted to democratize formal property. Why, then, have they failed? De Soto identifies five common misconceptions upon which many unsuccessful efforts have been made. First is the idea that extralegal behavior predominantly occurs for the purposes of tax evasion; all things considered, de Soto argues, it is usually more expensive to operate in the economic underground. Another common assumption is that assets must be surveyed and recorded with modern technology before they can be fully integrated in a formal economy. This, too, is fallacious, evidenced by the documentation of assets in the West far before the invention of computers. The last three assumptions (the belief that mandatory law is sufficient, that extralegal contracts can be ignored, and that conventional attitudes regarding asset ownership can be easily altered) have been disproved earlier in the book.

De Soto identifies two paramount challenges facing any policymaker wishing to create an integrated system of property. First of all, “the separate, loose extralegal property arrangements...must be woven into a single system from which general principles of law can be drawn” (162). To do this, government authorities must discover what constitutes “the people’s law” and properly acknowledge its implications. It is not enough to see extralegality as a vacuum waiting to be filled by mandatory law. Indeed, de
Soto argues (with support from Plato and Kant), property law must be rooted in social contracts in order to be successful.

Yet widespread formalization is not a mere task for the conscientious legal scholar. Because it implies a move away from the status quo, property integration also requires the efforts of savvy politicians able to “rearrange the eagle’s nest without being clawed” (189). This involves three primary tasks. First of all, the would-be reformer must be willing and able to experience life from the perspective of the poor in order to truly understand and explicate the existing obstacles to formal property. Next, this policymaker must be able to enlist support from those elites already inside the bell jar. Finally, he or she must take on the “custodians” of the jar – the lawyers and technicians directly responsible for the status quo.

The framework offered by Hernando de Soto proves intriguing when applied to economies within a virtual world. Although many of the historical phenomena he identifies have no clear analogue within World of Warcraft or EVE Online, his conception of a “bell jar” remains particularly compelling. Throughout the rest of this paper, I will highlight examples in which such a sector of formal economic activity is similarly extended and opened – or remained inaccessible – to player populations of virtual worlds. In a later
chapter, I will also explore the extralegal nature of the real world market for in-game goods.

The upcoming chapter will focus on the nature of production within *EVE Online* and *World of Warcraft*. 
3.1 Methods of Virtual Production

Introduction to virtual production

Tuukka Lehtiniemi, a researcher with the University of Helsinki, provides an adroit overview of the process of creating goods in a virtual economy. Citing a study by Joshua Fairfield of the Washington and Lee School of Law, Lehtiniemi identifies property in a virtual world as being a “rivalrous, persistent, and interconnected resource” (12). In effect, such items exist semi-permanently, can only be consumed by the individual who owns them, and possess utility related to other features of the game environment. These characteristics, which are shared by property in the real world, ensure that virtual goods are economically useful for a user to possess.

Lehtiniemi goes on to distinguish two methods by which these goods can be produced in a virtual economy. The first of these processes is a close facsimile of production in real-world markets; raw materials are accumulated and refined (possibly through several stages) into finished goods for use or exchange. The initial stage of such production, Lehtiniemi notes, “usually happens by a simulation of some real-world raw material production process, such as mining” (28). Subsequent activity, ostensibly adding further value to these materials, often occurs through the application of specialized inputs possessed by multiple economic agents. In practice, however, the value chain...
theory frequently breaks down in a virtual economy; such a phenomenon will be explored later in the chapter.

As mentioned above, this method generally replicates (at least within the constraints of a virtual environment) the manner in which property in the real world is created and refined. The second process identified by Lehtiniemi, however, is one largely unique to an online economy. Often known colloquially as “hunting,” this activity involves the direct attainment of finished goods from entities in the game world. For example, notes Zachary Simpson, a character in *Ultima Online* might venture into a wild region of the game world and encounter a hostile, software-generated NPC monster. Upon defeating it, he or she commonly receives in-game currency as well as “loot” in the form of a new sword or piece of armor. In this fashion, the player has effectively “produced” a finished good through his or her efforts in defeating the game’s enemies (Chapter 2).

The exact implementation of these modes of production will now be explored further in both *EVE* and *WoW*.
3.2 Factors of Virtual Production

In his seminal study of economic activity in a virtual world, Indiana University researcher Edward Castronova identifies in-game productive processes as a function $q$ of five inputs:

$$ q = f ( L, H, A, K, R) $$

What follows is a detailed breakdown of each input, and examples of its manifestation in EVE as well as WoW (187).

**Labor**

$L$ represents the labor (in real-world hours) invested by a player in a given mode of virtual production. Productive activities in a real-world economy almost always require a commitment of some time. This does not change in the virtual world. Regardless of the game or specific conditions of production, a player in an MMOG must devote playing time to relevant processes in order to produce more goods. True to the Lockean labor theory of value, it is this investment of playing time that endows an in-game commodity with much of its value.

In an MMOG, a player’s labor is the most tangibly scarce factor of production. There is only so much time each day that can be devoted to playing a game; even users without familial, academic or professional
obligations must occasionally pause to eat and sleep. As a result, there is a 
notable opportunity cost associated with participation in any sort of in-game 
activity. In light of this, players might decide to delegate more mundane 
productive tasks to others, often paying for the privilege of doing so. The 
existence and implications of such real-world valuations of virtual labor time 
will be discussed further in chapter 5.

**Human capital**

Of course, there are factors that may prolong or shorten the duration of 
a given productive process. On such variable is the player’s efficiency of 
production, denoted by H in the production function. On some level, 
gameplay in *EVE*, *WoW* and similar titles is a test of a player’s skill. The more 
competent a user is in understanding and manipulating the mechanics of a 
game, the more successful they will be in attaining its objectives. When these 
goals involve a process of production, the more skillful player will thus be 
equipped to produce goods more efficiently. As a result, the abilities 
represented by H can be considered synonymous with human capital in real-
world productive endeavors.

In *EVE Online*, *World of Warcraft* and many other virtual worlds, 
players often experience an eventual trend of diminishing returns with regard
to this productive input. Unversed in the more intricate mechanics of a particular game, a new user is likely to be limited in his rate of production. As the player becomes more acclimated to the world, the ability to readily acquire goods improves dramatically. After a certain point, however, the former neophyte will have essentially mastered game mechanics relevant to production. At such a terminal skill juncture, improvements in other factors of the process will prove more beneficial to one’s productive output.

*Virtual human capital*

It might seem self-evident that better gaming skills would make a MMOG user more effective at in-game production. Yet H is not the only form of human capital at work in such a virtual economy. Indeed, the agency of a player’s character – distinct from the player herself – is another input at work here. This form of *virtual* human capital, represented by A, is one of the most significant factors in determining the possibilities and efficiencies of different productive behaviors. As such, the nature of its manifestation is worth elaborating upon:

In *World of Warcraft* and many other MMOGs, investments in virtual human capital are made through the productive process itself. In crafting goods or procuring them via hunting, a successful act of production grants
WoW characters experience points, ultimately allowing them to “level up” and enjoy improvements of relevant skill sets. Additionally, players may invest in their characters’ human capital by paying certain NPC trainers for more specialized skills. As a consequence, the process of character development in World of Warcraft mimics real human capital in several regards; workers become better at their jobs due to hands-on experience as well as learning gleaned from pedagogical institutions.

Unlike the involved, verisimilar process by which WoW characters gain virtual human capital, pilots in EVE level up their skillsets through a passive training system. Players choose a skill they would like to train; the development of this virtual capital then proceeds in real-time, regardless if the user is logged in or not. There is no imposed limitation on the number of skills a pilot may possess, but the time required for training (ranging from a few minutes to months, depending on the type and level of the skill) ensures that profligate skillbuilding comes with a high opportunity cost. Consequently, prudent users are careful to invest their training time only in the virtual human capital that they deem most profitable.

Like real human capital, however, virtual human capital is subject to the law of diminishing returns; as a character gains in level, subsequent gains in experience prove less and less effective in increasing productive power.
This phenomenon is especially pronounced in games such as *World of Warcraft*, which features an explicit constraint on the maximum level of a character. Ultimately, as the player becomes involved in increasingly sophisticated production tasks, virtual human capital is supplanted in importance by other factors such as the quality of applied physical capital.

**Physical capital**

Human capital, possessed separately by the player as well and her character, is not the only form of capital input required for production in a virtual world. Indeed, the skills to create or accumulate goods are of themselves little benefit without the necessary tools. Regardless of the type of production in question, agents in a virtual economy almost always utilize some sort of physical capital, indicated by a K in Castronova’s function. The acquisition of this necessary input is often the main focus of players in *EVE* as well as *WoW*. Indeed, because virtual characters do not have to fulfill many real world needs (such as hunger, thirst et al), a majority of final goods resulting from the productive process come to comprise some form of this capital. It is thus important to understand the significance of *virtual* physical capital in both games.
Easily the most salient type of physical capital in World of Warcraft is that which assists its possessor in quests and other hunting-based tasks. Often known colloquially as “gear,” such items range from swords, axes and staffs to shields and suits of armor to jewelry and other trinkets that raise a character’s capabilities. Upon entering the world as a new character, the player is provided with a rudimentary set of capital with which he or she can hunt low-level NPCs. In a short time, however, more powerful gear becomes available, enabling the once-moribund newcomer to expand his or her productive possibilities. Poor (or “grey,”) and common (“white”) gear is extremely easy to come across, being frequently dropped by weak enemies in the wild environment. Higher types of physical capital (“green” or uncommon; “blue” or rare; “purple” or epic; and “orange” or legendary) are much more difficult to attain. These goods are most often (although not always) acquired at the culmination of a dungeon or quest, and can be in high demand on the player-driven market.

In some regards, the physical capital crucial to production in EVE plays a similar role to that of gear in World of Warcraft. Though the equipment itself may differ (laser cannons instead of swords; armor plating instead of chainmail), much of EVE’s gear is useful for its instrumentality to combat (hunting) or manufacturing. Proper outfitting, from the choice of equipment
modules to the type of ship itself, makes almost all the difference between successful production and character death. The integrality of equipment is perhaps even more pronounced in EVE (the gameplay of which is often derisively referred to as “spreadsheets in space”) than in WoW, where user input remains a large factor. Furthermore, any of this physical capital can be lost at any time if the character possessing it is destroyed in combat. The result is a process of capital accumulation much more hazardous and random than Blizzard’s carefully implemented system.

In spite of their distinctions, both games notably exist in a Marxian environment wherein player characters themselves own most of the means of production. The lowly asteroid miner in EVE is not simply selling off her labor power; she is combining her productive efforts with capital she owns and possesses to create new wealth. Such a worker will likely find it necessary to trade (or work) with others to attain necessary goods, but on a fundamental level her labor power (and the value it yields) is entirely hers to dispose of in these transactions. Likewise, a World of Warcraft character might have to find capable allies in order to produce rare goods, but he is always able to apply his own gear to the task.

There are, of course, exceptions to the individual ownership of capital that characterizes the two games. Certain productive behaviors in WoW and
EVE require the use of an additional form of physical capital that is not directly owned by the players. The divergent approaches to the accessibility of such assets reveal much about the contrasting developer intentionalities behind each game world. In World of Warcraft, for example, crafting vocations such as blacksmithing and smelting require the application of character effort and capital to anvils and forges, large and immobile manifestations of productive capital. As in a socialist utopia, however, no individual (or group of individuals) owns such means of production; these fixed resources are freely available for all to use. EVE Online, by comparison, also requires the player to make occasional use of fixed capital (such as space stations) for manufacturing tasks. In the latter game world, however, the owners of such facilities – whether they are human corporations or code-operated entities – are often rent-seeking actors and will charge players for the privilege of their use. This set of circumstances perfectly epitomizes the more individual-oriented, capitalistic nature of EVE’s gameplay, standing in stark contrast to the collectivist design ethos behind the virtual world of Azeroth.
Raw materials

The final attribute of virtual production, R, has been mentioned before yet not fully elaborated upon. In both discussed games, production begins with the harvesting of resources and raw materials from the environment. Though their appearances and behavior may change between and within games (e.g. a wild orc will fight back; an asteroid or vein of copper will not), the continued existence of these pristine assets is as crucial to a virtual economy as any other factor of production. Because the main economy of WoW revolves around hunting, hostile monsters (“mobs,” short for mobiles) can be considered the basic resource to be harvested in the game; indeed, the process of rapidly killing monsters in a given area is often referred to as “farming”. When defeated in battle, mobs leave currency, raw materials, or finished goods behind. Over time, these enemies will reappear (a process known colloquially as “respawning”), allowing players to fight mobs already defeated by others (or come back and fight them again). Resources necessary to the crafting professions (such as herbs or veins of ore) behave in much the same way.

While players in EVE can also hunt NPC enemies for fun and profit, most fundamental resources are acquired through the process of mining asteroids. Entirely dissimilar from WoW’s mobs on the surface, these
inanimate entities nonetheless present similar concerns of resource depletion: as asteroids are partially or wholly consumed in the act of “popping rocks,” their global disappearance would have serious ramifications for the game’s economy. To prevent such catastrophe, CCP have taken measures to ensure that asteroids, too, remain a renewable resource. Just as in Azeroth, the raw materials of New Eden have regenerative properties; the functional manner in which these attributes behave, however, differs significantly in *EVE Online*. Although asteroids themselves are random and fully mutable, the belts to which they belong are fixed to certain specified areas of the game world.

When an asteroid is mined, the amount of ore removed enters a pool for all recently mined ore of that mineral type. The ore is subsequently redistributed back into the various asteroid belts of the game world at random. As a result, while the global availability of any particular raw material remains the same (without developer intervention) in the long run, the abundance of resources in a particular region of virtual space is prone to short-term fluctuation (“EVE Miner’s Guide”). Thus, for a successful miner to maximize his or her profits, they must be continuously willing to seek out the asteroid belts that are currently the most corpulent. Once these are located, however, the miner is free to reap the rewards – provided they aren’t attacked by pirates or enemy fleets.
The above expositions serve to illuminate the particular natures of the most basic productive input in *EVE* and *World of Warcraft*. The behavior of raw materials in both games is highly significant for a number of reasons. Because such natural resources regenerate relatively frequently, they are theoretically capable of adding new wealth to either in-game economy at a nearly continuous rate. When the process of harvesting yields currency in addition to regular goods, such a characteristic may act to rapidly increase the money supply of a virtual economy; the resulting “MUDflation” phenomenon will be discussed in a later chapter. In either game world, mining raw materials is a simple and often tedious activity that requires time above all else. Because time is the scarcest and most valued input in virtual production, some players may decide to pay others (in real currency) to do this work for them. The controversy surrounding this burgeoning industry of “gold farming” is a notable component of many contemporary MMOGs and is the topic of my final chapter.

Having discussed in depth the nature of production in *EVE Online* and *World of Warcraft*, the player behaviors that originate from and revolve around such processes are worth considering.
3.3 Division of Labor

A typical dungeon in *World of Warcraft* is optimally “run” by a group or “party” of five players. Larger dungeons, known as raids, require the cooperation of up to 40 players, although the division of labor can be observed in comparably small groups. Each member of a group fulfills one of three roles: Damage Per Second (DPS), Tank, or Healer. When each of these roles is adequately executed, the group’s hunting production successfully yields new goods.

These general roles, being conventions of the fantasy RPG genre, are not contrivances unique to *World of Warcraft*. Over time, however, the specific nature of each responsibility has evolved in accordance with the demands of production in Azeroth. Currently, a well-functioning party usually contains three DPS characters, a tank and a healer. While such a division of labor is now explicitly delineated in the pre-dungeon staging process, this was not always the case. Indeed, the structuring of dungeon groups was once random and haphazard; parties, for example, could have five DPS characters and no specified healer or tank. The most successful groups—often comprised of players who already knew one another—learned to carefully specialize their efforts in order to maximize the potential of survival. Wishing to extend the
bell jar of such auspicious organization to more casual players, Blizzard eventually codified these roles into the game proper.

Integral to the success of the group at large, each of the above roles is ostensibly of equal value in World of Warcraft’s labor market. In practice, however, this is not the case. The DPS role generally requires less specialization and is more straightforward to play; a competent character need only inflict as much damage as possible to adequately contribute to group production. As a result, DPS has remained significantly more popular than its counterparts. A user playing tank or healer, then, is at a significant advantage; these characters are usually able to enter dungeon groups immediately (minimizing opportunity cost) while others are forced to wait for these specialists to become available. Blizzard’s decision to formalize group roles, then, serves to reward players willing to assume less common responsibilities in group production – an incentive they would likewise enjoy in real labor markets.

Unlike in World of Warcraft, where the inherent abilities of a character’s class (chosen at the onset of play) often dictate the role they will adopt, a player new to the world of EVE Online is not necessarily required to commit to one particular career path. Moreover, the profession(s) in which he or she decides to specialize can be rethought or abandoned at any time. Because skill
training is a glacial process with significant opportunity costs, however, pilots tend to focus their efforts within one of the larger categories of combat, trade and industry. A player electing to become more self-sufficient usually creates one character (the “main”) for active tasks such as piracy or combat while retaining others (“alts”) in support roles.

More compelling examples of specialization in the game can be found within its primary institutions, the player-run corporations. Although EVE is an individualistic game wherein players may freely behave as they see fit, CCP recognized the frequent need for large-scale cooperation in many productive tasks. As such, the game includes an extensive incorporation system allowing for detailed structuring of player-run organizations. By formalizing groups of players in this manner, EVE facilitated and encouraged a division of labor within them; some pilots could dedicate their efforts (and character skill sets) to the procurement of necessary goods through trade or manufacture, while others could worry themselves with the attacks of rival corporations. As the population of the game flourished, a further division of labor emerged between such institutions. Bolstered by the establishment of an Alliance system (which allows corporations to formally work together), corporations themselves began to specialize in certain tasks such as protection or resource gathering. Ultimately, CCPs decision to explicitly
recognize incorporation rights in *EVE Online*'s code has allowed its inhabitants to reside within the bell jar of economic legality. The result is a well-functioning virtual economy that is permitted to achieve truly remarkable levels of pecuniary vibrancy.

### 3.4 Value Chain Analysis

Value chain theory stipulates that the valuation of a certain good will reflect the base price of the materials from which it was derived as well as the efforts made in improving and completing it. In the former (non-hunting) method of production identified by Lehtiniemi, raw materials are first extracted from the environment. The initial value of such resources (reflecting, in part, the labor required for their acquisition) is subsequently enhanced by further productive activities, which apply additional labor and capital to refine or otherwise improve the good in question. Ultimately, a “finished” good will be valued well above the material from which it was derived, reflecting the input costs of subsequent processes that helped to craft it.

Such a phenomenon can be readily observed at work in *EVE Online*'s capitalist economy. At the bottom of the chain, pilots skilled in mining extract ore from the asteroid fields that populate the game world. This ore is then
refined into minerals, which are later used in the manufacture of ships and equipment. At any point in this process, the miner can improve the material by himself – provided he possesses the skills and capital – or sell it to another opportunistic producer. Because of the temporal limitations involved in acquiring the capacity to improve a good at multiple levels of the value chain, most pilots tend to specialize in one or two steps of this productive process. The natural result is a robust market economy populated by a diverse assortment of specialized producers. By implementing a holistic, player-driven means of creating items, CCP Games has ensured that every user is capable of tangibly contributing to aggregate production in *EVE Online.*

*World of Warcraft,* by comparison, is hobbled by discrepancies and imbalances within its own value chain. To craft a Phantom Blade, for example, a blacksmith is required to amass and combine a number of basic goods including mithril, leather and stone. Sold individually on the in-game market, such items would usually cost a total of about 100 gold. Ostensibly, the Phantom Blade, which requires the accumulation of all these goods plus the labor time and crafting skill of the producer, should enjoy a valuation well above that of the unrefined raw materials. Yet this crafted sword typically sells for well under the price of its derivative goods. Such a
phenomenon is not unlike conditions in the former Soviet Union, where bread was sold for less than the grain used to produce it.

As in a real command economy, the failure of the value chain within World of Warcraft’s economy is rooted in design decisions made by those in charge. Crafted items such as the Phantom Blade are inherently inferior goods, meaning that most rational players with the wherewithal to attain and use them would rather purchase something better (Kassan). This dilemma might be rectified by making the Phantom Blade available for use by lower-level characters, to whom the item would compare favorably against other options. Such a solution, however, is merely a palliative in terms of dealing with the underlying issue: World of Warcraft’s crafting system remains more of an economic afterthought to the predominant productive process of hunting. Crafting remains popular not because it is economically viable but because it is the only means by which players improve their characters’ crafting skills. Indeed, the most useful items cannot be constructed at all; a user can only attain them from the corpse of a slain NPC adversary. The shortcomings of crafting in World of Warcraft might have been intentionally implemented in order to center gameplay upon more entertaining hunting activities. A more compelling supply-side economy, however, might be facilitated if Blizzard
followed CCP’s example and made efforts to better integrate craftsmen into the formal economy.

This chapter has focused on the nature of production within the economies of massively multiplayer online games. I have attempted to portray the manners in which virtual producers replicate or diverge from their counterparts in the real world. In the next chapter, the processes, arenas, and phenomena of market exchange will be examined within these games.
4.1 The Environment Defined

A virtual economy, Lehtiniemi observes, is often characterized by the behavior of two distinct groups of agents. The first, logically, is comprised of human users, whose collective efforts in “playing” an MMOG constitute the bulk of the game’s social, political and economic activity. Yet in many such games, including *WoW* and *EVE*, players are not the only ones participating in economic transactions. Indeed, users in both games are joined by a population of AI characters whose actions are driven by instructions in the game’s code. Lehtiniemi refers to the aggregate of these entities as the Environment. In many regards, agents of the Environment behave much like human users; they can interact with the user(s), suffer damage and die, and appear to take pecuniary interest in the material goods which abound in the world. In this latter behavior, however, such NPCs differ notably from their animate counterparts. Unlike human players, who are economically motivated by a desire to accrue and increase profit, these characters usually operate without budget constraints and are often willing to indiscriminately purchase goods of all types. In effect, they “supply and demand goods much like vendor machines, creating and erasing virtual goods and currency upon need (27). The intertwinement of an Environment sector with the player-
driven economy has a number of important effects on the dynamics of exchange in a virtual world and will be discussed at length.

4.2 World of Warcraft

Environment economy

The dichotomy between Environment and player-driven economy is made particularly explicit in World of Warcraft. NPC vendors are nearly ubiquitous in the game world, allowing players to readily and efficiently exchange goods for currency. Unlike other MMOGs such as Ultima Online, which employed an algorithm to simulate the forces of supply and demand, members of Blizzard’s Environment universally operate at fixed price points (known in-game as the “vendor price” for each item) set by the development team (Simpson chapter 2). Bound by these artificial rates, vendors often fail to competitively value assets involved in exchange with a player, buying goods at lower prices and selling them for more than their real market value.

Nevertheless, NPC merchants prove essential to users for whom the opportunity cost of participating in the player-driven market is too high. They are also a useful means of offloading common items that are unlikely to be desired by a human character. In this capacity, the Environment can be seen to function as an embodiment of comparative advantage between itself
and the player-driven economy. Code-operated Environment agents can produce any good instantaneously and easily, while low-level human users (limited to methods of production delineated by gameplay mechanics) are most competent at producing basic goods. Under such a condition, players have a comparative advantage in these common items and should thus trade with the Environment for less quotidian commodities.

Overproduction of common goods. To increase in level, players are required to hunt weak mobs, a process which frequently yields common items. Paradoxically, however, the resulting glut of undesired items limits the profit incentive for producers of these goods (Simpson chapter 5).

The inclusion of the Environment economy, then, embodies an extension of the formal economy to incorporate the productive efforts of low-level players. In the player-driven economy, low-level characters are likely to
lie outside de Soto’s bell jar; while somewhat valuable as a product of labor, the common items they produce possess no or little utility – and ultimate value – as a form of physical capital. Like many in real-world “extralegal” economies, the neophyte avatar would lack of any real means of economic advancement. The inclusion of the Environment, however, effectively allows for players of limited capacities to contribute to Blizzard’s world, ultimately enabling them to accumulate the means of production necessary for participation in the player-driven market.

Basic functionality of the Environment economy (Simpson chapter 5).
**Player-driven economy**

Transactions occurring between users, meanwhile, are much less ordained than the routine trading of the Environment sector. In *World of Warcraft*, a vibrant player-driven economy is predicated upon use of the code-operated Auction House. These institutions, accessible at every major settlement in the game world, provide a means by which users can exchange goods and currency at dynamic rates influenced by real-time market forces. For a small fee (relative to the “vendor price” discussed above), users are able to put an item up for auction, setting a minimum bid, length of offering, and an optional buyout price. As long as the auction remains active, other players are able to browse, place bids, or (if available) purchase the item outright. After a marginal transaction tax (5% of sale price), the Auction House ships good(s) and currency to the respective participants of exchange.

The format of the Auction Houses provides for a nearly limitless degree of market dynamism. In practice, however, other features of *World of Warcraft*’s gameplay heavily influence its economic nature. Those with the time and resources to follow the Auction House closely can undercut rivals and manipulate trends for enormous pecuniary benefit. However, there is a significant opportunity cost associated with such clever trading; namely, one must sacrifice the potential gains of hunting. As a result, consumers in *WoW*’s
Auction Houses are often price takers: seeking to obtain goods quickly and conveniently, most players are frequently willing to pay higher prices for goods rather than hold out for a better deal. As a result, the preferences and behaviors of individual buyers are unlikely to have much of an impact upon the nature of the market, and sellers are free to mark up prices of even mildly valuable items.

The nature of World of Warcraft’s Auction House system often fosters predatory behavior on behalf of sellers. Just as in the real world, such strategies often backfire. Economist David Friedman notes an instance in which his wife “observed both an attempt to corner a market and an attempt, at least partly successful, to form a cartel—a cartel she was invited to join.” Her subsequent refusal was met with threats to force her out of the market by underselling. Ultimately, however, the ultimatum proved hollow; in aggressively lowering prices, the cartel lost too much money on each transaction and soon abandoned the gambit (“World of Warcraft: A Course Proposal”).

**Seasonality**

Seasonal market effects provide further reward for the clever supplier. The annual Feast of Winter Veil, for example, is a canonical celebration of the
December holiday season. Its arrival marks the availability of a number of new quests and activities, which often require a character to obtain certain goods. Demand for these items – such as the “Small Egg,” a common and normally uninteresting commodity – consequently experiences a dramatic increase. Relatively easy to obtain, they nevertheless require some time and effort; many users would rather simply purchase them. Players inclined to invest in the production of Small Eggs, then, are able to profit handsomely (Martin).

Arbitrage

Although there are multiple Auction House locations in the world, each institution is linked to a larger, faction-specific auction market. As a result, player-driven exchange within the Horde is largely unaffected by market fragmentation, but users trading here cannot interact with the auction market of the Alliance (and vice versa). There is one notable exception to the mutual exclusivity of faction-specific auction markets. At three particular areas in the game world, neutral Auction Houses exist that allow for avatars of either allegiance to trade with one another, albeit at a greater transactional cost of 15%. Being located in more obscure areas, these impartial realms of exchange experience a significantly reduced volume of trade. However, they
present a unique opportunity for arbitrage in an otherwise cohesive faction-based economy. A player with both Horde and Alliance characters (or a friend in the opposing faction) could, by cheaply exchanging goods through the neutral auctions, gain access to the markets of either faction. Many players are cognizant of this process, however, and will lie in wait at a neutral auction, hoping to cheaply “poach” offered goods before the intended recipient can obtain them. Such behavior serves to increase the transaction costs associated with arbitrage, as opportunistic traders are forced to raise prices in the neutral market to avoid losing items to poachers.

4.3 *EVE Online*

*Environment economy*

An active Environment economy can also be observed in *EVE Online*. Unlike in *World of Warcraft*, however, the code-operated economic agents of CCP Games’ universe do not function primarily as a “safety net” for marginalized player characters. Even in the most remote areas of *WoW*’s game world, a friendly NPC is almost always nearby to provide a means of offloading common items acquired while adventuring. This is not the case with *EVE*, as Environment vendors are often hard to come by in many systems of this virtual galaxy. Though the goods they offer might remain the
product of spontaneous, code-stipulated creation, these traders carry finite stocks that require time to replenish. Furthermore, the NPC merchants one does encounter are fully integrated into the main (player-driven) economy. As such, they are not necessarily inclined to purchase low-value goods; functioning as market makers, these agents must maintain a modicum of competitiveness within a regional economy.

By incorporating the Environment into the bell jar of the primary economy, CCP Games have ensured that overall market behavior remains reasonably dynamic within certain parameters. Though influenced by basic principles of supply and demand, Environment agents are limited (by software) in their capacity to raise or lower prices substantially beyond a certain item-specific base rate. The result is a stabilizing effect on the market(s): human suppliers engaging in price gouging, for example, risk being undercut by their competition in the Environment. At the same time, NPC vendors allow some necessary goods – such as skillbooks, required items for improvements in virtual human capital – to retain their vital availability in spite of tumultuous price fluctuations. While the Environment economy in World of Warcraft can be seen to function as an essential provider of subsidies to low-level characters, the code-driven merchants of EVE’s galaxies serve a different purpose entirely. Rather than assist a particularly
needy subset of the game’s population, these entities behave as bulwarks against excessively inequitable market behavior.

*Player-driven economy*

The centrality of pecuniary activity to gameplay in *EVE Online* can be readily ascertained in its high degree of accessibility. While commerce normally takes place when a player is docked at an outpost (a brokerage system that, naturally, imposes a transaction fee), the game’s in-game interface allows one to quickly access market information at any time with the click of a button. From here, one is able to view the current list of items for sale, their prices, and further metrics such as the recent price history for a specified good. Transactions in the game world normally occur through one of two methods. Players wishing to sell goods create sell orders specifying the quantity and price of their offering. If a potential buyer finds a sell order agreeable, he or she may purchase the relevant good(s) immediately. If this is not the case, however, the prudent customer may stipulate a buy order describing a desired item and the price she is willing to pay for it. Though useful for patient traders seeking to maximize their mercantile utility, buy/sell orders frequently punish those who fail to set appropriate price points. A supplier who sets his sell orders too low, for example, will miss out
on the additional revenue a purchaser was willing to pay. Conversely, imprudent buy orders result in the consumer potentially overpaying for a good that was offered for much less.

**Manipulation of Economy**

The cutthroat nature of market activity in *EVE Online* ensures that suppliers are often willing to capitalize on any opportunity to increase profits at the expense of others. A player named Dark Shikari gained much notoriety for doing this in the marketplaces of his corporation’s rivals. Shikari would frequently venture into enemy space and purchase as many vital goods as he was able. He then relisted them on the same market at enormously inflated prices. Aside from infuriating his victims, Shikari was successful in effectively depriving them of basic items they needed most. He also made a tidy profit; by the end of the operation, he had more than doubled the capital he started with.

Another particularly compelling example of this occurred during the introduction of advanced Tech 2 equipment. The blueprints for these coveted ships and ship parts were quickly bought up by cartels (or colluding individuals) resulting in artificially inflated prices for several months. Ultimately, however, CCP Games countered this exogenous development by
introducing an invention system, which allowed players to create T2 blueprints themselves. By incorporating such a feature, the developers effectively lifted the bell jar surrounding the new technology, making its productive capacities available to those who previously could not afford them due to the tenacity of rampant cartelization (Drain).

**Market fragmentation and arbitrage opportunities**

Bound by the confines of the local star system, markets in *EVE* are regional in nature. A player perusing the offerings in the market screen is only able to engage with the commodities available in his or her current sector of virtual space. The result of this developer-imposed market myopia, naturally, is a high incidence of arbitrage opportunities. A clever merchant, viewing price disparities between certain regions, might make thousands of ISK (InterStellar Kredits, the game’s virtual currency) by transporting goods to locations experiencing high levels of demand.

Successful arbitrage, however, requires much more than the adroit identification of divergent regional market behavior. Traders must physically warp to the economic regions in which they wish to participate, a process that (potentially taking upwards of an hour or more) might impose a significant opportunity cost. Such journeys, moreover, are often immensely dangerous; a
careless trade route through low-security space could easily result in the loss of a merchant ship and the entirety of its precious cargo. The eager exploiter of arbitrage, then, must carefully consider the required outfitting of his or her ship and character – with respect to cargo capacity, navigational acumen, defensive capabilities, et al – when evaluating chances to profit through market fragmentation.

4.4 Market Tumult in the Virtual Economy

Although World of Warcraft and EVE Online are manifestly different MMOGs, it seems that neither virtual world is invulnerable to the shocks that frequently impact real-world markets. Consider the following, for example:

• Released in early 2010, World of Warcraft Patch 3.3.3 introduced a number of updates to the game, significantly impacting its virtual economy. One particularly notable alteration affected the virtual human capital involved in the production of an item called Spellweave Cloth. Previously, the skillset that facilitated such productive labor came with a major caveat – a “cooldown effect” that limited the individual creation of Spellweave to once every four days. The removal of this restriction dramatically increased aggregate production
of Spellweave, resulting in a substantial decline in value for the good. Even before the patch had formally been introduced to the game world, the announcement of its changes had already caused decline for such formerly rare goods to plummet (Deleon).

• In late 2009, a large number of EVE pirates engaged in a coordinated suicide attack against mining vessels in high-security space. Destroying several hundred ships, “Hulkageddon” resulted in a large spike in prices of mining barges despite relatively static demand. The announcement of a “Hulkageddon II” the following year caused prices to rise even further as suppliers anticipated a similar level of carnage (Guðmundsson, “2009 Newsletter” 34).

• The 2008 release of the Wrath of the Lich King expansion brought a number of changes to World of Warcraft. Especially notable was the introduction of an “Inscription” profession, responsible for the production of ability-enhancing glyphs. At one time, the benefits conferred by glyphs were temporary; the Cataclysm expansion pack, however, made them permanent but significantly more difficult to create. The result has been a marked increase in the price of glyphs and
a commensurate increase in the profitability of inscribers. Followers of other professions (such as Herbalism, for example), meanwhile, have seen the value of their labor decline (Adams).

- The first week of September 2010 saw the completion of one of the biggest scams in the history of EVE Online. Titans4U was a popular investment scheme that sought to monopolize blueprints required for the construction of valuable Titan-class starships. The head of this project, a user known as “Bad Bobby,” had developed a solid reputation by running similar investment schemes over the course of several years. This time, however, Bobby carefully manipulated shareholders until he had amassed the 50% stock required to assume unilateral control of the investment corporation. Having accomplished this, the devious antihero was able to steal all of the scheme’s assets – a haul worth more than 850 billion ISK (Lau).

Generally, the developers of EVE and WoW take highly contrasting approaches to sudden changes in the economies of their worlds. Blizzard usually does not hesitate to intervene if market activity is perceived to threaten World of Warcraft’s balanced gameplay. The developers of EVE, by
comparison, often adopt a laissez faire approach to New Eden; a tumultuous economy, in their eyes, only increases the game’s appeal. One issue with which both developers are actively concerned, however, is the existence of a phenomenon known as MUDflation.

4.5 MUDflation

No occurrence is as ubiquitous to the MMOG economy as that of MUDflation. In many ways analogous to the depreciation of value present in real-world markets, MUDflation nevertheless results from the peculiarities inherent in virtual economies. Although the term harkens back to the days of text-based Multi-User Dungeons, it gained widespread usage during the height of EverQuest’s popularity. The 2000 release of The Ruins of Kunark, an expansion for that game, gave players access to a number of new, high-level areas and equipment while raising the cap on player leveling to 60. Though highly successful, the add-on had an unexpected effect on the game’s economy: the value of goods – particularly those native to the “vanilla” game world – experienced a significant decline. This issue was only compounded by subsequent EQ expansions, which introduced additional endgame content (Enright).
Causes of MUDflation

Although MUDflation can manifest itself in the economy of nearly any virtual world, the causes and specific nature of such a phenomenon often vary. Predominantly, however, two main factors contribute to its occurrence. An excess of inflows is perhaps the most readily identifiable culprit. As discussed in the previous chapter, the productive act of hunting NPC mobs results in an accumulation of goods and currency. Yet mobs respawn frequently, potentially allowing for rapid inflows of money and items of (some) value. If these newly-minted embodiments of wealth enter the economy faster than they can leave, the result is a gradual increase in the money (or good) supply and a consequent depreciation of value. While conditions inherent in a game world often foster such a phenomenon by themselves, the situation has been exacerbated by the advent of real-money trading and gold farming, discussed in chapter five.

Exemplified by EverQuest’s Ruins of Kunark expansion, the release of developer addons can also encourage MUDflation. By introducing a new set of challenges and rewards geared to players at the highest levels of character development, such expansions render previously desirable goods comparatively mundane. The ultimate consequence of this economic recontextualization is a substantial depreciation in the value (and reflected
market price) of all goods not needed for or associated with the game’s new standard of so-called “endgame” play.

The deleterious effects of MUDflation on the gameplay of an MMOG cannot be overstated. Notably, the phenomenon serves to undermine the carefully constructed balance of gameplay in a virtual world. The economies of MMOGs are – like those in the real world – predicated on a sense of scarcity. Scarcity in a virtual world, however, is an artificial implementation made by game developers looking to maintain player interest. Certain rare weapons, for example, might possess tremendous, nearly unstoppable power; their attainment, however, requires prolonged periods of assiduous dungeon questing. Yet after serious MUDflation, these goods are suddenly markedly easier to attain – though no less powerful. The game, as a result, becomes less challenging, removing (or at least diluting) much incentive to continue playing.

Additionally, a surfeit of currency lowers the purchasing power of a low-level character, requiring additional of “grinding” the same area in order to accumulate necessary items. This tedious process may alienate newer users, causing them to lose interest before they are able to ender the novel markets whereupon compelling economic activity is now centered.
It is important to note that MUDflation may have positive consequences as well. Each linear expansion to an MMOG extends the upper ceiling of character development outwards, making true endgame play that much further removed from a new user beginning play at the first level. The neophyte, however, benefits from the decline in price associated with items that, while no longer as generally desirable, are nevertheless still useful to her. As a result, the novice player is able to accumulate needed capital at a faster rate than her predecessors, facilitating a rapid convergence with the new arenas of virtual production and exchange. In this fashion, MUDflation acts as a countervailing force against the tendency of post-expansion game worlds to emphasize high-level play at the expense of new users.

**Corrective Mechanisms**

Though its impact on the virtual world might not be entirely detrimental, MUDflation remains a threat to the stability and market vibrancy of an MMOG. As such, it is often in a developer’s best interest to mitigate (or at a minimum, control) the rampant depreciation of in-game goods and currency. There are a number of mechanisms by which this might be achieved. Arguably the most obvious of these is the creation of mandatory currency outflows, commonly known as “money sinks” in developer parlance. By
requiring players to incur certain costs during the course of regular gameplay, developers are able to combat increases in the money supply caused by production. In *World of Warcraft*, for example, players must periodically pay NPC vendors to repair their equipment; such costs scale at a rate commensurate with gear quality. Likewise, the NPC vendors of *EVE Online* sell fundamentally necessary goods (such as ship blueprints and space station fuel) to ensure that some currency will be removed from the money supply. In this fashion, money sinks might be considered akin to the real world imposition of seigniorage as a form of inflation tax.

In a (partially) planned economy such as *World of Warcraft*’s, developments in the overarching plotlines of a game world can be used as another means of enforcing scarcity in the short run. The opening of *WoW*’s Ahn’Qiraj dungeon was a notable event in the global storyline of Azeroth. Before players could open its gates, however, they were required to “contribute to the war effort” en masse by donating large quantities of common goods to a war drive held by NPC officers (“Gates of Ahn’Qiraj”). Using such an incentive, Blizzard was successful in removing hundreds of thousands of items from the economy of each game server without sacrificing the immersive nature of the game world.
Macroeconomic flows within *EVE Online*. The existence of money sinks (Box D) allows virtual currency to be removed from a game economy. (Guðmundsson, “2007 Newsletter” 8)

Other successful corrective mechanisms are preemptive in nature. As noted above, many of the difficulties associated with MUDflation stem from the restructuring effects of game expansions that exclusively target high-level gameplay. Since its inception, the game world of *EVE Online* has been augmented by fourteen freely downloadable expansion packs. These releases, however, largely eschew a linear approach to gameplay improvements, favoring instead content enhancements to combat, the game interface or means of resource collection. Such an orthogonal approach allows developers to maintain player interest – the primary objective of an expansion – without necessarily emphasizing one stage of the game over others. While the changes brought about by this kind of expansion will nonetheless affect a virtual
economy, they are less likely to result in the widespread depreciation of pre-update goods and services.

Occasionally, game developers intervene directly to correct egregious threats to the stability of a virtual economy. CCP Games generally adopts a noninterventionist approach to the functions (and failures) of EVE’s economies, even when the principal-agent dilemma leads to firm heads completely defrauding their shareholders. However, the developers are keen to act against those engaged in inflationary behaviors such as gold farming or real-money trade; Operation Unholy Rage, which banned over 6,000 gold farmers, resulted in a significant decline of the money supply.

Market thickness throughout Unholy Rage. This ban of several thousand RMT accounts brought about a 10% decline in July 2009 market activity ("Unholy Rage").
Blizzard, too frequently issues warnings to those engaged in “economy manipulation” and hundreds of thousands of WoW characters accused of gold farming have been banned to date (Reimer).

Though the markets of virtual worlds are characterized by interesting hermetic phenomena, the exogenous impact of real-money trading has already become evident. The next chapter explores such behavior in further depth, linking virtual economies to those of the real world.
5.1 Virtual Economies and the Real World

Introduction

Up until this point, I have discussed the dynamics of virtual economies as hermetic phenomena removed from pecuniary behavior in the outside world. I believe there is merit in this approach, as the economic mechanics of these games are intriguingly complex and in many regards parallel actual conditions of production and exchange. However, no complete analysis of contemporary MMOGs would be complete without apprehending the manner in which they tangibly impact real market activity. The most salient embodiment of the overlap between corporeal and code-operated economies lies in the issue of real-money trading (RMT), where players exchange actual currency for virtual characters, property and assets.

Although RMT has become a major presence in the current generation of virtual worlds, its origins can be traced as far back as the multi-user dungeons of the late 1980s.3 By the mid 90s, real-money trading had become truly widespread as users posted *EverQuest* and *Ultima Online* characters and

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3 It is possible that earlier MUDs also contained instances of RMT, but the frequent game-world resets that characterized these games kept such behavior from truly becoming a phenomenon. Richard Bartle, co-creator of the first MUD (*MUD1* in 1978), identifies the first significant incidence of RMT as taking place in the game *Shades* in 1987 (Bartle & Mulligan 1).
gear for sale on eBay. With the mainstream success of *World of Warcraft* a decade later, RMT has likewise exploded in popularity. A Google search for phrases such as “*World of Warcraft* gold” returns a litany of web pages advertising the sale of in-game currency at competitive rates; characters hawking “gold 4 cheap” almost continuously bombard the virtual marketplaces of Azeroth. The ubiquity of such RMT services belies the fact that this behavior is nearly universally forbidden by game developers and publishers. Why, then, has real-money trade proved so persistent?

5.2 RMT Today

*Inherent incentivization*

“Looking at the incentives of the users,” Lehtiniemi argues, “it is not a surprise that RMT exists” (19). MMOGs, like all other entertainment products, ostensibly bring utility in their consumption. At the end of the day, most people purchase such video games because the act of playing them brings enjoyment. In many virtual worlds, however, this utility results from more than the process of playing the game and improving one’s character; the results of such aggrandizement are equally treasured. Facilitating access to

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4 In one particularly compelling example of this emergent behavior, a 43 year-old deliveryman paid $750 for a mansion in Ultima Online’s virtual Britannica (Dibbell 1).
advanced stages of gameplay, high-level characters and gear might enable more entertainment to be derived from a user’s playing time. Moreover, because MMOGs are fundamentally social environments, players might also enjoy a Veblenite utility in conspicuously possessing scarce or powerful assets.

As mentioned in the third chapter, the greatest limitation to a player’s attainment of ever-greater wealth and status is the amount of labor time he or she is willing or able to invest in related in-game activities. For some, the opportunity cost of these actions justifies the expenditure of real currency. The ultimate goal of an EVE subscriber, for example, might be the power and prestige associated with piloting a Super Capital-class starship. Working a full-time job, she can only devote a few hours per week to her gaming hobby; the amount of time required to amass the cash and material for her ship might defer her dream by weeks or even months. Our gainfully employed protagonist, however, possesses enough disposable income in the real world to pay another user to build her prized vessel immediately. In a contemporary society full of obligations and mandatory distractions, the demand for such in-game shortcuts cannot be ignored.
Size of the market

Enterprising individuals have responded to this demand in droves. In 2001, Castronova estimated the total value of EverQuest RMT transactions on one auction site to approach 5 million USD. Four years later, the New York Times reported that over 100,000 people in China were actively engaged in gold farming (Barboza 1). Recent attempts at apprehending the total worth of RMT transactions have valued the industry at upwards of $3bn worldwide (Lehdonvirta & Ernkvist 40).

<table>
<thead>
<tr>
<th>Source</th>
<th>Year</th>
<th>RMT volume (M USD)</th>
<th>Estimate type</th>
<th>Scope</th>
<th>Property Included</th>
<th>Notes</th>
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<tr>
<td>Castronova</td>
<td>2001</td>
<td>5</td>
<td>academic</td>
<td>secondary market</td>
<td>MMOG-related</td>
<td>eBay-sales of Everquest II items</td>
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<tr>
<td>Castronova</td>
<td>2004</td>
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<td>eBay and itembay sales</td>
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<td>2006</td>
<td>830</td>
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<td>Korean secondary (+primary?)</td>
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<td>Chinagovt</td>
<td>2006</td>
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<td>Chinese domestic consumption</td>
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<td>some uncertainties</td>
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Various estimates of the scope of RMT. Though explicitly outlawed by game developers, real-world transactions are frequently conducted on secondary markets such as auction websites (Lehtiniemi, “RMT Market”).
RMT and gold farming are almost universally banned in the Terms of Service agreements required to play many MMOGs.\footnote{All types of duplicitous behavior are allowed and even encouraged in \textit{EVE Online}; when such deception results in real-money transactions, however, CCP hands out player bans liberally.} In spite of such developer opprobrium, however, the real world sale of in-game assets has become a veritable cottage industry in many developing Asian countries. Just as high wages and a paucity of free time make RMT purchases appealing to players in North America and Europe, the low wages and abundant labor supply in these nations make them compelling hosts for a form of production that requires little besides labor time and Internet access. Fittingly, the exchange of real currency for virtual goods has seen partial or complete acknowledgement in China and South Korea. Though Blizzard and other companies continue to pursue offenders – even threatening to take major RMT firms to court – it is clear that the phenomenon cannot be banished easily.

The contentious nature of this emergent condition merits a more detailed consideration. First, however, I will consider the related issue of property rights in a virtual environment.
5.3 Virtual Property Rights

Lockean approach

According to John Locke’s labor theory of value, an object becomes the property of an individual when it results from the mixing of his labor with the raw materials commonly available. The owner of such a good, then, may freely exchange it for whatever compensation he finds equitable. In MMOGs such as WoW and EVE Online, Locke’s qualifier is certainly applicable; at the most basic level, a user invests his or her time producing virtual goods from common resources in the game world. Under such a framework, these producers have created property and should enjoy free reign to dispose of it as they see fit.

A serious problem with a Lockean approach to the question of virtual property is the fact that it overlooks many particularities inherent in MMOG worlds. Writing in the 17th century, Locke was concerned with the initial acquisition of property in a state of nature. A video game world, no matter how competently verisimilar, is not a state of nature. Legal scholar John Nelson is careful to note that although a WoW player might expend labor in the production of a sword from raw materials, “it was the labor of the game developer that created the graphics representing the ore, the code functions allowing the user to mine the ore, and the hardware that runs the code so that
the user can access and interact with the ore” (Nelson 291). A serious attempt to justify virtual property using Locke’s theory of value is thus doomed by significant overcomplication.

**Security, efficiency and extralegality**

The vibrant RMT market for MMOG goods is nonetheless testament to the fact that individuals participating in virtual production are creating embodiments of real world value. The efforts of these laborers, however, are largely relegated to the domain of extralegality. Outside of the game world, virtual laborers have little claim to the assets they create, which remain the fundamental property of Blizzard or CCP Games. As a result, if a user loses electronic currency or property to hackers – a reasonably frequent occurrence – they have extremely limited means of recourse. Though the goods in question might be worth thousands of dollars in real-money valuation (not to mention the required investment of time), they might as well be worthless from the current legal perspective. Like the entrepreneurs of Brazilian favelas, human inhabitants of virtual worlds exist in a tenuous economic realm wherein their entire means of production can be suddenly and irrevocably stripped away. In such circumstances, the establishment of formal property
rights might serve to lower fiduciary transactional costs, ultimately improving economic efficiency.

Further arguments can be made in support of extending virtual property rights to MMOG players. If items in such environments are rivalrous, persistent, and interconnected, as Fairfield claims, should they not be considered akin to their counterparts from the real world? After all, other goods that exist only as code – such as URL domain names – enjoy full property protection (1053). Nevertheless, there are a number of downsides to the theoretical application of these rights to a game environment. Ultimately, such an extension may prove untenable due to the peculiar nature of massively multiplayer games.

The case against virtual property rights

An in-game implementation of property rights suffers from a number of troubling convolutions. For one, it is difficult to firmly establish the rightful owner of a given virtual good. The labor theory of value proponed by Locke et al. has been shown to be too simplistic to justify virtual property rights; the labors of game developers, after all, facilitated any productive efforts in which a player can be engaged. Moreover, an exchange theory of value can only account for property rights if real money transactions are acknowledged.
As those who run most game worlds do not consider RMT to be a “legal” behavior, such a justification fails to prove compelling. Any hypothesized gains to economic efficiency (in terms of RMT) would be similarly inadequate.

In addition to the objections listed above, the full extension of legal claims to property will inevitably conflict with many rules of a game world. Can an *EVE* user justifiably sue another for destroying his or her starship? Such behavior is central to the game world and wholly encouraged by developers. Likewise, a *WoW* user upset that his character class has been weakened by a recent update cannot reasonably take legal action; Blizzard, after all, is committed to maintaining the entertainment value of its product by keeping the game balanced. At the end of the day, MMOGs are enjoyable because of the immersive environments they are able to foster. Any exogenous imposition of legal considerations might only serve to undermine their appeal.

Virtual property rights, which serve as implicit justification for real money transactions of virtual goods, are difficult to wholeheartedly support in an MMOG environment. Nevertheless, RMT remains a compelling and contentious issue surrounding persistent game worlds. As such, it will be explored further in the following section.
5.4 The Debate Over RMT

The existence of RMT in virtual worlds is troubling for observers and developers alike. As mentioned in the previous chapter, rampant gold farming acts to increase the in-game money supply, compounding the intrinsic threat of MUDflation. By reducing the scarcity of virtual good, RMT acts to further weaken the carefully constructed incentive structure of an MMOG; rather than spend valuable hours in pursuit of a rare item, the enterprising user could simply purchase it for a relative pittance. If such purchases become widespread, the game begins to unfairly favor those willing to spend money above and beyond the nominal subscription fee. Ultimately, however, RMT and the stratification – between “gamer” and “laborer” – that consequently emerges yield serious socioeconomic ramifications within and beyond the game world.

Labor alienation

Gold farms, as noted above, typically operate in low-wage nations where labor is cheap and Internet access a ubiquitous fixture. Often working out of an Internet café, a gold farmer enters a given virtual world and engages in its processes of production. The fruits of his – these users are almost universally male – labor are then accumulated and readied for sale in
an available secondary market. Yet it is not the worker who reaps the subsequent rewards of a successful real world transaction. Indeed, gold farms are fundamentally business structured around real world principles of production. The owner of a farm thus supplies the capital (computers, software, Internet access and game subscriptions) and purchases the labor hours of those who actually produce the virtual goods in demand.

The resulting organization of labor and capital perfectly epitomizes Marx’s apprehension of production in a capitalistic firm. An owner of a gold farm, possessing the capital inputs required for production, enjoys most of the gains made from RMT. The actual farmer, whose efforts were equally integral to the creation of these fetishized virtual commodities, is rewarded only marginally at the market price of his abstracted labor (Wang 6). Writing in the nineteenth century, Marx discussed labor relations as manifested in the factories of then-industrializing nations. Yet the estrangement he described proves wholly applicable to the electronic production that occurs inside many gold farms. The farmer’s job, which consists of staring at a screen and clicking a mouse for extended periods of time, is no less alienating than the factory conditions with which Marx was concerned.
**Class and racial conflict**

Ultimately, a widespread consequence of gold farming is an emergent class stratification among virtual inhabitants of an MMOG. Gamers, primarily located in North America and Western Europe, remain the most visible group of users actively involved in the operation of the virtual world. Yet they are joined and supported by another caste of subscribers – predominantly from Asia – who are not “playing” for entertainment. While the first group typically enters the game world to enjoy time away from work, school and other obligations, the latter strata is here to make a livelihood. Though interdependent, the diverging nature of their in-game objectives render these two classes fundamentally at odds with one another. Perhaps even more troubling is the manner by which such class antagonisms may take on racial components. Studying the player culture that has solidified around these games, Lisa Nakamura argues that “as long as Asian ‘farmers’ are figured as unwanted guest workers within the culture of MMOs… [users] will most likely continue to depict Asian culture as threatening to the beauty and desirability of shared virtual space in the World of Warcraft” (26). Video games have long been accused of the pernicious fermentation of violence and misogyny; racism and classism are additional allegations many software developers would do well to avoid.
A means to economic advancement

Although an adherent to Marx’s bombastic prose might argue otherwise, gold famers are not slaves. Their entry into the RMT market is completely voluntary and guided by a rational profit incentive. As mentioned before, the Asian nations in which many gold farming operations are located are optimal for such an industry, possessing enormous amounts of labor power and time with relatively low wages. RMT and gold farming, then, might provide an excellent means of economic advancement – and commensurate reductions in unemployment – for citizens of these states. Indeed, a recent World Bank report concluded that a “virtual economy can have a significant impact on local economies despite its modest size.”

Moreover, researchers discovered, the gold farming industry is actually more equitable (in terms of the return for individual workers) than many real crops such as coffee (“Virtual sales provide aid”).

If basic comparative advantage results in benefit for players (who are able to use strong characters and items without excessive time commitments) and farmers (who can earn a livelihood by playing video games) alike, perhaps the pariah status of RMT should be reconsidered. Yet it is fallacious to tout the supposed benefits of legitimized real money transactions without also considering the complications they will likely incur. First of all, a
formalized gold farming industry must be taxed and regulated like any other. Unlike real world businesses, however, the gains made by gold farmers are prone to tumult and fluctuation due to changes or updates of game code. Furthermore, if RMT industries are allowed to flourish and expand, a significant component of their host nations’ economies would ultimately be influenced by the agendas of game developers. When such intentionalities – as in the case of *EVE* – do not necessarily align with the goal of maintaining a stable and predictable virtual economy, this influence can prove highly troublesome. In the end, governments might routinely pressure the wardens of virtual worlds to make or refrain from certain gameplay or environment alterations. Somewhere along the way, the game has ceased to be a just a game; it has been transformed into a serious instrument of economic activity. With such real world implications, the escapist appeal of these worlds could disappear altogether.

The pernicious effects of RMT could thus be held to outweigh its ostensible benefits. It is not enough, however, to simply argue against the existence of such behavior. As long as players exhibit a willingness to pay real currency in exchange for virtual goods, gold farmers will gladly take them up on the offer. In fact, RMT purchases will likely become even more normatively acceptable as developers themselves begin to sell virtual items
for real prices. If real-money transactions cannot be avoided, however, their threat to the integrity of a game world should at least be controlled.

5.5 Solutions to RMT

There are a number of ways by which the scope and influence of RMT might be mitigated. Strident developer enforcement – through warnings and bans – provide a reasonably powerful disincentive to engage in such behavior, though such action is costly and is marginally effective at best. As long as the virtual world is accessible – which it must be in order to entice new customers – gold farmers will never find it difficult to return. In fact, there is evidence to suggest that trenchant disciplinary measures will only serve to further the bureaucratization of the industry, reducing the wages of low-level workers.

Some MMOGs have already employed alternative measures to counter RMT. Warhammer Online attempted to curb the phenomenon through social disincentives, encouraging the ostracization and ridicule of those who engage in this type of behavior (Egan). Even if these players could be readily identified, however, there is little guarantee that other users will feel truly outraged, and whatever scorn they do manage to level might not matter to the player in question.
Social scientists have proposed other answers to the issue of real-money transactions. Jan Pontzen, a German economist, provides one means of mitigating the deleterious influence of gold farming and RMT. By channeling market activity through anonymous, concealed auctions, Pontzen argues, game developers can exclude would-be gold farmers from openly hawking their wares. Additionally, a validation system ensures that gold farmers cannot set artificially low (ie close to zero) in-game prices; if buy or sell bids fall outside of a certain Pareto-optimal range, the transaction is declined and involved parties are automatically refunded.
Pontzen’s Proposed mechanism for validating game market auctions. “Vendor Buy” refers to the fixed prices offered by Environment agents. All offers between market equilibrium and the maximum price threshold are considered; at the end of a given trade cycle, all legitimate exchanges occur automatically (“Resolving Goldfarming”).

In theory, such an approach could be tremendously effective in eliminating real-money transactions as well as maintaining competitively thick market activity. Practically, however, this model is subject to a number of limitations. Even assuming that sufficient trade data could be accumulated to calculate the supply and demand curves for each virtual good, a reliance on trade cycles could make exchange glacial and cumbersome. Additionally, the effectiveness of this market system is predicated upon excluding other
forms of transaction; players in Wow, for example, would no longer be able to
give money and items to their friends. Ultimately, Pontzen’s proposed
method remains a compelling countermeasure to illicit RMT, but the
feasibility (and popularity) of its exact implementation is quite dubious.

Dr. Eyjolfur Gudmundsson, the economist employed to oversee EVE
Online, arrived at another novel solution. The creation of the 30 Day Pilot
License Extension (PLEX) provides a formally recognized means through
which players can participate in legal RMT. PLEX, which exists as an in-game
commodity, credits a user with one month of paid game time; a productive
player with little real-world cash but plenty of ISK is thus able to subsidize
the cost of playing EVE with his or her virtual wealth. Conversely, a
subscriber bereft of in-game earnings (or the time needed to attain them) but
flush with disposable income can legitimately convert one currency into
another. Although detractors argue that such a system only acts to encourage
the confluence of corporeal and code-operated economies, CCP notes that
RMT will likely occur regardless. With the PLEX system, players are at least
able to engage in such transactions without being scammed or hacked by
unscrupulous gold farmers. Interestingly enough, systems such as PLEX do
not act to expand a bell jar to other users; instead, this feature seeks to close it
off to the “non-gamer” segment of EVE’s population.
The controversy surrounding RMT and gold farming is only likely to grow in the near future. Incentives to engage in such behavior are simply too strong for the phenomenon to disappear of its own accord, and game developers have yet to find a panacean answer to the problem. From their perspective, it is easy to understand why such transactions are disconcerting; gold farming undermines scarcity, disrupts gameplay balances, and consumes bandwidth and server power that would otherwise go to legitimate players. At the same time, participation in real-money transactions may offer thousands of workers in developing nations an equitable means of economic advancement. Of course, the complications involved in legitimizing RMT
make it unlikely that developers and governments will open the bell jar to
gold farmers anytime soon. Nevertheless, the issue will almost certainly
remain a focal point of MMOG discussion for many years to come.
6. Conclusion and Final Thoughts

This thesis represents an attempt to explore and analyze the dynamic nature of market activity within virtual game worlds. Using tenets of contemporary and classical economic theory as a context for analysis, I have explored the gameplay of EVE Online and World of Warcraft. In this epilogue, I will summarize and reflect on some of my findings as well as discuss the motivations behind such a project.

The third chapter of the thesis focused on the virtual production of goods in WoW and EVE. Two main forms of productive behavior were identified; although one (the act of “hunting”) is an activity particular to online games, both means of item creation are shown to be dependent on inputs largely analogous to those in the real world. As such, these factors are often subject to actual economic phenomena such as the law of diminishing returns. Furthermore, production in these worlds commonly employs a comprehensive division of labor that rewards player specialization and corporation. Game developers have experienced much success in codifying these exogenous phenomena into formal aspects of gameplay, although some producers (such as WoW’s craftsmen) remain marginalized at the periphery of the economic bell jar.
Although specific characteristics of production vary between the two games, *EVE* and *WoW* are alike in that they largely empower the individual player with the means of creating goods. Consequently, users are beholden to no higher capital-owning class and are able to engage in productive as well as entrepreneurial behaviors. While such a real world economic condition may seem relegated to the domain of socialist utopian idealism, some find evidence to the contrary. The rise of the Internet and a knowledge-based economy, for example, might spawn a new class of workers who (with marginal capital investments such as a computer, a domain name and internet access) can similarly reap the full value of their productive efforts (Jarche). This state of affairs is hardly a foregone conclusion, but the recent democratization of information nevertheless presents compelling opportunities to erode many extant paradigms of labor relations.

Chapter 4 introduced the methods by which goods are valued and exchanged in virtual worlds. One of the more intriguing of these mechanisms is the computer-controlled Environment sector, which possesses characteristics of a foreign sector as well as a planned economy. Additionally, common market characteristics such as fragmentation, arbitrage opportunities and seasonal effects were revealed and discussed. Like their real world analogues, virtual markets are susceptible to tumultuousness and
failure. Easily the most salient embodiment of such vulnerability, MUDflation brings about a devaluation of in-game currency and goods. Just as governments struggle to appropriately respond to real world economic woes, the efforts of game developers to curb MUDflation and other pecuniary failings have seen mixed results. Virtual economies, it turns out, are hardly as straightforward to manage as one might imagine.

A particularly compelling conclusion drawn from observations of exchange in an MMOG is the primacy of information. Simple economic models often assume the existence of perfect information, allowing the individual agent to make wholly rational decisions. In real economies, however, market knowledge is never so transparent; parties involved in transactions must often rely on limited information coupled with experience and intuition. Yet the developers of World of Warcraft and EVE Online provide for the widespread dissemination of economic data through direct efforts (the accessibility of vast market information from EVE’s interface) or benign permissiveness (Blizzard’s decision to allow players to install third-party addons, many of which display detailed market histories). By facilitating a more perfect condition of information, these games allow for more dynamic economic behavior that rewards the market-savvy user. In the same fashion, a diffusion of real world data might help empower the individual economic
agent to make more rational choices. Once again, the Internet – by significantly reducing the cost of information for many people – has the potential to perpetuate such an ideal condition.

The last chapter of this thesis considered online games in the context of real world markets. Because the most vital factor of production in a virtual economy is labor time, there is a large opportunity cost associated with any activity in which a player might participate. Consequently, there is a notable incentive for players of these games to circumvent the paucity of time by spending real money (a relative surplus) for virtual goods and currency. Conversely, other users are incentivized to capitalize on this demand by producing in-game items en masse. The result, an international market with an estimated value of billions, is the subject of much controversy. Increases to the money and item supply caused by this phenomenon – resulting in devaluations – have a deleterious impact on the gameplay of an MMOG; in the worst scenario, players are all but required to spend real money (beyond the games’ monthly subscription fee) just to remain on an even footing with their peers. At the same time, however, recent reports suggest that such real-money operations are enormously beneficial to the developing economies in which they are frequently hosted.
The controversy embroiling RMT and gold farming ultimately raises fundamental questions regarding the very nature of an online game. It might be easy to argue against such behaviors due to the negative impact they often have on the game environment. Yet the prospect of these games providing a source of substantial and relatively equitable income for workers in developing nations cannot be dismissed out of hand. An in-game stratification, however, between players and “laborers” profoundly alters the nature of an MMOG, introducing real concerns (income disparity, workers’ rights) to a medium that has long promised escape from the ailments of an imperfect world. At what point does World of Warcraft cease to be just a pastime? Many at CCP already consider their product to be a service rather than a game; perhaps such a time has already come (Garratt 2).

Regardless of the serious issues that will continue to accompany them for some time, it is clear that video and computer games are much more than an evanescent consumer distraction. Author and pop-culture critic Chuck Klosterman has vehemently posited the artistic significance of such games, finding them comparable to the rock music of the late 1960s (“Lester Bangs”). Though many (notably including film critic Roger Ebert) may disagree with Klosterman’s contention, video games have maintained an unequivocal presence in the zeitgeists of the last few decades and will almost assuredly
continue to do so (“Video games can never be art”). Several contemporary thinkers have already realized this. Based on a lecture from a few years prior, 

**author Jane McGonigal**’s *Reality is Broken: Why Games Make us Better and How they Can Change the World* vigorously asserts the utility of game mechanics in fostering human productivity and happiness. Ultimately, McGonigal sees tremendous benefit in appropriating many of these features in order to encourage tangible improvements in daily life (“How to save the world”).

While the veracity of McGonigal’s arguments remains to be proven, her underlying premise – that video games are much more than “toys for children” – has considerable merit. Popular opinion, unfortunately, remains dubious. Media stories continue to reiterate shock stories regarding violence and sexual content of some titles, often suggesting a correlation between these elements and aggressive or deviant behavior. In spite of assiduous efforts by the industry to keep explicit software away from those too young to appropriately enjoy it, parents routinely purchase games for their children with little regard for the product (or its intended audience) itself. Game journalism, too, is mired in myopia; Klosterman laments its consumerist emphasis on “expository information” with little regard for the meaning or cultural significance of a given title (“Lester Bangs”). It is abundantly clear,
then, that video games have yet to receive the cultural recognition many believe they deserve.

My intention in writing this thesis was to promote such a shift in perception. I contend that video and computer games are worthy subjects of profound analysis and discussion. By considering *World of Warcraft* and *EVE Online* through a framework of political economy, I aspired to illustrate the potential import of these games to the interested social scientist. If perusing this work has at any point enabled the reader to place games such as *EVE* and *WoW* in a deeper intellectual context, I will consider the endeavor to be a success.
Bibliography


“Definition of snipes.” Webster’s Online Dictionary.
Deleon, Nicholas. “Man alive, the World of Warcraft economy is quite elastic!”

*CrunchGear* 22 Feb 2010.


Enright, Dan. “Massively goes to WAR: Interview with Senior Designer Dan Enright.”


“Gates of Ahn‘Qiraj.” WoWWiki.


Guðmundsson, M. EVE Online. CCP Games, 2011.


“Virtual sales provide aid to poorer nations.” *BBC News* 8 Apr 2011.

