# Lantern
## Part 1/2

# Volume 7, Number 1
# Lantern part 1/2
# January 2014

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# The Aspatial Economics of Virtual Worlds

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## Abstract

This article compares and contrasts the economic geography of the physical world with that of virtual worlds, with an analytical focus on the spatial (and aspatial) characteristics of Blizzard Entertainment's *Diablo II* (released in 2000) and its massively multiplayer online roleplaying game *World of Warcraft* (released in 2004). The purpose of this article is to show that although virtual worlds are not immune to aspatial economic laws, geographic constraints on economic interaction in virtual worlds are optional inclusions. Virtual world designers can manage the inclusion, disinclusion, and degree of emphasis on space and place in order to carefully craft a specific user experience. Hence, even though virtual worlds may provide the illusion of operating in a spatially bounded environment, the underlying mechanics of the world may not have spatial constraints. Nevertheless, the article concludes that there still remains a role for geographic analysis in virtual worlds, especially because, though *space* may be deemphasized, virtual world designers still may go to great effort to emphasize *place* to create the users' experiences. Further, the study of the economics of virtual worlds may provide insight into possible future economic situations of the physical world as increasingly more physical goods become digital.

## 1. Introduction

Human beings have imagined alternate worlds for thousands of years, but historically have been very limited in their capability to interact with them and share them with other people (Bittarello, 2008). For most of human history, worlds could only be shared through one-way communication channels from their creators to their audiences, such as through oral stories, paintings, the written word, and later movies and television. These communication methods only allow the audience to experience the created world passively and present them with only the content the creator wants them to experience. The underlying mechanics of the world necessary to produce the situations and phenomena the creators present may be assumed to "just work" behind the scenes. There is little need to study how the mechanics of the world (such as its economy) function when the ability to experience it is so limited. But this has changed with computer-based instantiations of alternate worlds. Computer technology allows users to take an active role in experiencing, interacting with, and even changing an alternate world. Therefore, when a virtual world is developed, substantial consideration must be given to its underlying mechanical structures, such as its economic structure. These structures serve as a foundation for the world and as common sets of rules by which the users interact.

Just as alternative worlds have transitioned from being passively experienced to being actively interacted with, the study of alternate worlds is transitioning. Academic study of alternative worlds is no longer mainly confined to literary, artistic, or descriptive perspectives, such as that Karen Wynn Fonstad took with a cartographic description of J.R.R. Tolkien's Middle-Earth (Fonstad, 1981), the world of Dragonlance (Fonstad, 1987), and the Forgotten Realms (Fonstad, 1990). Now, the virtual creation of these worlds allows them to be the subject of scientific (especially social scientific) study, as in Bainbridge (2007), Lin (2008), Castronova et al. (2009), Chesney, Chuah, and Hoffman (2009), Lastowka (2009), Nakamura (2009), Barnett and Achambault (2010), Golub (2010), Animesh et al. (2011), Wasko et al. (2011), and Beekman (2012). Some disciplines have more readily accepted the study of virtual worlds than others. For example, the anthropological study of virtual worlds has been going on for several years. Wilson and Peterson (2002) wrote that the Internet had allowed "the emergence of new sorts of communities" and that these are "phenomena worthy of the attention of anthropological researchers" (p. 449). However, the geographic study of virtual worlds is not as developed, even though these communities and virtual environments are also worthy of geographic attention.

This article compares and contrasts the economic geography of the physical world and virtual worlds, with an analytical focus primarily on the spatial (and aspatial) characteristics of Blizzard Entertainment's *Diablo II* (released in 2000) and its massively multiplayer online roleplaying game *World of Warcraft* (hereinafter WoW, released in 2004). The purpose of this article is to show that although virtual worlds are not immune to aspatial economic laws, geographic constraints on economic interaction in virtual worlds are optional inclusions. The *Diablo* game series has attracted little academic attention, but WoW has been studied academically in Krzywinska (2006), Bainbridge (2007), Lastowka (2009), Nakamura (2009), Barnett and Achambault (2010), Gilmore (2010), Golub (2010), Kosminsky (2010), and Bainbridge (2011). WoW was even the subject of epidemiological research in Balicer (2007) and Lofgren and Fefferman (2007), when the "Corrupted Blood" disease spread rapidly though the world's population in 2005. This article fills a specific gap in the literature regarding the spatial structure of the worlds. The central observation in this article is that geographic constraints are *optional* in virtual worlds. This has huge ramifications for the applicability of geographic models that were developed from observations of the physical world for understanding the spatial patterns of virtual

worlds. This is especially true since (as will be shown) virtual world designers often opt not to include geographic constraints on economic activity in their worlds. Blizzard's designers emphasize space in certain situations, but deemphasize it (to the point of disappearance) in others. It is even possible that economic geography could have no meaning in some virtual worlds, leaving their economies to be understood exclusively through aspatial economic models.

This article will distinguish the human being who controls his or her digital representation in the virtual world from that representation itself. The human being who participates in a virtual world will be called a "user" most generically, but in contexts where a virtual world serves as the setting for a game (as is the case with the *Diablo* franchise and WoW), the term "player" can and will be used. The user's digital representation in the virtual world is known generically as his or her "avatar", but again, in the context of games, the term "character" will be used. In WoW, a single player can have more than one character in the world (though he or she only controls one at a time), although other virtual worlds may restrict each user to only a single avatar.

As a final introductory note, it has been recognized that a distinction between the "real" and "virtual" is not always easy to make, and that this distinction will likely continue to blur with further technological advances (Graham, 2009). Because of this, "new critical approaches to virtual geographies are becoming necessary, which abandon any *a priori* distinction of the 'real' and the 'virtual'" (p. 800). This article follows this school of thought, and as such makes no distinction between the two. In fact, as Boellstorff (2008) notes, "real" "often acts simply as a synonym for 'offline' and does not imply any privileged ontological status" (p. 20). However, this article still maintains a distinction between the *physical* (what Boellstorff [2008] calls the "actual", though this term seems too close to "real" to be adopted here) and the virtual. The physical world is made of atoms and their component parts, whereas virtual worlds are made of the bits and bytes of computer systems—but in this article, both are considered real.

This article begins with an examination of the monetary policy of the world of *Diablo II*, in order to show how aspatial economic theory from the physical world can apply in virtual worlds. Then the article examines how space is used in WoW, and how space and geography relate to the world's aspatial economic forces. This article concludes with a discussion of the power the economic planners of virtual worlds wield and the relevance of the study of virtual economies, not only for their own sake, but also because of what it may reveal about the economy of the physical world as more and more goods become digital.

## 2. Monetary Theory in Virtual Worlds

One of the essential aspatial components of virtual words, which is often critical to the proper functioning of a virtual world, is its money. Maintaining an effective currency for multi-user virtual worlds has been a challenge for virtual world designers, and the principles of monetary theory excellently illustrate the similarity between the economics of the physical world and of virtual worlds. A persistent problem has been that the economies of virtual worlds (especially those that serve as settings for games) can become wildly inflationary. Bloomfield (2009) writes,

> *Inflation plagues many virtual worlds, because all players wish to make progress in the game, leveling up and receiving better weapons and armor. Once better weapons become available to the top players, they sell, trade or even give their once-valuable weapons to less-advanced players, causing a trickle-down effect. Overseers of virtual worlds must pay close attention to the sources and sinks of currency and property. (p. 17)*

Extreme currency inflation can also occur when computer-controlled merchants have an unlimited number of goods to sell and an unlimited supply of money with which to buy goods. Such a mechanism can lay the foundation for economic collapse. However, the devaluation of in-world money presents an opportunity to study the spontaneous emergence of new money when users of the world adopt a good for use as money because the world's economy was poorly designed.

Rothbard (2008 [1983]) describes what qualities a good needs to possess in order for a society to adopt it as money. Ideally a potential monetary good should already be in "widespread use for its own sake" and in heavy demand (p. 6). The good should be highly divisible "so that small chunks of other goods can be bought, and size of purchases can be flexible" (p. 6), and should be easily portable, thus having "high value per unit weight" (p. 7). The selected good "should be highly durable, so that it can serve as store of value for a long time" (p. 7), and, finally, should exhibit a high degree of homogeneity.

For a good to become accepted as money, it is not necessary for it to perfectly exhibit all the characteristics Rothbard enumerates. The most "money-like" good in circulation may become money despite deficiencies in one area or another. For instance, Radford (1945) details the emergence of a cigarette-based economy in prisoner of war (PoW) camps in World War II, even though Rothbard (2008 [1983]) notes that cigarettes score low in the area of durability. The adoption of cigarettes as money within PoW camps closely parallels the emergence of money in barter-based virtual economies. In the physical world, the prisoners in the World War II PoW camps had no money with which to purchase goods and so initially resorted to a barter-based economy, despite its disadvantages. Eventually, however, the prisoners found that cigarettes were the most money-like good in circulation and so adopted them as money in order to make trade more efficient. Cigarettes were already in circulation. They were valued for their own sake (because they can be smoked) and were easily divisible (Radford, 1945), and machine-rolled cigarettes are very homogenous. Thus the prisoners began to establish prices for different items in cigarettes because "everyone, including non-smokers, was willing to sell for cigarettes, using them to buy at another time and place" (p. 191).

In *Diablo II*, the digital "gold" intended to serve as money by the world's designers massively inflated and became worthless. It was very easy for players to acquire gold (either by finding it after slaying monsters or by selling items they found to computer-controlled merchants), but there was very little for the players to buy with it. The players stockpiled gold in massive quantities, until eventually no player would accept any amount of gold in exchange for items. With worthless money, the users of the world resorted to barter. However, much as the World War II PoWs discovered the money-like characteristics of the cigarette, the players of *Diablo II*'s virtual world discovered that a magical ring called the Stone of Jordan had money-like characteristics. Stones of Jordan could not be bought from computer-controlled merchants with the valueless gold, and were only very infrequently found after slaying certain rare monsters. Just like the cigarettes in the PoW camp, Stones of Jordan were already in circulation and valued for their own sake, because wearing a Stone of Jordan conferred great benefits on spell-casting characters. Just as nonsmokers began to accept cigarettes, players with non-spell-casting characters began to accept Stones of Jordan in exchange for other items because they knew they could later be exchanged for other items of value. Therefore, just as the PoWs began to price goods in numbers of cigarettes, *Diablo II* players began to price items in Stones of Jordan.

Stones of Jordan became accepted as money despite not scoring highly with regard to Rothbard's divisibility criterion. A single Stone of Jordan is indivisible, making it difficult to purchase an item valued at only a fraction of a Stone of Jordan. However, the Stone of Jordan did score very well in the area of portability and high value per unit of weight. The digital items were not programmed to "weigh down" a character regardless of the number that he or she carried, so one might not expect this to be a

major factor in the virtual world. However, *Diablo II* is very restrictive regarding the number of items a character can carry. Each player has a backpack and a chest to hold his or her possessions, and each has a very limited number of "slots" in which to store items. An item may take up one or more slots depending on its size. For instance, a magical wand might only take two storage slots, whereas a suit of armor might take up six. A ring, such as the Stone of Jordan, only takes up a single storage slot. In this way, a Stone of Jordan does have a high value per unit "weight" (a high value per storage slot), and many of them can be carried. The storage slot system is illustrated in Figure 1.

Radford writes that the homogeneity of cigarettes (especially the machine-rolled variety) was an important factor in the acceptance of cigarettes as money in the PoW camps. Virtual goods have a tremendous advantage over physical goods in this area. As Kominsky (2010) notes, items in a virtual world can be homogeneous in a way that items in the physical world can never be, because "they are all the result of the exact same coding and function identically" (p. 7). Every Stone of Jordan in the virtual world was created from the same computer code and so exhibited perfect homogeneity, without even the potential for occasional manufacturer defects. Because of their money-like characteristics (summarized in Table 1), Stones of Jordan became the de facto currency of the *Diablo II* world, and the players made a transition from a barter-based economy to a money-based economy. Ultimately, however, the game was hacked, and some users began duplicating Stones of Jordan (and other rare items) though third party software. This dramatically decreased their scarcity and resulted in their devaluation in a manner similar to that of gold.

Perhaps learning from this experience, Blizzard implemented controls for inflation in its later worlds that are impossible in physical world economies. For instance, WoW items are often "soulbound" to a particular character, preventing them from functioning for others. There are different ways an item may become soulbound to a character, but two of the most common ways include "bind on pickup" and "bind on equip". An item that binds "on pickup" can only be used by the character who first picks up the item. An item that binds "on equip" can be picked up and carried by one character and transferred to another, but once a character equips the item for use (for instance, by putting on a suit of armor), it is bound to that character. In the physical world, of course, goods do not bind themselves to the souls of human beings to prevent them from functioning for others. If that were the case, secondary markets and charitable giving would collapse. Yet this is an option available to virtual world designers as an economic control.

**Figure 1: The Slot System for Item Storage in *Diablo II***

The character's inventory can be seen on the right. The number of slots available in the inventory is very limited and large items can take up many slots. On the left, a character is standing by a town portal, a magical means of transportation, which is very common in the game world. When the player steps through the portal, he or she is instantly transported to the nearest town, where he or she can sell unwanted goods and acquire new items necessary for adventuring. The use of the town portals represents extreme time–space compression and allows the player's characters to instantly overcome time and space, eliminating the need for a return journey after an adventure. Image captured by Seth Robinson.

**Table 1: Summary of the Money-like Characteristics of Cigarettes and Stones of Jordan**

| Criteria for Good to Be Adopted as Money According to Rothbard (2008 [1983]) | Cigarettes in the PoW Camp Economy | Stones of Jordan in the *Diablo II* Economy |
|---|---|---|
| Good is already in widespread use for it own sake | Y | Y |
| Good is in heavy demand | Y | Y |
| Good is highly divisible | ~ | N |
| Good is easily portable and has a high value per unit weight | Y | Y |
| Good exhibits a high degree of homogeneity | Y | Y* |
| Good is highly durable in order to serve as store of value | N | Y† |

Y—item exhibits the characteristic

~ —item somewhat exhibits the characteristic

N—item does not exhibit the characteristic

\* By virtue of being virtual goods, Stones of Jordan exhibited perfect homogeneity.

† Stones of Jordan did not "decay" or otherwise degrade over time. After the game was hacked and the stones were massively duplicated, Blizzard did implement some controls to destroy Stones of Jordan in an (unsuccessful) attempt to remove them from the game world and restore their value. However, it remained the case that, unless a character deliberately destroyed one, a Stone of Jordan would remain exactly the same and not degrade in any way.

A further important component of a virtual world's monetary structure is the relationship between virtual currencies and legal tender issued by physical world governments. Legal tender can be and has been exchanged for virtual currencies and virtual goods. Blizzard had tried to keep the virtual and physical markets separate, but this only moved such exchange into gray or black markets. Other virtual world designers encourage these transactions, such as Linden Labs, the developer of Second Life, which even established an exchange rate between the U.S. dollar and the virtual world's Linden Dollar. The ability to exchange digital goods for physical world currency on these markets has lead to the emergence of "gold farming", described in Nakamura (2009), Gilmore (2010), and Beekman (2012), in which

people, often in less developed countries, spend long hours performing repetitive tasks in virtual worlds to acquire money and goods to be sold for legal tender to those with less time to spend in the virtual world, but with greater physical world resources. This blending of the virtual and physical economies in a rather uncontrolled fashion has the potential to introduce unexpected variables into the virtual economy. It is important to note that even though Blizzard previously tried to enforce a separation of the virtual and physical markets, it moved in the opposite direction for the initial release of *Diablo III*, in which the exchange of digital goods for legal tender was an integrated component of the game through the "real money" auction house. By integrating virtual/physical exchange into the structure of the virtual world, the world's economic designers have greater ability to manage and control economic interaction than is possible when such activities are conducted through third-party channels. However, Blizzard has since decided that the presence of the auction houses undermines core game play and will remove them in March 2014.

Preventing economic collapse through the careful design and management of a virtual world's economy has become a major objective for virtual world designers. Given the experience of *Diablo II*, potential users expected a better-designed economy for future games. Blizzard promoted the quality of the design of *Diablo III*'s economy as a selling point. To assure these potential customers that Blizzard took the design of *Diablo III*'s economy very seriously, Micah Whiple (2010), Blizzard's community manager, explained (under the handle "Bashiok") on the Battle.net *Diablo III* forums that "We're designing a stable economy, we have the knowledge and experience to do so. We have people in-house with doctorates and degrees in statistics and economic analysis and all the know how to pull it off. I think we'll be okay."

Statistical analysis of economic choices available to the users in the virtual world would seem undoubtedly useful, but conspicuously missing is the consideration of a geographic or spatial component in the economy. For instance, Whiple does not specifically mention that economic *geographers* have been involved in the development of the economy of *Diablo III*. Given a basic understanding of a virtual world as a digital instantiation of three-dimensional space that users' avatars can inhabit, is it not important to consider potential geographic components of the economy? To answer this question, the geographic structures of virtual worlds will be analyzed. This will be investigated in the following section though a case study of Blizzard's *World of Warcraft*, released four years after *Diablo II*.

## 3.  The Geographic Structure of *World of Warcraft*

The geographic structure of a virtual world can be studied on a variety of levels. Thus far, the study of the mechanical geographic structure of virtual worlds has been neglected. This section uses the popular virtual world of the *World of Warcraft* to illustrate how the appearance of geographic constraints on the world may, upon further analysis, be only a geographic "veneer" upon an aspatial mechanical structure. In a manner of speaking, geography may only be skin deep.

WoW is a massively multiplayer online role-playing game featuring a vast high fantasy virtual world of humans, orcs, trolls, gnomes, goblins, undead, and many other fantastic creatures with magical abilities designed primarily for the entertainment of its users. Figure 2 provides a cartographic overview of the world. On a certain level of geographic analysis, one can emphasize the immersive nature of the richly developed landscapes. Krzywinska (2006) took this approach to the study of the world. In her article, WoW is framed in terms of a spatial narrative set in a beautifully rendered environment that uses distinctive landscapes to create a strong sense of place as the players' characters travel from location to location. The virtual geography and associated constraints seem to support the goal of creating a quasi-

medieval fantasy world with the player's experience centered on a journey. On this subject, Krzywinska (2006) writes,

> *The nature of World of Warcraft's quest system forces players to be nomadic, traveling widely in the world to undertake the tasks required to progress. There is therefore a strong and highly recognizable sense of a journey structure in the game, working on the lines of the archetypal hero quest structure found in Homer's* **The Odyssey** *(c. 750 B.C.). (p. 390)*
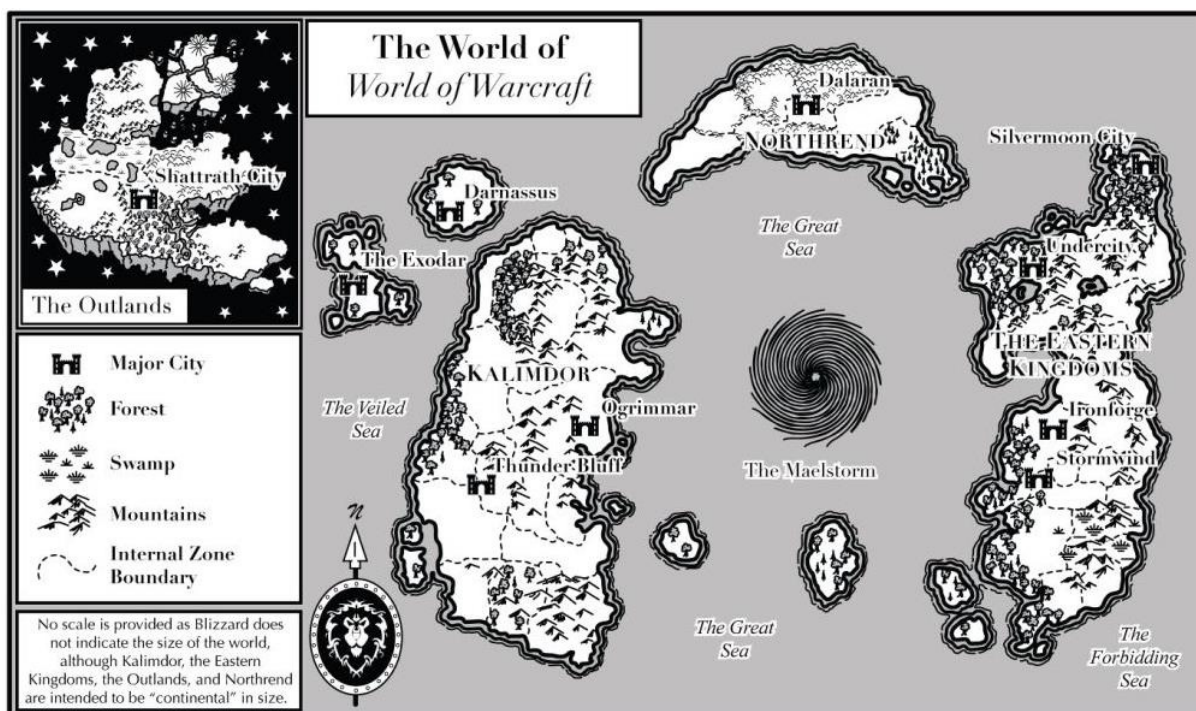


**Figure 2: The World of World of Warcraft**

Map compiled and redrawn by the author from information available from http://www.wowwiki.com/Maps.
Last accessed 5 May 2013.

However, this understanding of the geography of WoW is not complete. It could be investigated from other perspectives. For instance, Golub (2010) explains how medium to heavy users of WoW actually downgrade the sensory stimuli that contribute to the creation of the rich geographic landscape (thereby intentionally reducing what might have been considered the world's most immersive characteristic) in order to more efficiently visualize and process information necessary to be effective at tasks undertaken in the world (such as killing monsters). This intentional degradation of the landscape by the world's heaviest users may come as a surprise to those who would suppose that the visual and auditory components of the world are the most important factors in retaining the world's heaviest users. This article, however, explores another perspective on the geographic aspects of the world—namely its (a)spatial economic characteristics and the selective use of space, place, and geography to create a very specific user experience.

## 3.1    Geographic Constraints on Movement and Communication

Despite the appearance of the geographic constraints of a quasi-medieval fantasy world, the mechanical effects of geography and space, including those on movement and communication, are very limited and carefully controlled. When a user first begins the game, his or her character's mode of transportation is largely limited to foot travel, limiting the speed of travel to and from various locations to how fast the character can walk or run. Foot travel is augmented by the use of flight paths for faster long-distance travel. The flight paths form a transportation network between fixed locations in the world, each of which is operated by a flight master. For a small fee (paid in coins of digital copper, silver, or gold), the flight master allows the character to use a flying creature (such as a griffon, hippogriff, wyvern, or giant vampire bat) to fly to another node on the flight path network. The flight is not instantaneous. Instead, the player temporarily loses control of his or her character while the flight is in progress. The user watches the character flying along a predetermined path. Generally, in order to fly to a particular point on the network, a player must "activate" that node by first visiting each flight master by another mode of transportation (such as walking) before being able to fly to that location through the flight path network. However, in later updates to the game, some flight paths are pre-activated for new characters and some may be used for free. Flight paths are also restricted according to which faction the character belongs to. The Horde's flight path network on the continent of the Eastern Kingdoms is shown in Figure 3.

As the character advances, he or she may acquire personal mounts to speed movement. The acquisition of a mount (such as a horse, wolf, or manticore) goes through a progression from "regular" land-based mounts to faster "elite" land-based mounts. Then the character may acquire a "regular" flying mount (such as a hippogriff), which not only travels faster than land-based mounts, but also allows characters to soar over topographic obstructions, thereby gaining greater flexibility in travel. There are also "elite" flying mounts that travel at greater speed. When riding a flying mount, the player does not merely watch his or her character in flight (as with the flight path network), but rather may direct the character's flight in any way he or she chooses. The character's ability to overcome distance is increased as he or she advances in level by the acquisition of increasingly fast mounts. Likewise, possession of the increasingly valuable (and expensive) rare mounts serves as an indicator of the character's status. Thus, the capability to overcome space becomes a status symbol.

Travel across even greater distances, such as between continents, is accomplished by boats or zeppelins that launch and dock at regular intervals at predetermined points, and the (presumably long) travel time across the ocean is abstracted. Once the vehicle launches, there is a brief time when the player can view the landscape as the character moves away from it. But then the scene fades and is replaced by one of arrival at the new destination, and the player may watch the new landscape approach for a few seconds before disembarking. Thus the player is largely spared the temporal cost of the character's intercontinental travel. Similarly, the Deeprun Tram operates between Stormwind City and the city of Ironforge, serving as a free and speedy link between those cities for members of the Alliance faction. But, further, beyond these "standard" methods of transportation, players have many other options for overcoming distance and space in WoW.

Each character also begins the game with a hearthstone. When activated (a process that takes ten seconds), this magical stone teleports the player from his or her present location to the inn to which the hearthstone is "bound", regardless of the distance between the character and the inn. Binding a hearthstone to an inn is free and is accomplished by simply requesting that an innkeeper bind the stone to his or her particular inn (which replaces the previously bound location). This means that the character must initially travel to the inn by some other method in order to bind his or her hearthstone. The

innkeeper will also freely provide replacement hearthstones for players who have lost theirs. Hearthstones have a thirty-minute "cooldown" time, meaning that a player may only activate the hearthstone's teleportation power once every thirty minutes. There are also additional items (such as the Ruby Slippers) players can acquire that have a power similar the hearthstones. Players with mage characters of sufficient level can teleport themselves to the capital cities of the world. Some mage characters choose to monetize this ability by opening portals for other characters for a price. Shaman characters can develop an ability called Astral Recall that functions like the hearthstones, but with only a fifteen-minute cooldown. Through these methods of travel, the players can experience the journey component of questing and adventuring, but are not burdened by the journey back to a tavern to replenish their consumables and heal their characters in preparation for the next quest. The return journey is not "fun"; therefore the world's designers eliminate it from the user's experience through magical teleportation powers.

Additionally, players will find Meeting Stones placed throughout the world by dungeons (locations that are specially designed for players to enter, slay the monsters within them, and find treasures). These are large monoliths decorated with glowing runes that allow all of the members of a particular adventuring party to assemble easily so that they may enter the dungeon together (Figure 4). Once two characters in a party have reached the stone, one of them may "target" a distant member of the party and then touch the stone. This opens a portal beside the distant character, and he or she may pass through for instant teleportation to the Meeting Stone and his or her companions. Not being able to enter the dungeon with one's friends because they are dispersed across the world is not fun; therefore the world's designers intentionally drastically reduce the geographic constraints on assembling one's friends in order to partake in the activity of dungeon raiding.

In discussing the geographic constraints of virtual worlds, it is also critically important to recognize that the geographic constraints imposed upon the *characters* inhabiting the world are not necessarily the constraints on the *players*. This distinction has profound ramifications. In WoW, communication between players can be accomplished through a text-based chat box interface. Players can communicate by chat with every other player of the same faction in a zone or with other members of the player's party, guild, or other group of users, regardless of their characters' positions in the world. In later updates to the game, voice chat has been added as an integrated component of player-to-player communication, further relaxing geographic constraints on communication. However, even before developers chose to implement aspatial voice communication among players as a core feature of the game, players easily found ways to circumvent this constraint. For instance, players used third-party software (such as Skype, Ventrilo, SMS messaging, or even simple cell phone conversations) simultaneously with WoW in order to communicate without regard to the positions of their characters in the game world. From a perspective internal to the virtual world, this results in a kind of telepathy between characters. The instantaneous communication between players regardless of the proximity of their characters allows coordination between players in a way that the designer of the world may not have originally intended, or might have wanted to discourage. However, the existence of third-party systems would seem to make involuntarily constraining players to a communication system based on their characters' geographic positions very difficult. Rather than attempt it, Blizzard has made such aspatial communications between players (and the social interactivity this enables) a core feature of the game.
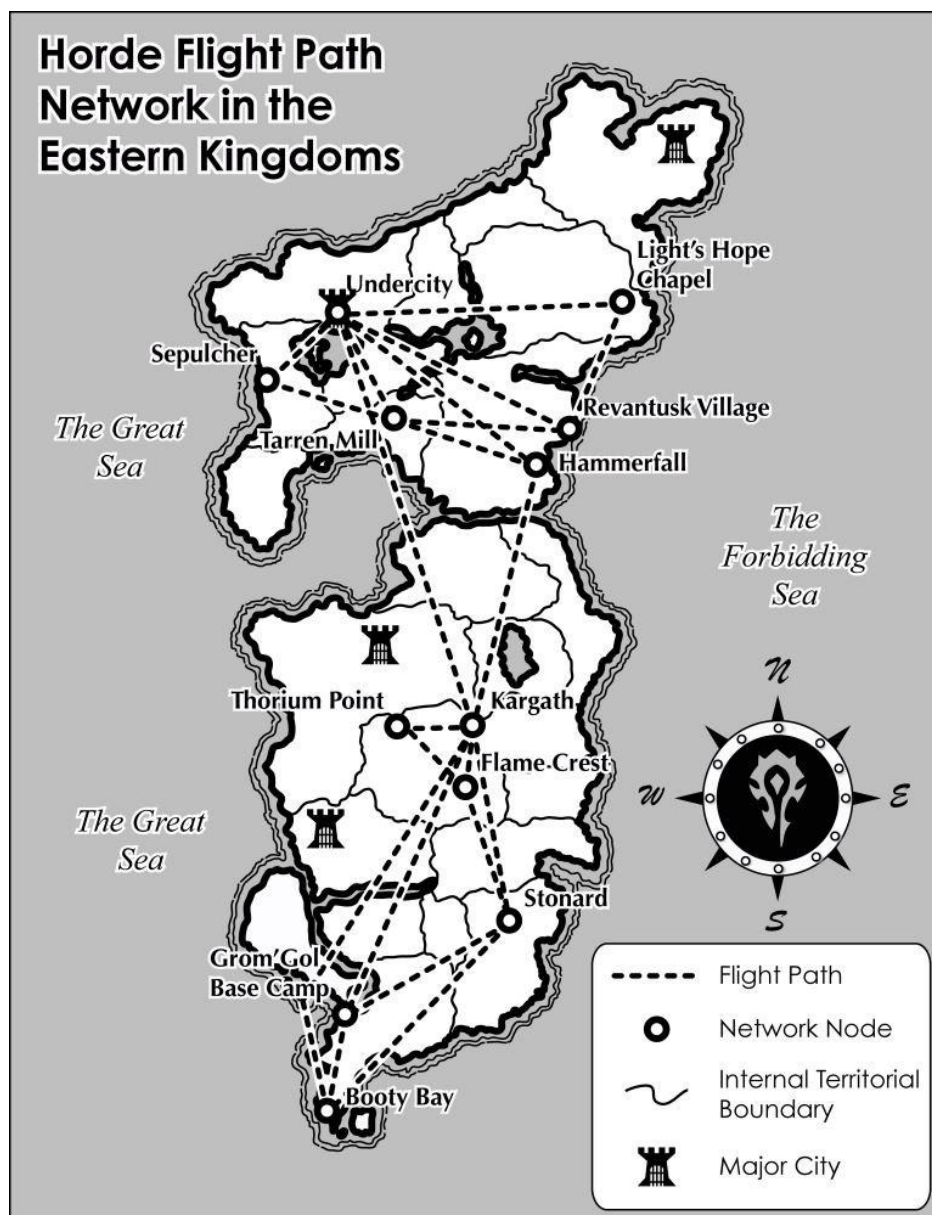
**Figure 3: The Horde's Flight Path Network in the Eastern Kingdoms**

Map redrawn by the author from information available at
http://wow.allakhazam.com/wiki/category:flight_points_(wow). Last accessed 5 May 2013.

**Figure 4: A Meeting Stone. Image captured by Garrett Speed.**

## 3.2    The (A)spatial Nature of the Player-to-Player Economy

WoW's economy has two major interacting parts, each with a different geography—the player-to-game and player-to-player economies. When players slay monsters and accomplish quests, they gain items and money. The items may be used by the character, or, if they are not needed, sold to computer-controlled merchants at certain locations for money in the player-to-game economy. The money can then be used to purchase items the character needs from other computer-controlled merchants. In the player-to-player economy, players may trade items among themselves, resulting in a vastly more complex economic system. Though players can exchange items with one another through a direct trading method when the players' characters are within ten yards of one another, the vast majority of players-to-player trade is conducted in a manner that operates largely without geographic constraint. A

system of magical mailboxes, shown in Figure 5, forms the cornerstone of the world's player-to-player economy.

Each character has a mailbox that can be used to send messages as well as goods from one character to another. These mailboxes operate very similarly to email. Messages are written, goods can be attached, and then the mail is addressed to the intended recipient and sent. These messages and item transfers can be instantaneous, but in some cases, the system imposes an artificial delivery time of one hour. An item can even be sent "C.O.D.", which means the recipient must pay a certain amount of in-world money to the sender before being allowed to remove the item from his or her mailbox and place it in his or her inventory. The game system handles the transaction and enforces the payment. Despite the similarities to aspatial email, there is a minimal geographic constraint imposed on the use of the mailboxes, in that the characters must travel to specific locations, often within major cities, to check their mailboxes and send and receive messages and items. But even this constraint is tempered by the existence of portable mailboxes that allow a player to check his or her character's mailbox from anywhere in the world. The mailboxes are also used by the Auction House system (shown in Figure 6), which is a major part of the player-to-player economy, to ship and deliver goods.

However, the Auction House system appears not to have sufficiently lifted the geographic restrictions on economic transactions in the world for Blizzard's designers, and so further steps have been taken to eliminate them. Blizzard developed the "World of Warcraft Remote", a service accessed through smartphone apps for the iOS and Android operating systems. This service allows players who are not currently logged into the world to access the Auction House remotely and participate in text-based communication with other players. This eliminates even the most minimal geographic requirement for participation in economic transactions—the requirement that the user must be present in the world and have a spatial location. Thus, the economic models of the world must consider locationless nonpresent economic agents.

**Figure 5: Figure 5: Mailboxes in World of Warcraft**

Even though each mailbox performs the same economic function of moving digital messages and goods from one place to another, Blizzard changes the appearance of the mailboxes to conform to the cultural themes of the different races and societies. In this way, the sense of place that Blizzard creates in different locations is not disrupted. These mailboxes are a) a standard mailbox of the Horde faction; b) a Tauren mailbox; c) a goblin mailbox; d) a standard mailbox of the Alliance faction; e) a mailbox in the city of Shattrath; and f) a Blood Elf mailbox. Images captured by Garrett Speed.
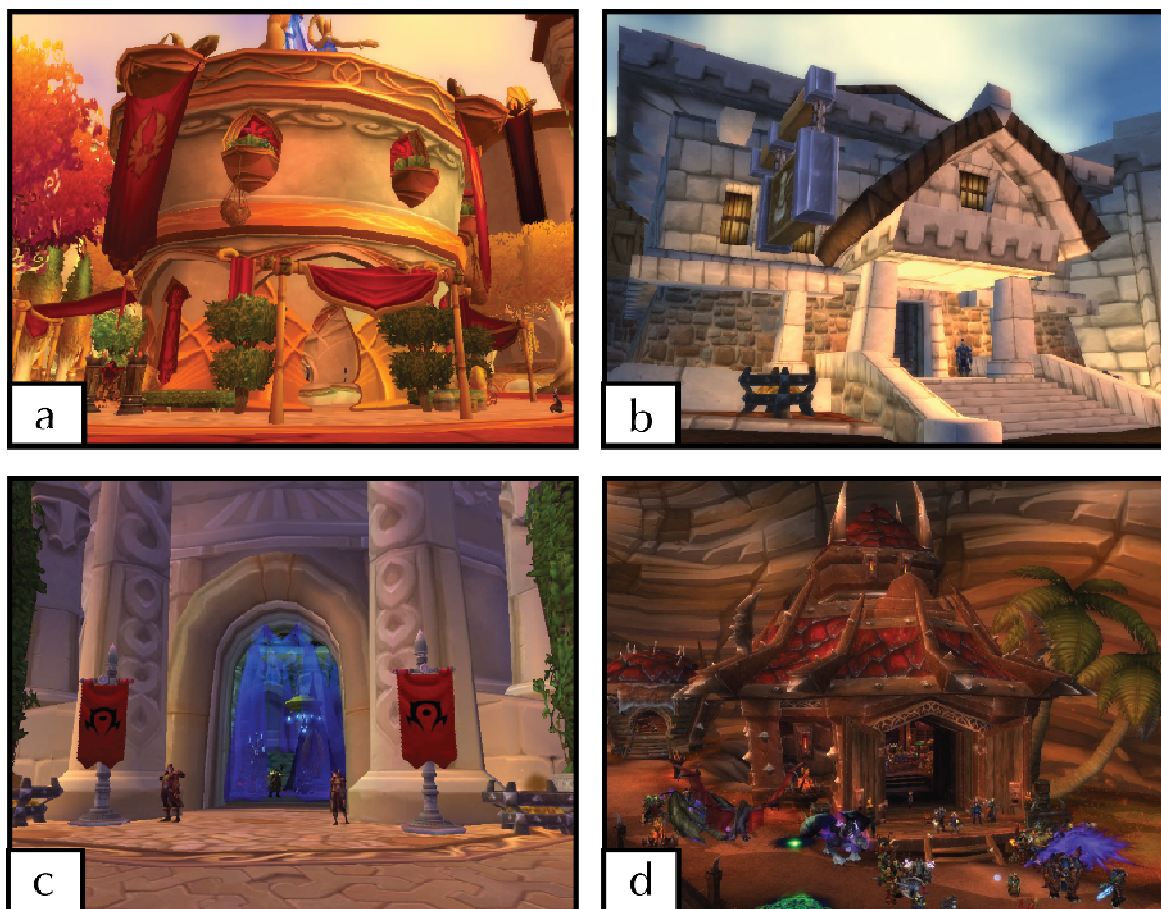
**Figure 6: Auction House Exteriors**

Even though all of the Auction Houses above have the same function, each is styled to conform to the cultural theme of the area in which it is located. The Auction Houses shown are a) a Blood Elf Auction House; b) a human Auction House; c) the Horde Auction House in Dalaran; and d) the Horde Auction House in Ogrimmar. Images captured by Garrett Speed.

## 3.3    The Use of Space to Create a Gameplay Experience

The user's capabilities to overcome distance, such as the mailbox system, are not available to the computer-controlled characters in the world. In fact, they frequently ask users to deliver items to other computer-controlled characters. In these situations, geography and travel from one location to another are used to enhance the user's experience in a way that would not be possible if the computer characters simply used the mailbox system. Similarly, when a player is tasked with recovering a lost item or slaying certain monsters, traveling to the necessary location is part of the experience the designers of the game intend the users to have. The contradiction between the player's ability to overcome space due to electronic advantages and the computer-controlled character's inability to overcome space in a similar fashion is supposed to be overlooked. They are two different systems for different purposes and the illogic of their coexistence in the same world is not something the players are supposed to analyze. It is fun for the players to be able to trade goods without great geographic constraint, and so that occurs. It is also fun to pretend to be in an environment where space and geography matter in order to reenact the traditional nomadic hero narrative, and so that is also present.

The WoW developers also use distance, space, and geography to inconvenience users when inconvenience is intended to be part of the gameplay experience. This is perhaps best exemplified in the death of a player's character. A character's death in WoW is not permanent, but it is inconvenient for the player. When the character dies, the character's ghost appears in the nearest graveyard. The screen is gray and spectral, and the ghost has none of the items and equipment he or she possessed when alive. These items remain on the character's corpse. Importantly, the character's ghost is also stripped of all of his or her abilities to overcome distance (such his or her mount). This means the player must direct the ghost to run from the graveyard to the location of the body (which might be none too near), using the inconvenient mode of transportation used at the start of the game. Once the ghost has reached the corpse, it reenters the body, and the player is then free to continue the game. However, Blizzard provides another option for players who would rather not experience geographic inconvenience as a result of death. Spirit Healers in the graveyards can instantly resurrect a character and return all of his or her gear, if the player is willing to sacrifice the durability of his or her items (which will need to be repaired) and endure a "resurrection sickness" penalty that temporarily degrades the skills and abilities of the character. Priest characters by the dead characters' corpses also have the ability to resurrect dead characters, instantly returning the ghost to the corpse without the need for the dead character to overcome the distance between the graveyard and the corpse.

It is important to emphasize that the elimination of *space* is not the same as the elimination of *place*. Geographers have addressed "the annihilation of places, shrinking distance and time to zero, and even the death of geography in virtual worlds that leads to a deep thinking and wide discussion for geographers in the context of future geography" (Lin & Gong, 2001, p. 1, internal citations omitted). But, at least in the case of WoW, distance and time can shrink to zero (or very nearly so), but this does not correspond to the annihilation of place. Not only do places such as the Auction House remain important, but also Blizzard goes to great effort to emphasize place through the creation of unique and dramatic landscapes for users to experience, which was the focus of Krzywinska's (2006) article. Users may experience different places, but the space between places is not intended to be a major obstacle, especially as a user's character progresses in power.

## 4.  The Omnipotent Central Planner

Virtual economies provide an opportunity to experiment with central economic planning in a way that never has been (and perhaps never can be) realized in the physical world. Graham Smith (1994) defined central planning as "An omnipotent form of economic and social planning, associated with state centralized control and direction of a national economy and society" (p. 59). Of course, economic central planners operating in the physical world have never been omnipotent. They are constrained by physical laws and existing conditions beyond their control (such as the availability of raw materials). However, the developers of virtual worlds are not so constrained, and thus they can come far closer to the ideal omnipotent central planner because they can begin with a blank slate on which to create their world. They can even determine its very "physical" laws and the starting conditions of all aspects of the world. Once the world has been created, managers of the world can be vested with the power to alter even fundamental rules of the world, remove goods from existence, change the scarcity of goods, or redistribute goods with only a few keystrokes. Determining the role geography will play in the world is but one of the choices the world's designers must make. Relaxing or eliminating geographic constraints on communication and the movement of objects has the potential to dramatically alter emerging spatial patterns of the world, the relevance of geographic models developed in the physical world, and the users' experience.

There is, of course, a distinction between the *study* of virtual economics and the *design* of virtual economies (although by being studied, perhaps virtual economies may be more effectively designed). Academics have engaged with the study of virtual economies, but their design has largely been a private sector activity. The ability to design a virtual economy effectively can provide a company with a competitive advantage. Thus knowledge of how to do so may be closely guarded. Blizzard, for example, has not published a handbook on the effective design of virtual economies. Castronova et al. (2009), however, is one academic investigation concerned with the design of a virtual economy. It outlined an academic project to create Arden, a virtual world based on Shakespeare's England. The intention was for the world to serve as a laboratory for economic experimentation through the selective manipulation of economic variables. The article describes the authors' approach to building a "thriving economy" (p. 167), and though the project to build Arden was ultimately abandoned, the article remains an important insight into the considerations of an omnipotent central planner attempting to build an economy that is "rich, deep, persistent, complex, nuanced, and rigorous" (p. 177).

An especially important consideration in Castronova et al.'s article is monetary policy—especially the aspatial concerns of inflation, deflation, and preservation of value (all problems encountered in *Diablo II*). Regarding these aspects of the economy, Arden might have been an effective tool for economic research, but not necessary *geographic* economic research. Castronova et al. (2009) are conspicuously short on references to the effects of location or space on economic activity, other than a brief mention that geography would play a role in limiting access to advanced resources. It was noted that necessary resources could only be obtained by mining them from "resource nodes", and "higher tier resources will appear in more remote locations requiring a larger time investment from the player" (p. 170). Arden would have featured two different markets, The Marketplace and The King's Market, designed to facilitate and manage the player-to-player economy and the player-to-game economy, respectively. Castronova et al. (2009) mention that the King's Market would have been "a physical location in the central town with satellite location in the nearby villages". This would have provided a minimal geographic constraint on interaction with the King's Market, but in contrast, the Marketplace could have been "accessed anywhere in the world" (p. 173). Because "the only way to gain money is to sell items on the Marketplace", the Marketplace is "central to the player experience" (p. 173). Perhaps because of this centrality, Castronova et al. intentionally eliminated geographic obstacles to its access. Instead, players could access it "at any time and any place in the world" (p. 173). Allowing aspatial access to the Marketplace suggests that Arden would have used an aspatial economic model for player-to-player transactions. The use of a spatial or aspatial economic model is one of many choices the omnipotent central planner must make for his or her world, and it seems clear that the economic theories Arden was intended to test were aspatial in character. It might even be that introducing geographic variables into the world could be potentially disruptive to aspatial economic experiments.

Recalling the economic failure of *Diablo II*, economic planners are still learning how to use the immense power they have in virtual worlds most effectively. In the physical world, economic planners are not experienced in designing *everything* from the ground up. Unlike the physical world, for which there is a physical reality from which to start, in a virtual environment everything must be specified. Economic collapse in virtual worlds shows that, at present, even with an omnipotent economic planner, economic success is not guaranteed. Central economic planning can fail not only because the planners had insufficient control over economic variables, but despite their having nearly complete control of them.

## 5. Conclusions

Advances in information technology have caused some to herald the death of distance in the physical world for some time, but in virtual worlds, distance may never have been born. The economies of virtual worlds have not been able to escape aspatial economic constraints, such as the law of supply and demand, but the potential elimination (or at least noninclusion) of the economic geographic variables means that it is not always necessary to consider space in virtual economic models. Also, the similarities between the virtual economies and the economy of the physical world, such as the parallels between the PoW cigarette-based economy and the emergence of the Stones of Jordan as money in the world of *Diablo II*, further reinforce the idea that the distinction between the "real" and the "virtual" is unnecessary and (aspatial) economic models may be equally applicable in physical and virtual environments. One may not need to distinguish between the study of "virtual economics" and "real economics".

As has been shown, Blizzard uses geographic constraints in WoW selectively in order to enhance the user's experience or create the intended atmosphere. Otherwise, geography is not a greatly limiting factor in the world, and as characters advance in capability, the constraints geography imposes on them decrease even further. When space is useful to create a certain gameplay experience (such as when questing over the world), geography and space are featured. When space is a hindrance (such as with player-to-player trade), it is eliminated.

However, even as virtual world designers increasingly take advantage of the digital foundation of the worlds to eliminate spatial constraints on economic transactions, this need not mean that geography is not relevant in the study of virtual worlds. The elimination of space has not coincided with the elimination of place, and arguably, virtual environments are one of the only places where space can be eliminated, but place can be emphasized. Further, aspatial virtual economies of digital goods provide insight into the economic future of the physical world. Goods in the physical world are becoming increasingly digital, and thus may be acquiring aspatial economic characteristics. Aspatial virtual economies may provide a window into the economic future of the physical world if (or when) *all* goods become digital and spatial constraints on their trade are "virtually" eliminated.

## Acknowledgments

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