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Toys Become Tools: From Virtual Worlds to Real Commerce

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Abstract:

This teaching case considers the challenges and opportunities faced by an entrepreneur in Second Life, one of the more popular virtual world environments. Second Life provides the economic and technological platform required for immersion, social interaction, and the potential of private enterprise. Many entrepreneurs have taken advantage of the various business opportunities offered in Second Life, and a number have earned significant income through their in-world creations and services. Stuart O'Brian, the CEO and founder of VirtualCircle, was one of the early pioneers of virtual commerce. Over the last three years, his organization faced multiple business and technology challenges while negotiating the hypercompetitive and turbulent environment within Second Life. However, he now questions the sustainability of the ever-changing and agile business model that enabled the success of VirtualCircle. Stuart also faces questions regarding avenues of future growth and is grappling with issues concerning interoperability and the replication of his prior success in other virtual environments—and the real world.

Keywords: agile enterprises, digital options, turbulent environments, IS platform, virtual commerce, virtual organizations, virtual teams, second life, virtual worlds, immersion

Editor's Note: A teaching note for this case can be obtained from *svitzthu@iwu.edu*. Only active faculty who are currently listed in the AIS Faculty Directory are eligible to receive the teaching note.

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The default assumption of your mind, unless you fight against it, is that everything in an immersive game world is completely real [Castronova, 2005].

I. INTRODUCTION

As he scanned the island, taking in the familiar surroundings for one last time, Stanley's thoughts strayed to the travails of the recent past, and waves of nostalgia washed over him. He could hear the surf pounding on the rocks and see the sun setting beyond the expanse of the horizon. He could *almost* taste the salt in the air and smell the green grass below his feet. *Almost* being the operative word; because none of this was real. It was all a kaleidoscope of 0s and 1s, made possible by the marvels of modern technology. The sun, the beach, the houses, the people, and even Stanley Orsk Barrowstone himself were all unreal. But his feelings, his experiences, his successes, and the money he had made were all very much real.

Stuart O'Brian, the alter ego of Stanley, was an entrepreneurial pioneer—an entrepreneur who in early 2009 was making real money from engaging in real commerce in a virtual world. He had sensed the business opportunities offered by his passion and pastime, *Second Life* (SL), and carved a niche for him in the micro-economy of this virtual world. Over the past three years, he had witnessed many tumultuous events that created new business opportunities induced by continuously evolving rules and regulations in SL. And yet, he and his company *VirtualCircle* (VC) had not just survived, but thrived and prospered well beyond his initial expectations. His business model of having an adaptive business had seen him through ups and downs and had led him through a succession of roles: gathering spot creator, land developer, retailer, service-system provider, and market facilitator. VC had established a brand presence in SL and was a well-known retailer of fashionable virtual goods and accessories. Stuart's growing network of stores, vending machines, and sales affiliates had contributed toward a trajectory of growing revenues and profits. Despite these successes, he was worried about where the next business opportunities would come from and if they would be as successful as the earlier ones. He was concerned about the sustainability of a continually adapting business and avenues of future growth. He wondered what it was in his business model that had led to his success in SL and whether that success could be replicated in another virtual world. Could his intricate knowledge of the SL platform and experience with virtual commerce be utilized to expand VC beyond the boundaries of SL, or even other virtual worlds and into the real world itself? Were the learnings from the hypercompetitive and turbulent environment of SL applicable beyond its realms?

Stuart O'Brian pondered over these questions as he used his mouse and keyboard to guide Stanley along the shore of his company's latest sale, Patailani—an island that had been one of his earliest developments. Reminiscences of his entrepreneurial journey made him wonder what lay in store for him and his constantly adapting company.

II. VIRTUAL WORLDS[1]

Virtual Worlds are immersive, interactive, persistent online environments that provide their participants with a game-like, role-playing, and concurrent experience. Virtual worlds provide a sense of identity within a space and enable participants to use their online persona to engage in a variety of activities, including socialization, education, commerce, entertainment, collaboration, exploration, and creation. Thus, virtual worlds consist of online personas, spaces, the creations of online personas, and the interactions of these three.

The first 2-D virtual worlds (e.g., *ImagiNation Network* and *The Palace*) were born in the early 1990s, and most were shut down by 2001. Some of the early immersive virtual worlds, which were established in the mid-1990s, were still active in the late 2000s (e.g., *Active Worlds*). Many truly massive and immersive virtual worlds (e.g., *Second Life* and *Entropia Universe*) emerged at the dawn of the twenty-first century [Bray and Konsynski, 2006]. Some virtual worlds were game focused (e.g., *World of Warcraft*), whereas others focused on socialization of specific (e.g., *Habbo Hotel*) or all types of participants (e.g., SL). Some virtual worlds also facilitated education or served as a meeting place for geographically distributed participants. For example, corporations such as IBM had created virtual meeting and training rooms in SL. Many virtual worlds enabled their participants to engage in commercial transactions of spaces (e.g., property in SL) and creations (e.g., virtual goods in SL). Real-world companies attempted to tap into these rapidly growing economies within virtual worlds by offering a virtual shopping experience.

[1] Refer to Castronova, 2005; Bray, 2006; Bray and Konsynski, 2007, for an overview of virtual worlds, their history, and limitations.

Virtual worlds consisted of a main application hosted on a set of servers, which were accessed via either a standard Web browser or proprietary client software. There were several pricing models for virtual worlds: Some providers distributed free software clients and did not charge for their use, while other providers charged an upfront fee for the client, and others required subscription fees for access. Some virtual worlds offered free download of their client applications and free access along with subscription-based premium offerings. The short history of virtual worlds was replete with these and other complex pricing models as virtual world providers grappled with the challenges of monetizing their investments.

Brief History of Virtual Worlds

In 1991, *Sierra On-Line* launched a subscription-based 2-D online gaming network, named *ImagiNation Network* (INN). INN was comprised of multiple lands and featured different games and services, including an electronic post office, bulletin boards, and chat rooms. The online personas of participants were assembled using a built-in face maker. INN was partly sold to AT&T and eventually acquired in 1996 by *America On-Line*, which later shut it down. Another early pioneer was *The Palace*. It was a 2-D interactive chat application which featured emoticon-shaped avatars which could chat with one another and move from one room to another by clicking on doors. Launched in 1994, *The Palace* was quietly shelved in 2001.

Some of the early immersive virtual worlds, which were established in the mid-1990s survived for a longer time. *Active Worlds* originally was envisioned as a 3-D web browser. It was re-launched as a 3-D platform in 1995 and was still active both as a paid and a free service in the late 2000s. In 1998, *There* was launched as a subscription-based 3-D virtual world with 2-D web-based services [Bray and Konsynski, 2006]. *There* had a virtual economy of member-created items and offered free and paid membership.

The dawn of the twenty-first century saw the emergence of many truly massive and immersive virtual worlds. In 2003, *Electronic Arts*, a giant in the computer game industry, launched the subscription based *The Sims Online* (TSO). TSO was an online version of the highly successful game franchise, *The Sims*. Participants were allowed to control up to three simulated persons, or Sims, across three different game servers. TSO also featured an online currency and virtual economy. However, TSO was unable to replicate the runaway commercial success associated with the *The Sims* PC games and was not updated after 2005.

In 2003, Linden Lab launched SL on a partly subscription-based model. Around the same time, *MindArk*, a Swedish software firm, launched *Entropia Universe* (EU). Both SL and EU had their own virtual currency and virtual economy. SL provided its participants, termed *Residents,* with the ability to create or modify the SL world and the objects within it. Residents were allowed to retain the intellectual property rights over their in-world creations and buy and sell these creations.

Limitations of Virtual Worlds

Wide-scale adoption of virtual worlds was inhibited by several limitations. Chief among these was the proprietary and closed natures of virtual worlds. Virtual worlds were developed as silos, many with proprietary code and rendering technologies; thus they lacked interoperability. Personas and their belongings in one world could not be ported to another world. Security, functionality, and digital rights management issues needed to be resolved before inter-world portability could be implemented across multiple virtual worlds. The proprietary nature of the underlying code and rendering technologies of most virtual worlds further increased interconnectivity complexities and resulted in duplication of development effort and multiple technical problems. Lack of good documentation on the proprietary application programming interfaces (APIs) of different virtual worlds also contributed to the closed nature of virtual worlds. Efforts aimed at developing open standards and open source platforms such as *OpenSim* had been initiated in the mid 2000s, but had yet to gain widespread support. Thus, a multiverse, a network of interoperable and connected virtual worlds, was nothing more than a bold vision.

Another limitation was the hardware and bandwidth requirements on both the virtual world provider and user ends, due to the demands of providing more realistic graphics. Concentration of multiple online personas in a given space further increased the load on hardware. This compromised the ability of virtual worlds to support gatherings of more than a few dozen people, such as conferences, conventions, and concerts, and hence severely limited their adoption by a larger audience. A recent approach was to utilize peer to peer technology to cope with the processing power requirements. While companies such as NICTA offered peer-to-peer technology-based distributed solutions, only a few of the prominent virtual worlds adopted this technology [Naone, 2008]. Legal and cultural issues arising from the global reach of virtual worlds also dimmed their appeal to certain audiences. Issues of jurisdiction, governmental regulation, language barriers, and self-aggregation of similar people were some other issues faced by virtual worlds. Despite these limitations, virtual worlds had the potential to transform many aspects of human life, including education, business, social events, corporate meetings, social networking, and e-commerce [Bray and Konsynski,

2007]. By early 2009, many virtual worlds had populations and economies that were larger than those of some small countries.

III. SECOND LIFE

Linden Lab (LL) was incorporated in 1999, with an aim to develop virtual immersion hardware which would allow users to immerse themselves in a virtual world experience. A software application, named *Linden World,* was developed to go along with the hardware and was eventually launched as SL, after alpha and beta trials, in June 2003. SL was developed as much more than a mere game or chat application. In an April 2006 blog post, Philip Linden (the SL persona of Philip Rosedale, the founder of SL) commented:

> *I'm not a gamer, and SL isn't a game. From the start, we/LL observed that something like SL would have its first uses in entertainment, and then grow beyond those uses as people became more confident in the capabilities of the new platform/OS/whatever-we-want-to-call-it. So we focused on making SL very exciting and visceral and inspirational, but not on making it a game* [Linden, 2006].

Unlike games, SL did not have rules or objectives, and, unlike chat applications, it consisted of an extensive world to be explored and interacted with. The world was designed on a real-world template, wherein participants' online personas, called *avatars* (a Sanskrit word meaning incarnation), were placed under almost realistic environmental constraints. Andrew Linden, the avatar of a SL developer explained this in a March 2005 blog post:

> *Way back when we started working on SL we talked about the fundamental design of what the space should look like. There were all sorts of freedoms that could be explored in a virtual space—no need for gravity, ground, sky, water, or trees. However, we decided we wanted SL to be very much a place rather than an abstract collaborative CAD tool. Since the humans are most familiar with an environment that has a horizon, ground, sky, water, and trees we decided that SL would be fundamentally familiar if it had these things. Similarly we decided to center the avatar possibility space around a realistically human shape instead of a cartoony or otherwise stylized avatar* [Linden, 2005].

SL avatars could take any animal, vegetable, or mineral form that users chose, including resembling the users themselves. Users could change the appearance and form of their avatars as they wished and could also have multiple avatars. SL residents used to refer to the state of being present in the SL world or anything that took place within SL as in-world. SL was conceived as a largely user-created, highly scalable environment. LL did not charge users for creating an account or for making use of the world. LL did offer a premium membership that provided a higher level of technical support and an in-world stipend. Philip Rosedale grasped the potential of collaborative creation early on and reoriented SL from an objective-driven, gaming experience to a community driven, user-created experience. He later remarked:

> *… we want SL to be able to reach everyone in the world, to be able to scale to 100's of millions of users and millions of servers, and to remain an open decentralized system in which creativity rules* [Linden, 2006].

Business Model

The primary business model of SL revolved around virtual land. Ownership of land within SL bestowed on its owner the ability to store or showcase creations and build offices, residences, or any other buildings. A subscription-based premium membership gave participants the right to own any of the four types of land regions available in SL: Mainland, Private Region, Homestead, and Openspace. Each region was hosted on an individual CPU and comprised of an area of 65,536m². LL tightly controlled the overall supply of land within SL. Residents could purchase regions sold by LL through auctions or could purchase or rent smaller parcels of land from other participants. The owner of land had to pay monthly upkeep fees, which were determined by the size of the plot, to LL and could use the land for any purpose not prohibited by the SL's Terms of Service.[2] Ownership of land would cease if a participant failed to pay monthly dues to LL.

LL provided residents with the virtual space within which they could store their creations. In November 2003, LL allowed residents to retain the intellectual property rights over their in-world creations. Residents had four basic choices to copyright their objects. Objects could be freely resold or given away, copied for personal use, modified, or remain unchanged. This decision to enable copyrights and ownership of digital creations made LL the provider of a platform for creativity, where residents could engage in commercial activities regarding their creations. These commercial activities were facilitated by the SL virtual currency, Linden Dollars (L$), which had a market determined floating exchange rate with real U.S. dollars (USD). The exchange created a secondary revenue stream for LL, which collected a 3.5 percent fee for converting L$ into real world currency. Beginning with the first quarter of 2007,

[2] The SL terms of service are available at http://secondlife.com/corporate/tos.php.

more than USD 10 million were exchanged per quarter. In the last quarter of 2008 nearly 30 USD million were exchanged, leading to nearly USD 1 million in conversion fees.

LL thus had a commercial interest in attracting two types of users: premium members who would develop land, and thus contribute membership and land usage fees, and users who would spend on in-world purchases of goods and services. While premium memberships slowly declined in 2008 to 80,000, the total amount of land owned by SL residents increased to 6000 km^2, foreshadowing a consolidation among land owners. At the same time, the value of in-world commercial transactions increased tremendously, which resulted in rising revenues from currency conversion fees. LL controlled both the land and the L$ supply in SL. Changes in both directly impacted LL's revenues in the short term. Yet, oversupply of either would lead to devaluation of the assets of users and premium account holders, which could easily lead to residents leaving SL for good (see Appendix B).

SL had started as a virtual space for creativity, but had developed into a micro-economy. It was LL's core business challenge to make both governance and technical decisions that would satisfy all stakeholders, while at the same time warranting positive cash flows for the company.

In-World Economy

By October 2006, over 1 million accounts had been registered in SL. However, not all registered residents were active. It was estimated that less than 10 percent of newly signed up users would return within thirty days after they had initially signed up. Several factors contributed to the low retention rate: First, users had difficulties with the SL interface. While most managed to create an avatar, few were able to find or interact with other avatars. In addition, the lack of a defined objective, similar to quests in popular massively multiplayer online role-playing games (MMORPGs), led to users not returning to SL.

Still, from the end of 2006, SL usage started to grow. One reason was the increased media coverage of SL. Outlets such as BusinessWeek and the German Bildzeitung started reporting on SL, and Reuters decided to have a dedicated news bureau that would report only on the developments in SL and other virtual worlds. The increased coverage not only drew in more casual users but also spurred the interest of entrepreneurs. The intense reporting on Anshe Chung's success as the first self-made USD millionaire in SL only added to that movement. The influx of new residents created new demands in the in-world economy. Users wanted to express themselves, but often lacked the skills or time to create virtual goods or accessories on their own. Just as in the real world, residents started to buy virtual goods from other residents who had specialized in designing and creating objects. However, the amount of virtual goods that residents could have on display at any time was limited by the amount of land over which they owned usage rights. Since the subscription-based premium membership was a prerequisite to land ownership, but not land rental, this created a class structure within SL and promoted a lucrative land-rental market. The exchange of virtual goods along with the commissioned development of real estate and subsequent land rentals were credited with the first significant economic spike in SL. User-to-user transactions in the fourth quarter of 2006 increased by 75 percent compared to the previous quarter.

After establishing their virtual identity by creating an individual space and purchasing or creating virtual goods, many residents sought to showcase their belongings and find like-minded peers. Thus, gathering spots, built by the early entrepreneurs, became increasingly popular. Popular venues included coffee shops, night clubs, and resorts. However, most of those venues did not have a clear-cut business model to monetize on their popularity. Some operators tried a subscription model, but often failed to retain paying customers who would just move on to free alternatives. Advertising within the gathering spots was another attempt to capitalize on the popularity of venues. But similar to the early days of online advertising, few operators were able to provide measures of success of advertising beyond the number of residents that had gathered in a particular space at a particular time.

Despite the meager returns of the initial entertainment services, entrepreneurs soon found an economically viable niche. Virtual gambling became a huge success in the first half of 2007. The provision of gambling services and the transfer of funds to and from gambling service providers was heavily regulated in the U.S. However, U.S. law had yet to include virtual worlds in this ban. Thus, virtual gambling became an alternative welcomed by many users. Within six months, user-to-user transactions tripled in SL, peaking at above L$ 9 billion in the second quarter of 2007. This was due in no small part to the revenue generated by gambling services. Despite this success, LL decided to ban gambling in SL because of the legal uncertainty. The decline of user-to-user transactions to less than L$ 6 billion in the last quarter of 2007 was a direct result of this ban, leading to the first recession in SL. Yet, usage of SL increased to 80 million hours, making it an interesting place for real-world businesses to promote their real-world products (see Appendix B).

Real-World Institutions Move into SL

By early 2009, many real world institutions had established a presence in SL. Some confined their activities to in-world advertising and brand building. Other institutions offered their real-world products and services through SL. Some organizations attempted to tap into the collaboration potential of SL and used it as a virtual meeting place. More ambitious firms integrated SL into their overall business model and presented SL variants of their real-life offerings. For example, an architectural firm called *Crescendo Design* built model homes in SL, which it then integrated with its website. This enabled the company to provide virtual tours of homes to its potential customers. Similarly, *Starwood Hotels* built and tested a digital prototype for a new hotel chain. *Dell* developed an island in SL for use as a meeting spot for its employees and interaction with its customers [Dell, 2009]. It promoted a cross-world sales model where visitors to the Dell island could configure a new computer and then be routed to the Dell website for payment. The computer would then be delivered to the SL user at their real-world address. Other real-world institutions with a brand presence in SL included *American Apparel, Coldwell Banker,* and *Nissan*. In a brand-building exercise, the *Weather Channel* created weather-related sports activities across a series of SL islands. *Cisco*, *Generali Group*, *IBM,* and *Microsoft* were other organizations that attempted to use SL for meetings. Many universities and government institutions also used SL for its meeting capabilities. Early SL adopters expected SL to act as a substitute for face-to-face meetings. However, some of their efforts were stymied by the population concentration constraints of SL. Some companies moved away from SL to more controlled worlds like *There* to avoid association with controversial elements.

The initial failures of real-world institutions' efforts to adapt to SL created a demand for the services of virtual consultants. These in-world service providers had successfully promoted their own virtual offerings and thus were in a position to offer insights into the idiosyncrasies of the SL economy, resident behavior, and the SL platform. Real-world institutions that relied on the services provided by these consultants realized that mere replication of real-world products and processes was not a sustainable strategy in SL. Companies like *Apez*, *Electric Sheep,* and *Hippo* provided distribution, record keeping, and communication systems which facilitated virtual commerce. They also enabled their clients to offer incentives to their virtual customers for purchasing real goods. *Aimee Weber Studio* was another successful inter-world business that combined real-world and virtual-world activities. Run by designer and artist, Aimee Weber, it designed virtual products in SL for many real-world institutions, which included the *United Nations, American Cancer Society,* and *Ohio University*. It also provided virtual marketing, project management, and video production services and had an acclaimed virtual fashion clothing line.

These in-world service providers had developed enormous expertise in dealing with the idiosyncrasies of the SL platform. Moreover, they had also developed agile structures that allowed them to constantly adapt to the environment that was at the mercy of LL's governance.

Influence of LL's Governance on the In-World Economy

SL was regulated by LL through changes to its Terms of Service which participants agreed to adhere to during the SL signup process. These regulations concerned the presentation and behavior of avatars and the commercial activities in which they engaged. Many changes to SL's Terms of Service were made over the years to bring in-world activities into compliance with various international laws. As a result, many businesses that made up large portions of the SL economy became regulated or were banned. Changes to the SL platform sometimes also resulted in certain business activities becoming irrelevant. Losses suffered by SL entrepreneurs due to such changes in regulations were normally not compensated for by LL.

For example, in December 2005, LL decided to allow avatars to bypass telehubs, which were points where avatars gathered when moving from one region to another. This caused large upheavals in the SL land prices, leading to cascading effects on the rental and property development markets. In her interview, Anshe Chung explained:

> *… the telehub situation was big mistake where Linden Lab screwed up in many ways. Basically, they acted like a government that decides to build one big dam and flood one city. However, they finally realized what they did and changed their policies. They made a buyback offer for devalued land. That way we still all took some loss, but within what one can call acceptable business risk* [Hof, 2006].

In another intervention of far-reaching consequences, LL banned in-world gambling activities in July 2007. Many virtual corporations went out of business, and the SL economy halved in size. The economic damage was not restricted to businesses that provided direct gambling services. Many virtual banks were faced with liquidity problems and became victims of bank runs. In August 2007, a virtual bank named *Ginko Financial*, which was running a pyramid scheme, collapsed as a result of a run triggered by the gambling ban. Account holders lost over USD 750,000 in the collapse of this single bank, leading to calls for greater regulation of in-world banking [Gardiner, 2007; Hsu, 2008]. Consequently, in January 2008, LL cracked down on unregulated in-world banking activities by banning interest payments on cash deposits. Within a month, the SL banking industry ceased to exist. All purely

virtual banks either closed down or converted into virtual joint stock companies. A few companies that offered zero-interest deposit accounts to avatars remained.

Influence of LL's Technology Decisions on the In-World Economy

Over the years, LL introduced technological changes that inadvertently stimulated social and economic changes in the world. SL was comprised of many servers operated by LL and an open source client application that was executed on each individual participant's computer. In order to reduce the load on the servers, all object-related data were stored in a separate asset server cluster. Limited data transfer between the region servers and the assets servers often caused lagged interactions and led to downtimes. In these downtimes, residents were advised not to create or sell objects, essentially halting economic activity in that period of time.

One of LL's core missions was to use open source applications and to eventually publish the server application code and the client as open source. In addition, the servers ran on the open source operating system Debian Linux. The use of open source code in the application allowed external parties to reverse engineer some SL functionalities. As a result, customized versions of the open source client software were available online. Externally developed clients provided earlier bug fixes (i.e., Nicolaz Edition), customized user interfaces (i.e., Electric Sheep's OnRez viewer) and viewers designed for mobile use of SL (i.e., Vollee mobile access). The external clients not only attracted new users but also allowed existing users to have a better SL experience.

However, the availability of the source code also led to negative consequences. CopyBot was a program originally written by the LL-supported *libsecondlife* open source project. It was designed to debug objects and scripts and to back them up. However, it was soon abused to copy objects without regard for their assigned digital rights. Many residents complained that their objects had been illegally copied and protested in SL by shuttering their businesses. LL did not ban the program itself. Rather, LL updated its Terms of Services and threatened to ban users employing the program for illicit purposes. For legal action it referred affected owners to file a takedown notice under the Digital Millennium Copyright Act. Only a few in-world businesses had the financial resources to file lawsuits. While these lawsuits ultimately awarded compensation for the original owners, many small businesses felt unprotected and hesitated to do further business in SL.

Many businesses felt they were at the mercy of LL's decisions to change policies and technologies at will. While LL openly communicated changes before they took place, the economic impact was not always foreseeable. But with SL being the largest virtual economy and the substantial investments made by in-world businesses, there simply was not an alternative other than to keep adjusting to the ever-changing environment.

IV. VIRTUALCIRCLE

VirtualCircle (VC) was an in-world service provider, and its target market was all SL users who had a need for virtual goods and services. The company was founded by Stuart in 2006 to seize entrepreneurial opportunities in SL. While initially focused on virtual land development, VC soon became known for its agility to adapt to new opportunities and for being a pioneer in various business and technology niches in SL. VC was recognized for its deep understanding of the SL platform and associated technologies, knowledge of the in-world business environment, and ability to leverage its relationships with the SL community.

Company Background

In its early days, SL was a fairly bleak place. SL was a platform that depended on user creations, such as virtual goods and lands, to make it an interesting space for users to spend their time. Residents were able to search either goods or places created by other residents. However, due to the fragmentation of the virtual land and the lack of search capabilities to find like-minded residents, early adopters were frustrated by the initial virtual experience (refer to Appendix C for a short description of the user experience in 2006). Stuart was one of the early residents of SL. He soon realized both the shortcomings of the SL experience and the potential of SL as an entrepreneurial platform. He founded VC in 2006 primarily to fill the residents' needs to find like-minded peers. Instead of creating a search capability for residents, Stuart decided to leverage the existing engines and to develop virtual gathering spots that would be tailored to the tastes and needs of residents.

Initial Business Models

For its first venture, VC leased a parcel of land and started developing a space similar to a real-world night club. Since there were only a few virtual architects in SL at the time, Stuart designed the gathering spot himself, creating objects and controlling their interactive behavior, storing the created objects and assembling them into the gathering spot. There were fifteen basic building shapes or "prims" to choose from. The prims could be edited in form, shape, color, and texture to resemble real-life objects. The objects then could be saved in the creator's inventory. The

creator could duplicate any objects in the inventory, use them for multiple projects, or sell them to interested parties that wanted to use them for their own developments [Curtis, 2008].[3] The design process did not require programming experience, as it was supported by a graphical user interface. However, creating interactive objects required knowledge of object-oriented programming language. The behavior of objects was coded in the Linden Scripting Language (LSL) that had syntax similar to C. Despite the similarities to standard programming languages, LSL suffered from its proprietary nature. There was hardly any documentation on LSL and standard features such as data type declaration, library mechanisms, or dynamic evaluation were not supported [Lee, 2007]. Thus, the development took much longer than expected and involved many trials and errors. Stuart later reflected:

> *The SL interface was a disaster. It was fairly easy to create the prims and skins. But making the passive active was a different story. There was no documentation or support for LSL. We would program scripts hoping that the LSL backend would accept our code and execute it. If it didn't, we would start again. Over time we tapped into the community of SL coders and collectively started to understand the idiosyncrasies of LSL. In retrospect, we probably were just very early adopters. Most issues we faced were resolved and documented by 2007. Yet, I still think that we managed to learn the principles of SL. It shows in our scripts. We still can do things that others can't.*

After the success of the first gathering spot, Stuart used the experience gained to develop more gathering spots and virtual commercial lease spaces. The gathering spots earned revenue through strategically placed in-world advertising boards. The commercial lease spots were modeled after stores and malls and mainly earned revenues from leasing fees. While the business model was cash flow positive, generating post-tax profits[4] of nearly L$ 2.9 million in the fourth quarter of 2006, the margins began to decrease due to increased land development after the widely publicized success of Anshe Chung, the availability of skilled residents that could develop professional gathering spots, and the decreasing cost of land due to oversupply by LL. The popularity of SL became a double-edged sword: More residents meant more potential business for the gathering spots, but the popularity also meant more competition.

Virtual Retailing

Stuart realized in the spring of 2007 that the original business model was not scalable and started looking for different business opportunities. He also recognized that behavior of the residents had changed. Rather than designing their avatars to shape their virtual identity, residents started to buy clothes and accessories designed by other residents to express themselves. Instead of relying on third parties to pay advertising fees for users coming to the gathering spots, Stuart focused on generating revenues directly from the consumers. In April 2007, VC ventured into virtual retailing. It initially offered virtual furniture products and soon added designer items, such as clothing, and accessories lines in its own store. Instead of designing products itself, VC contracted successful in-world designers and offered their products on a commission basis. As business picked up, VC started developing numerous specialty stores and housed them in virtual malls. Stuart remembered the situation in August 2007:

> *At the time I ran a store and we had over 100 locations in SL. Most were profitable, some were not and we closed them. I evaluated everything at the end of each rent cycle and decided what to keep and what not to, based on a number of factors. It seemed each month I had at least 5–10 malls that would close up, disappear or remodel on me. Some made things right by giving refunds and some just went away, taking my rent money with them. I guess this is part of why I don't pay more than 4 weeks ahead. It limits my risk to these things. This is just a part of business and accepting it as a cost of doing business and writing it off is really all you can do. As for returning things, if a place accidently returned my setup once, I would give them a second chance. If it happened more than once, something was wrong and it was time to move on.*

But as with the gathering spots, running multiple stores soon became a cost concern. Apart from the leasing cost, labor cost for store associates started to accrue. While labor was generally cheap, the costs were not scalable across stores. Moreover, all commercial transactions were facilitated through Stuart's avatar, which caused hours of manual payment processing. Although the virtual retailing in stores and malls did not become the sustainable, high-margin business Stuart had hoped for, he did credit their first ventures with many learning experiences. He was particularly proud of his grasp on the behavior of the residents and his understanding of how to direct his offerings to his target consumers. He later commented on the key lessons learned:

> *First, make sure the place fits your demographic. Selling niche items in a vanilla mall doesn't work any better generally than selling mainstream items in a nice place. I'm not saying it can't work, [it] just has to do with odds of success. Second, big traffic means nothing! Camping [inactive avatars that might have*

[3] Curtis [2008] provides an excellent overview and link to tutorial of how to build in SL.
[4] Income earned in SL is subject to taxation when it is monetized by converting L$ into real world currency.

been placed there by the property owner] is fake traffic that serves no purpose other than to scam you, the renter, out of a few weeks rent until you realize there are no sales to be made and move on. When I see a place with a lot of camping, I generally pass. I don't care what their traffic numbers are; after all, more campers means more traffic but not necessarily more sales. Third, the rents have to make sense. I have a very good feel for market rents with all the stores we have, so when I priced the rental spots at my places, each of which gets 30–40k daily traffic score without campers, I probably underpriced compared to a lot of places out there. If you can make enough sales to justify a high rent, great. The problem is that most places, especially those that are camper heavy and asking high rents due to high traffic scores, won't cover it. I find that [with] the cheaper rent places with good quality, no camper traffic easily covers their rents.

Vending Systems and Virtual Sales Affiliate Program

Stuart soon started questioning the dependence on virtual real estate and paid sales associates as a requirement for the virtual retailing model. He first experimented with vending machines that would be placed across SL to sell VC's products. Although successful—the vending program generated nearly L$ 1 million in post-tax profits in the first quarter of 2007, Stuart was still dissatisfied with paying rent for the machines, with the lack of tracking systems and with the limited customer service that vending machines could offer. He later recalled:

Our system needed to be upgraded to allow us to more efficiently track every rental box in one place so things weren't accidently returned and we could know exactly who had paid and for how long, without running around to every box or trying to decipher a huge list being spit out of an in-world server.

Thus, he came up with a radical idea: There should not be any variable cost of selling virtual goods. On the procurement side, VC had already been able to become an intermediary that would facilitate the sales of virtual goods in exchange for a commission. Stuart imagined that VC could create a similar model on the sales side. Similar to Amazon.com with its seller's marketplace, Stuart decided to put his customers to work.

The sales affiliate program was supposed to enable every resident to resell goods procured by VC. There were a few off-the-shelf solutions that promised to aid in the distributed sales process. JEVN was the early provider of a simple server script that would allow a content owner to sell at different locations in SL. The system consisted of the JEVN Server which held the inventory of items and the JEVN Vendor application which allowed individuals to display selected items hosted on the server in virtual vending machines. The JEVN script was designed for individuals to sell only a few products across different places. However, Stuart sourced from over 100 manufacturers of virtual goods and envisioned the products to be sold by thousands of individual vendors. In its early versions, JEVN was not capable of dealing with the complexity of Stuart's operations and often crashed for days at a time. Stuart sought a more reliable application that would manage the digital assets and properly interface with SL. He realized that there was a need for a proper application programming interface (API) so VC could customize the sales affiliate script to their needs. He later reflected on the switch from JEVN to the more enterprise-focused HippoVend system (HV):

When I used the JEVN system, I lost a lot of business. My vendors that were online could neither develop nor sell the products. I couldn't add new stores or products, nor could I finish setting up my affiliate system. It was very irritating and did cost me sales. JEVN was one disaster after another. Every time the server locked up on me, I had to change it out and update dozens of vendors with the new server key. When I switched to Hippo, I discovered half a dozen vendors that appeared online but were really seized up and another 3 that were offline but the server didn't reflect that.

Customizing the HV platform to VC's needs posed a new programming challenge. There was a need for software that could control the sales process to enforce the property rights of the original creators and VC, and to ensure that sales affiliates would be properly reimbursed for their sales. Instead of hiring additional programmers in-house, Stuart decided to rely on the skills of the SL community.

From its beginning, VC had only a small in-house staff that programmed the initial ad placement and the sales affiliate systems. Stuart focused on formulating the requirements for the systems and finding talented residents to implement the systems. Stuart understood that residents were eager to program and showcase their skills. For many, programming in SL was a hobby, not a job. Thus, many would work for a comparatively small stipend, accepting less than L$ 600 per hour as an adequate reimbursement (see APPENDIX A for the post-tax profits of *VirtualCircle*).

Organization

By the end of 2008, VC had more than 200 virtual employees. Aside from the three employees in VC's real-world Atlanta office, all other employees were working and communicating through SL. VC was a truly global company with employees on every inhabitable continent on the planet. Most of the employees were object and systems designers who were hired directly in SL. In the majority of the cases, Stuart knew only the name of their avatars, not the true identity of the employed residents. Since Stuart made sure that all of his contactors and employees were paid on time, many of his freelancers signed up to work on further projects. Managing the different teams also had its drawbacks. Stuart said:

> *Working with individuals in-world, it can't be "work" and it's difficult to impose real world scheduling, and what might be considered business. Managing people in SL, involves ensuring that "workers" stay in the illusion of doing a hobby rather than actually working. The salaries are comparatively small; however, between the social and the monetary value, it is a "profitable" job.*

The organization was an early example of an institution that was truly agile. There were no headquarters or large overheads. Employees were hired based on their skills, independent of their identity, background, or geographic location. Employment was project-based, and labor became an exchangeable commodity within the organization that could be scaled based on the demands of a given project. Thus, VC was a temporary organization that used the programmer network of SL to quickly adjust its workforce to implement projects.

In a typical recruitment process for designers, Stuart would scout SL for innovative or new designs and would track down the creator. He would offer to rebrand the assets and sell them through VC's stores and sales affiliate program and negotiate a commission. The standard commission was usually between 30 percent and 40 percent, but varied greatly based on the experience of the resident and the creator's valuation of their own work. VC was also active in commissioning work that might become a new fashion trend or sought-after accessory. They would either ask existing partners to design the products or request services via the SL classifieds.

Stuart also tried to leverage the in-world business community to expand the influence of VC. As a founding member of the SL Chamber of Commerce, Stuart knew most of the business owners in SL. He estimated that he personally knew 80 percent of the roughly 600 account holders that were considered sustainable businesses.[5] He organized regular chamber meetings, where responses to and recommendations for policy changes by LL were discussed. While there were some successful actions taken (e.g., the protest against CopyBot), such jointly coordinated efforts to change disadvantageous policy decisions by LL were the exception rather than the norm.

V. STATUS

The virtual organization and the constant adaptation to the turbulent environment yielded impressive results for VC. In less than three years, Stuart had developed six business lines, five of which were still active and profitable. VC leased out 250 commercial spaces, with a vacancy rate of only 12 percent. It had one virtual flagship store and more than 300 vending systems that operated across SL. In addition, there were over 1,000 sales affiliates who sold VC-branded products to their peers. VC had become an in-world brand that residents trusted. On an average day, 5,000 residents either bought items or spent money in the gathering spots. Overall, Stuart felt good about VC's accomplishments and was certain that the next business opportunity was just around the corner.

The email reminder jolted Stuart out of his reverie. He gazed at Patailani one last time and then teleported to the virtual office of VC. His daily virtual debriefing with his offshore design team was scheduled in the conference room. Spotting Linyette, the cat-shaped avatar of his assistant, he walked briskly toward her. Taking her aside, he asked her to schedule a meeting of the core strategy team of VC and handed her the draft agenda. It read:

> *When we started VC, we placed a real-life business into SL, and soon realized that real world business constraints do not hold in SL. The natural laws of commerce are non-existent in SL—the laws are repainted frequently and the paint is not even dry and is subject to change! Thus, we dealt away with the constrained real world business model and developed a business model based on constant change. The world is constantly changing around us; in real-life the rate of change is slow, in SL the rate of change is accelerated! Let us meet to think about the future of VC, consider options for its sustainability and growth and identify the direction we wish to travel in.*

Stuart wondered about the suggestions his strategy team would propose. There were various questions for them to consider. Should they rediscover their real-life business model and transcend VC into the real world or should they

[5] Experts considered accounts with Positive Monthly L$ Flow of USD 5,000 or more as true in-world businesses.

enter other virtual worlds? What had VC learned from its SL business, and what had been the drivers of its success? Was it possible to replicate these drivers in other virtual worlds or in the real world? Ruminating over these questions and his experiences, Stuart flew into the conference room, starting another day of making real money in a virtual world.

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Editor's Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the article on the Web, can gain direct access to these linked references. Readers are warned, however, that:

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APPENDIX A: POST-TAX PROFIT AND LOSS STATEMENT OF VIRTUAL CIRCLE

Table A-1: Virtual Circle's Profit and Loss Statement ($L '000)

	2006				2007				2008			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Land Development	-6,900	1,800	2,250	1,650	750	9,000	800	540	459	458	500	398
Gathering Spots	0	-960	150	228	240	276	255	240	225	270	303	318
Commercial Lease Spots	0	-1,680	-630	-15	738	1,617	1,869	1,935	2,157	1,965	2,034	1,896
Stores	0	-2,400	-1,650	372	402	330	468	594	606	639	645	657
Vending Program	0	0	0	651	942	1,101	1,203	1,269	1,296	1,197	966	1,095
Sales Affiliates	0	0	0	0	0	-267	336	1,023	1,770	2,610	3,006	3,600
Quarterly Total	-6,900	-3,240	120	2,886	3,072	12,057	4,931	5,601	6,513	7,139	7,454	7,964
Annual Total				-7,134				25,661				29,070

APPENDIX B: SL DATA[6]

Table B-1: In-World Businesses' Profits
(Accounts with Positive Monthly L$ Flow Grouped by Quarter and Income Level in USD)

Year		< 10 USD	10–50 USD	50–100 USD	100–200 USD	200–500 USD	500–1K USD	1K–2K USD	2 –5K USD	> 5K USD
2006	Q2	8,580	5,740	1,654	1,213	1,031	443	276	158	87
2006	Q3	14,140	7,570	2,069	1,533	1,411	607	342	218	106
2006	Q4	22,383	11,529	3,115	2,410	2,057	902	568	326	189
2007	Q1	41,484	20,988	5,312	4,043	3,598	1,513	941	677	365
2007	Q2	61,960	31,657	7,650	5,643	4,905	2,018	1,207	836	410
2007	Q3	69,813	37,632	8,936	6,369	5,313	2,091	1,264	859	412
2007	Q4	76,645	43,987	9,829	6,924	5,803	2,522	1,419	941	469
2008	Q1	88,689	49,195	10,959	7,182	6,189	2,659	1,514	1,007	476
2008	Q2	91,397	51,271	10,961	7,380	6,646	2,895	1,629	1,102	550
2008	Q3	97,879	54,170	11,554	7,472	6,867	2,965	1,778	1,246	656
2008	Q4	100,939	51,833	10,714	7,322	6,580	2,921	1,761	1,151	597

Table B-2: In-World Resident Spending

Year		1–500 L$	501–2K L$	2K–5K L$	5K–10K L$	10K–50K L$	50K–100K L$	100K–500K L$	500K–1000K L$	> 1000K L$
2006	Q3	33,295	13,390	10,854	7,975	13,462	2,759	1,992	169	155
2006	Q4	155,601	58,922	44,638	32,149	55,001	11,411	8,766	907	806
2007	Q1	325,490	98,838	71,569	51,714	91,984	20,103	18,047	2,128	1,911
2007	Q2	400,124	135,764	127,356	70,317	124,019	26,001	23,303	2,865	2,577
2007	Q3	391,699	150,119	114,517	79,349	129,922	27,995	22,039	2,266	1,617
2007	Q4	402,351	164,546	128,363	89,698	149,039	31,242	22,830	1,960	1,230
2008	Q1	377,228	185,905	141,816	100,100	168,938	36,291	25,512	2,121	1,342
2008	Q2	452,107	191,684	146,811	103,284	178,642	39,290	28,547	2,237	1,543
2008	Q3	485,164	204,767	154,772	109,959	193,749	43,815	30,621	2,490	1,953
2008	Q4	505,204	222,317	159,896	112,768	195,527	41,213	28,154	2,442	1,989

Table B-3: Average Exchange Rate

	2006				2007				2008			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
L$ to 1 USD	278.73	315.20	293.19	272.59	268.87	268.8	268.57	268.44	268.17	267.34	267.00	266.07

[6] All data compiled from SL economics data available at http://secondlife.com/whatis/economy_stats.php.

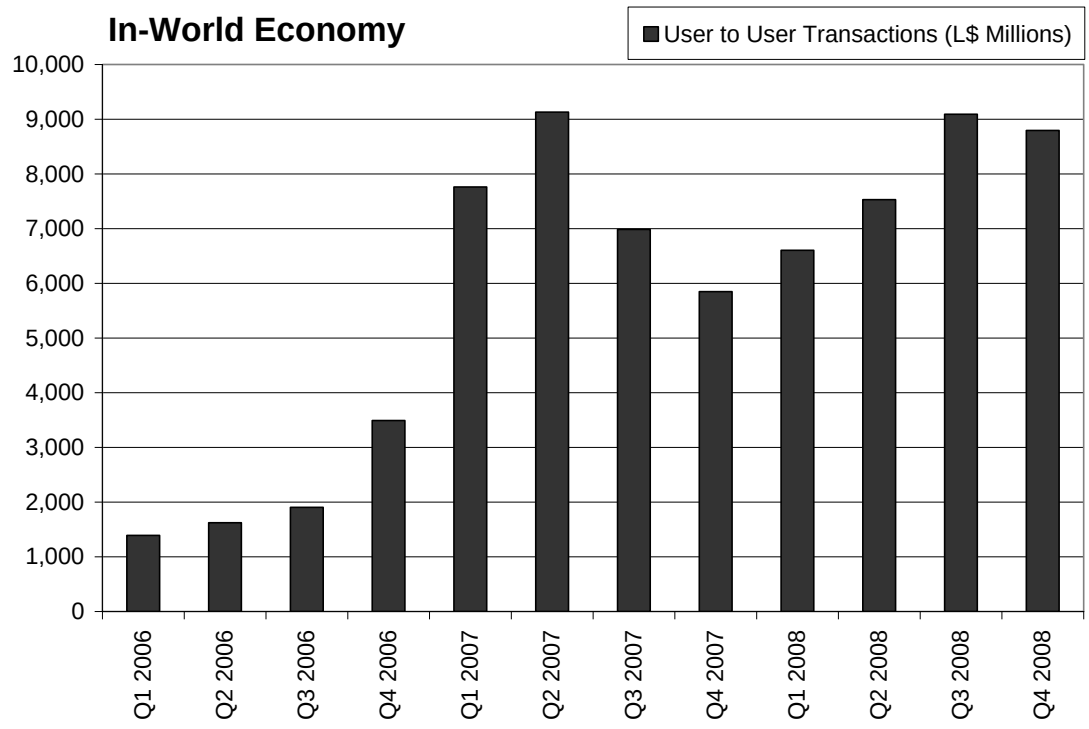

Figure B-1. SL Economy

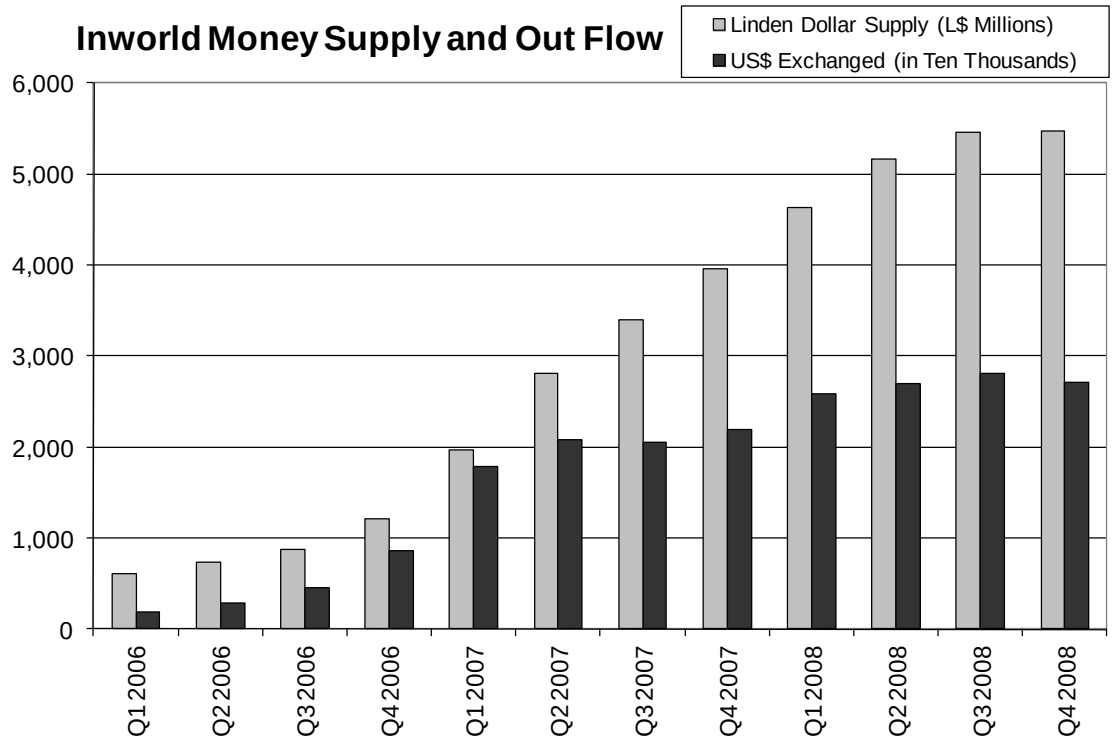

Figure B-2. SL Money Supply and USD Exchanged

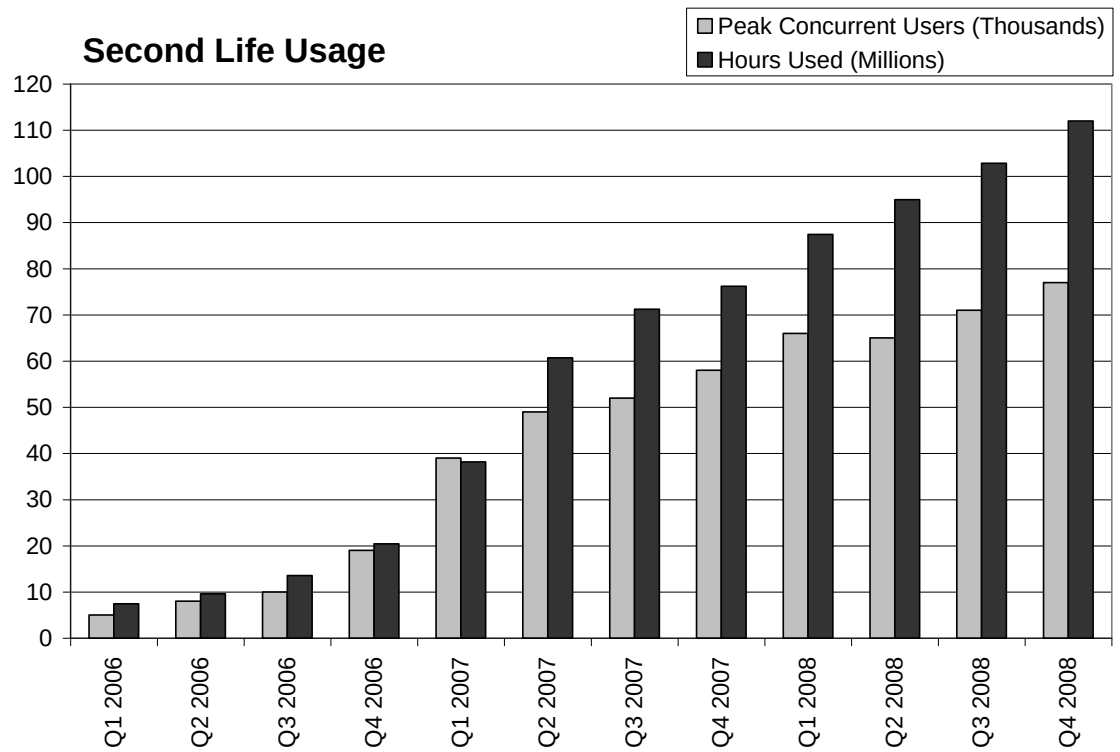

Figure B-3. SL Usage

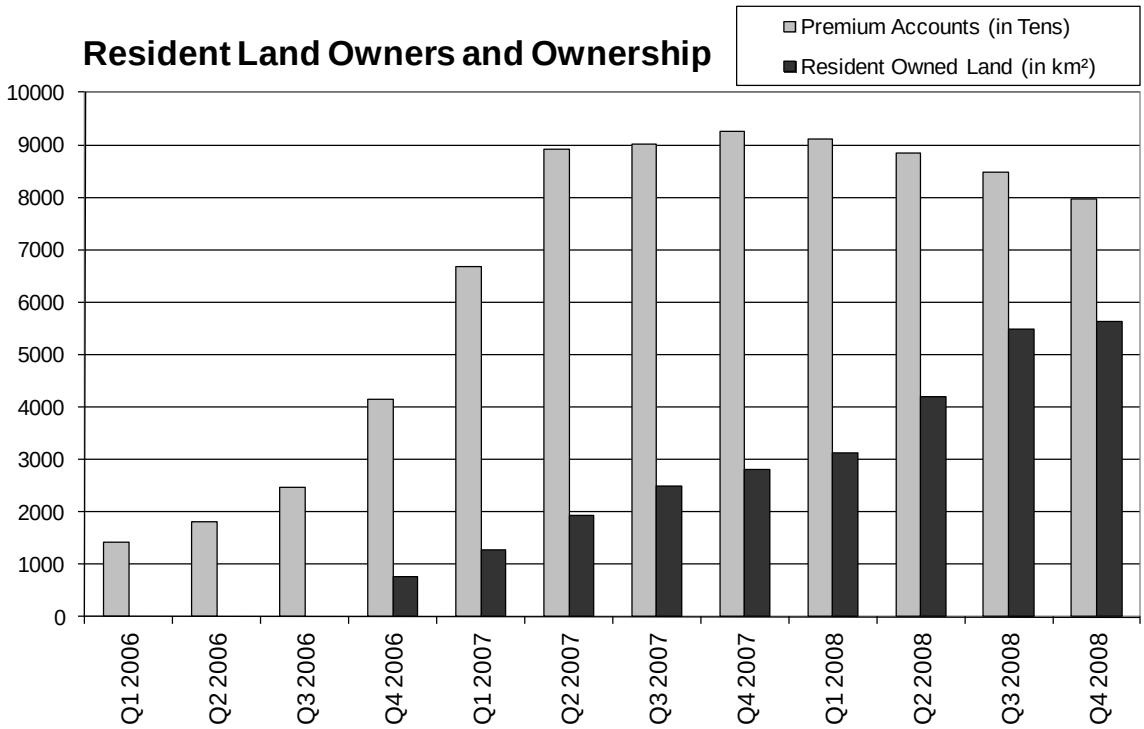

Figure B-4. Land Ownership in SL

APPENDIX C: USER EXPERIENCE DURING THE EARLY DAYS OF SL (CIRCA 2006)

In early 2006, SL had between 5,000 and 10,000 concurrent users online. However, those residents were scattered across the virtual world, unsuccessfully trying to find like-minded peers. They had the ability to search for popular places, but were unable to find specific residents that matched their interests. In addition, many popular spots were private islands that could not be accessed without the permission of the owner. An early adopter described her experience as:

> *I flew, and flew and saw a bunch of empty houses and buildings. There wasn't a soul anywhere.... Finally, I decided to click on the button that said "find" and asked for the most popular places. It told me there was free money at so and so. I tried teleporting there but it told me the space was full so I couldn't. I figured if it was that full it must be a really happenin' spot. So I flew there…. During my overly long flight there, I saw absolutely nothing of interest except a bunch of billboards and more buildings. Seriously, there wasn't a soul in sight. This game is popular, right?* [Ingrid, 2006].

The SL experience was affected by lags, or delayed responses to user commands. This resulted in erratic behavior of the avatar or environment. Lags were caused by the concentration of multiple avatars in a single region or when servers were flooded by requests to manipulate inventory. Inadequate hardware at the user end also caused lags and crashes of the software. Bug fixes and performance updates were thus regularly released by LL. These multiple updates also resulted in increasing the complexity of the SL platform.

Moreover, users were not satisfied with the experience as a whole. SL had high-end hardware and bandwidth requirements, leading to slow rendering and choppy movement, rather than smooth navigation in a 3-D virtual space. In addition, the slow rendering severely interfered with user-to-user interaction. Long wait times caused users to have SL load in the background, leaving their avatars idle for a long time. Another early adopter recalls:

> *Here's my usual SL experience—Log in. wait for everything around me to load. Keep waiting. Finally loads, try to move, no luck. Keep trying. Keep having no luck ... check the map to try and find some people. OK, there's some. Teleport there. Oh, that's a private zone that I can't get to, so instead I've been teleported off to this other place where no one is.... Finally get some place where there are other people. They are all away or talking about scripts. I try to talk to several of them. No one ever responds* [Bonner, 2006].

Despite the less-than-ideal user experiences, more than 180,000 users had become residents by spring 2006. Approximately 10,000 of the registered residents held premium accounts paying recurring fees to LL to lease their own piece of the SL mainland or entire islands. While many premium users just wanted to own their own space in SL, there were also quite a few entrepreneurs that saw a wealth of business opportunities in the virtual space. The early experiences of Anshe Chung, SL's self-made millionaire, were also far from ideal. In a virtual interview, she described her initial experience:

> *I read about SL on Terranova [a blog about virtual worlds]. Then I took a look at this seemingly hopeless little thingy. I logged in and it looked like an empty and dead place, incredible laggy [slow], clumsy, and ugly. And besides that, it seemed really pointless* [Hof, 2006].

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