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## **3D3C Real Virtual Worlds Defined:**

### ***The Immense Potential of Merging 3D, Community, Creation, and Commerce***

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#### **Abstract**

*The goal of this paper is to define the term “Real Virtual Worlds.” It is the assumption of this paper that this new field is destined to become a major force in 5-10 years. Much like the internet, Real Virtual Worlds, will change, enhance, and sometimes hamper how we learn, have fun, work, and perform human action.*

*Because the goal here is to expose the field and generate awareness and action, no prior knowledge in virtual worlds is called for. Those familiar with the field may enjoy a fresh perspective that takes into account the integration of factors that lead to new applications and services.*

*The short background will present the fields of “virtual reality” and “gaming worlds” as the parents of the field. Then, Real Virtual Worlds will be defined using (a) the detailed example of Second Life, (b) a formal definition of 3D3C (3 dimensions, community, creation and commerce) and (c) a short comparative analysis of several worlds as a method to explicate the 3D3C definition. Further exposition of the Community, Creation and Commerce will use Second Life to further describe the 3Cs. The conclusion will connect the supply (of powerful technology) and demand (from both young and adult users) with the sustained innovation that stem from 3D3C – to create a reinforcing cycle that will propel Real Virtual Worlds forward.*

**Keywords:** virtual worlds, Second Life, 3D, community, creation, commerce.

### **3D3C Real Virtual Worlds Defined:** ***The Immense Potential of Merging 3D, Community, Creation, and Commerce***

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When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than any talent for abstract, positive thinking.

*Imagination is more important than knowledge.*

*Albert Einstein*

#### ***Background: The Parents of Real Virtual Worlds***

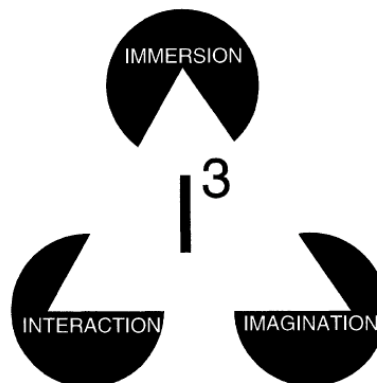
The young field of “Real Virtual Worlds” can be seen as the offspring of a marriage of two fields, plus additions from other related fields. The father field is “Virtual Reality,” the mother field is “Gaming Worlds,” and the related fields range from economy, sociology, and law, to biology, computer science, and mathematics.

#### ***Father: Virtual Reality***

Virtual Reality is the first parent of Real Virtual Worlds. Burdea and Coiffet (2003), in their seminal book, define “Virtual Reality” as “a simulation in which computer graphics is used to create a realistic-looking world. Moreover, the synthetic world is not static, but responds to the users’ inputs, [such as] gestures, verbal commands, etc.).” Later in their formal definition, they state:

Virtual reality is a high-end user computer interface that involves real time simulation and interactions through multiple sensorial channels [including these...] modalities: visual, auditory, tactile, smell and taste.

Later in the discussion, Burdea and Coiffet point the three “I’s” as the gist of Virtual Reality as the ability to “feel” the reality (“immersion”) and to change and modify it (“interaction”). They further, and humbly, add “imagination” stating that “the extent to which these applications solve a problem depends very much on the human “imagination.” They depict the 3-Is in the following diagram, which demonstrates a triangle that exists mainly because of our imagination.



**Figure 1.1-a: The 3-I's of Virtual Reality: Immersion, Interaction, Imagination**

The field of Virtual Reality has a long history, with patents starting in 1962 (the Sensorama simulator<sup>1</sup>). It was pushed and developed mainly in the defense industry where high-end systems were used to save costly training. A tipping point came around 2000, when the cost of high-end graphics processors (often called GPU – Graphical Processor unit) dropped. Instead of paying \$100,000 for a high-end computer from a company like Silicon Graphics, consumers could pay \$5000 for a PC grade machine. More advancement and cost reduction will soon bring us augmented reality – the ability to connect the virtual and the real in one view (example: someone sits near a desk with a few (real) people and views on the table a virtual model of a planned future car).<sup>2</sup>

### ***Mother: Gaming Worlds***

If Virtual Reality is the father of Real Virtual Worlds, “Gaming Worlds” is the mother. In Gaming Worlds, I include anything from the first MUD (1978) to World of Warcraft (WOW), and, to some extent, Second Life (which picked up interest in 2007, and is still a major force today in 2008). (A major source for this table is the summative work on designing virtual worlds - Bartle, 2004).

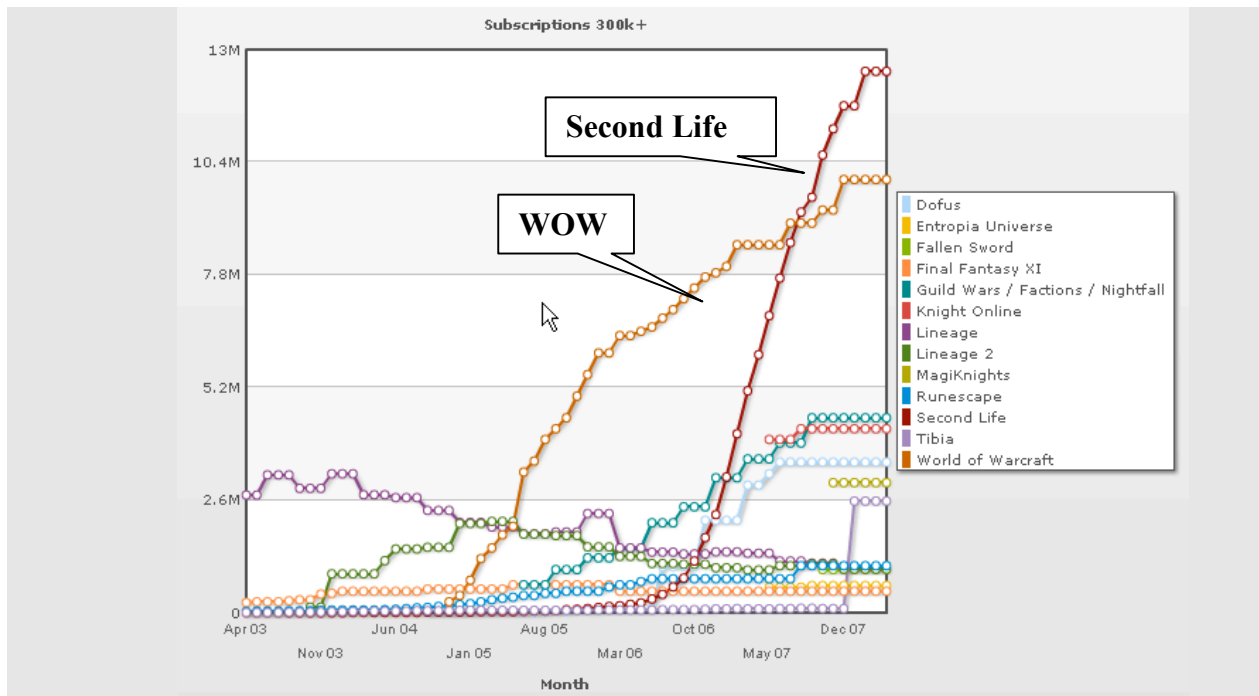
Year	World	Uniqueness
1978	MUD (Multi-User Dungeon)	The first text based multi-user world. While it had no graphics, it included a rich imaginary “world.” MUD released a flurry of text-based worlds and is considered the granddaddy of all the following.
1997	Ultima on-line.	Three-D graphical world. Achieved the, then, amazing number of 100,000 users by the end of the year. Introduced monthly pay per use (\$9.95).
1999	EverQuest	Key point: People power. It allowed the camera to roam around instead of fixing it to the avatar eyes. EverQuest was unique because it demonstrated the power of community. Players started the game for some reason, but they continued to play because of their friends. EverQuest supported small groups and allowed them to play together.
2002	Sims on-line	Took the idea of “user-created content” to the next level with tools that allowed creativity in 3D creation – albeit mostly moving and arranging items.
2004	World of Warcraft (“WOW”)	Massively parallel world. With millions of users, each paying about \$10 a month. An amazing success from both the gaming and business points of view.
2006	Second Life (“SL”)	While starting earlier (in 2003) and operating on the sidelines of the hardcore gaming worlds, SL gained a lot of exposure in 2006 and 2007. The first world to combine 3D, community, creation, and commerce – which I will later define. Introduced the idea of real money into the game.

**Figure 1.2-a: Using 3D3C to view sample worlds**

This is a very compact presentation of a much larger effort that included many more games and innovation in games (See for example Morningstar & Farmer, 1991; Taylor ,2006; Alexander, 2003 & 2005). Yet, for the purpose of this work, it will have to suffice. Since the border between gaming worlds and Real Virtual Worlds is located between World of Warcraft and Second Life, it is important to highlight what is so unique about WOW.

The following graph depicts the number of users for the leading worlds. The data is gathered from various sources (mmogdata, 2008<sup>3</sup>) and is presented on a monthly base. Note two trends: first, the overwhelming growth of WOW, and, second, the rise of Second Life. As of

April 2008 the WOW number of users was over 10 million users; that is, 10 million users who paid about 12 dollars per month. You will also note that Second Life had 12 million users.



(Caution: WOW line measures real paying users, SL line measures users that had merely opened an account).

**Figure 1.2-b: WOW's growth compared to other games (source: mmogdata)**

The attraction of WOW was demonstrated with the release of an extension called The Burning Crusade (Jan 16, 2007). Blizzard, the producer of WOW, sold 2.4 million copies of this extension in North America and Europe during the first 24 hours of distribution. Priced at \$40 per box, that's about 100 million dollars in one day<sup>4</sup>! The latest record for a game was broken in May, 2008, when Grand Theft Auto 4 raked in more than \$500 million in its first week in stores, selling more than 6 million units worldwide (Stephen, 2008).

Not only are these huge figures, but they also indicate a significant distance from their competitors. WOW's meticulous design made it into a successful game. Every aspect of the game – from the design of the monsters and the land to the parent control of time limits for users – is crafted artfully and skillfully. Blizzard, the maker of WOW, was able to pack a lot of wisdom into their creation (Fawcett, 2006).

We can take few lessons from WOW: first, it is technically feasible to run a world with millions of users. Second, Virtual Worlds can be enormously attractive. In addition, we should remember that WOW caters to a limited audience: those who like the WOW style (monsters, quests, battles, etc.) – the Hardcore Gamers. SL, on the other hand, while technologically immature, caters to a much larger audience. After all, in Second Life the player can do much, much more than killing monsters.

### ***3D3C: 3D, Community, Creation and Commerce***

I will use three methods to define Real Virtual Worlds: (a) I will use an example in which I will explore what makes Second Life a real virtual world; (b) I will formally define Real Virtual Worlds as a combination of 3D, Community, Creation, and Commerce; and (c) I will use the 3D3C definition to examine some of the current worlds to further clarify and discuss the definition.

#### ***An Example: Second Life***

SL is the first world to fully hint at the potential of Real Virtual Worlds. During the last three years, I have explored this world, visited places, made friends, reviewed technologies, and used it as research grounds. In short, I am biased by my own experience (see for example, Sivan, 2007).

SL was conceived in 1999 by Linden Labs as an implementation of the Metaverse<sup>5</sup> (this term is often used in professional circles to denote Real Virtual Worlds). Any user may install the software and create a three-dimensional character for him/herself (AKA “Avatar”), adjusting properties such as the shape of his body, skin, hair, and lips. (Note: “he” and “she” may both be used hereafter to denote both genders). He may select to wear a hat, shirt, or skirt, and add rings, earrings, or nose rings. After the body is constructed, the user may purchase a car, a plane or a yacht; he may build a room, an apartment or a castle. He can meet people, robots, or dragons.

At first glance, many view SL as a game – a direct descendant of games such as Sims, World of Warcraft, and Doom. Veteran users will probably recall the worlds of Dungeons and Dragons and other paper-based fantasy games. Indeed, many of the action patterns and techniques of SL resemble these games. This is a good starting point. But the rest is far more profound and meaningful, as well as exciting and scary. The interaction of avatars, the believability of what is seen, and the money involved, all create a new level of experience, a kind of parallel world, a different world – a Real Virtual World. A world where anyone can choose their own lifestyle and actions: from a life of hedonistic leisure and entertainment to a life of lucrative work and creativity (in the real world).

“Pepe” is one of these avatars. Her figure, her blonde hair, and her fluent speech (with a Spanish accent) make her very popular among visitors to the club where she works. Pepe hired a fashion consultant, who matched her looks and clothing to her career. Thus, her blonde hair was matched with her police shirt, which bears the letters “SLPD” – an internal joke that means Second Life Police Department.



**Figure 2.1-a: Pepe – policewoman or dancer? (sample avatar)**

Pepe is a dancer at a nightclub. Every evening she mounts the stage, holds on to the pole and moves to the music while smiling at the club's customers. Many of them show their appreciation by tipping some money in the tip jar. The tip could be a few cents- or a few dollars-worth, using the local currency: the Linden Dollar (more on that later).

Pepe is in the center of a human, social and commercial undertaking, which also includes dancers of both sexes, DJs, club owners (who rent out private rooms to visitors), land owners, landscape designers, building contractors, architects, lighting experts, and musicians. I chose Pepe as an example because most new users of Second Life will be amazed when they meet her at the club. The nightclub scene in Second Life appeals to most newcomers (and to their purses). Newbies visit various clubs to meet people; to see and to be seen. The exhilarating dances (*bolero*, waltz, slow) are the first encounter a newbie has with the power of Real Virtual Worlds.

Let us leave Pepe dancing on the stage and look outside. What, in fact, makes SL a Real Virtual World? Let's analyze Pepe's story:

- Pepe and the club she is working in has a three-dimensional representation (3D) that the users can zoom in and out, pan and explore everything from the texture of her shirt to the coil in the lamp that is located 10 meters above her. While Pepe is moving herself, other users can roam around the room.
- Pepe can dance on the stage because she belongs to a group of dancers of the club ("Community"). Groups allow several users to act together in the Real Virtual Worlds, to buy land, to work, to get certain permissions, etc. While at work she is using the group of the club; when she is shopping at Canimal fashion store, she is using the group of the Canimal; while she studies English, she is part of a small group of English as a Second Language (ESL) for Spanish speaking people.
- Pepe is both a creator and a beneficiary of other creations ("Creation"). She creates by mixing and matching her outfit, the color of her skin and her hair, the

jewelry, and her shoes—all of which were created by others. She can also buy furniture for her small country house and arrange them. With the right permissions, she can also create a garden for herself. With the programming skill, she can program the flowers in the garden to grow or just buy the growing flowers from someone with the programming skill.

- All of her actions, for work, fun, learning, or relations relay upon an economy that connect the virtual world to the real world (Commerce). She can make money by working at the club, she can pay for her house, she can make money by selling flowers, and she can pay her English teacher.

The claim of this example is two-staged: first, the combination of 3D and 3C (Community, Creation, and Commerce) define a new medium. Second, as Real Virtual Worlds become more 3D and more 3C, we will fulfill the immense potential of the medium.

### ***A Formal Definition***

Let's now formally define "Real Virtual Worlds" as an aggregate of four factors: a 3D World, Community, Creation and Commerce.

**3D World:** A dynamic world where viewers see objects like avatars, houses, and cars. The world has land, a sky, a sun (or maybe more than one sun), wind, gravity, water, and fire. Avatars move around freely (for example, in SL you may fly up to a height of 200 meters). The user can further examine the world from different points of points (roaming camera).

**Community:** Man is a social animal. Unfortunately, during the past century we gradually distanced ourselves from socializing – mainly through the advent of television. We sat alone in front of the screen, watching passively and without much interaction. We did not react, we did not create, and we could not see how others felt or reacted. The Web actually enhanced this feeling of "solitude" (in a manner of speaking). Then emails emerged, followed by the "chat," the cellular phone, SMS – and multi-player worlds. So we are now actually returning to the Community, to friends, to people. Amazon began this trend by allowing readers to review and recommend books. Later, companies like YouTube allowed users to upload video contents. Moreover, of course, blogs appeared (which included comments), along with social sites such as FaceBook and MySpace – the ultimate in this genre where anyone may create a personal site to communicate with his friends. Even avatars in SL represent real users. There are no computerized avatars as in regular computer games such as World Of Warcraft.

**Creation:** Second Life's greatest invention and technological achievement was to give users the capability to develop their own "things" (or in SL jargon: objects). In fact, the entire contents of SL (barring a few sample and demo objects) were created by users. Constructing objects may be done at a couple of levels – first, by moving pre-constructed objects from one place to another (i.e., rearranging furniture in a home or setting up a nightclub). Second, an object (i.e., a house) may be assembled from basic components, such as walls and ceilings, and "painted" with various textures. These basic components, called primitives, allow the construction of complex objects at a very high level of precision (see the SL example of Susan Vega's guitar, which is made out of more than a hundred primitives<sup>6</sup>). Linden hit the nail on the head when they built a programming language (LSL - Linden Script Language) into the world. LSL allow users with programming abilities to endow their objects with behavioral attributes. As

a result, we can see fish swimming in schools, a game of golf, pistols that shoot, and even Pepe's dancing. Largely, these are expansions of the capabilities found in worlds such as Sims, combined with industrial CAD software packages.

**Commerce:** This is *the* Linden innovation. Linden created a new currency - the Linden Dollar (or L\$, for short). There is a defined exchange rate between the Linden Dollar and the US Dollar – in 2008 one US dollar (USD) was worth about L\$265. The entire economics of the SL world is based on this currency. The credibility of this economy is built on two levels – one conceptual and the other technical. At the conceptual level, Linden established and runs its own exchange. Within it, Linden guarantees the exchanging of L\$ to USD immediately and at any time. For instance, if Pepe earned L\$2650 from tips, she could access the Linden website and exchanged them for about 10 USD, which would be immediately transferred to her real account. Going the other way, if Pepe needed L\$6,000 for a new hairdo, she could buy them for about 20 USD immediately. At the technical level, Linden has currency and commerce integrated into the game. For example, every object can have purchaseability and price.

Ultimately Real Virtual Worlds stem from the integration of 3D, Community, Creation and Commerce. Second Life reveals the emergence of this integration. In SL users are charged a price for objects, permissions (i.e., an object may be restricted from being sold), and ownerships. The commerce is structured into the world itself. For example, let us assume that we enjoyed Pepe's dancing (and her Spanish accent) and wish to tip her. We point to her and transfer money to her by clicking a button. If Pepe wants to buy a new blouse, she goes to the shop, points to the blouse of her choice and buys it for L\$2,000. The blouse is defined as a unique object in this world, and Pepe will not be able to copy it. The shopkeeper will receive L\$500 for the blouse, and the blouse manufacturer will receive L\$1,500 (in accordance with a previously defined business agreement between them). At the end of the month the shopkeeper will pay rent to the land owners, also by predetermined agreement.

This integration of a 3D world, organized and managed communities, immediate creation capabilities of objects and services, and a virtual commerce which actually becomes real – is the basic allure of SL in particular and of Real Virtual Worlds in general.

### ***Typical Worlds via the 3D3C Prism***

After the definition by example where we looked at Real Virtual Worlds via Second Life and the formal definition of the 3D3C, let us turn into using the definition to highlight some of the differences between specific worlds. The purpose of the following table is to highlight the different levels of each factor. The worlds represent a spectrum of worlds; they were selected to highlight various aspects of the 3D3C definition and not because of their impact on the field.<sup>7</sup>

<b>Sample Worlds</b>	<b>3D</b>	<b>Community</b>	<b>Creation</b>	<b>Commerce</b>
1. WOW	*****	***	*	*



2. IMVU	***	***	**	***
3. Penguin	*	*	*	*
4. Second Life	***	*****	*****	*****
5. ActiveWorlds	***	*	***	(per case)
6. Sony Home	*****	**?	**?	**?
7. Google Earth	***	*?	*** (Sketchup)	?

Key: “\*” = Relative Low. “\*\*\*\*\*” = Relative High.

**Figure 2.3-a: Different worlds viewed by the 3D3C Prism**

- WOW (World of Warcraft) is the #1 multi-user game with more than 10 million users. WOW has relatively good 3D graphics. Since it is centrally-created the graphics delivery can be optimized. Creation is relatively limited (the user can select an avatar and dress it, but can not change the environment). Real commerce is limited. I noted one star (\*) because the user can buy money on the net.<sup>8</sup>

- IMVU is a chat world merged with a MySpace-like home page. It does not allow the user’s avatar to walk around; instead, it moves from one scene to another. In many ways it is a limited world compared to WOW or SL. Still, it has 3D (only 3 stars); a strong community infrastructure (with groups, group chat, friends, and “who visited my page” capacity, albeit without permissions), and real money commerce – where you can buy and sell money.<sup>9</sup>

- Penguin Club, now part of Disney (it was purchased for \$700m in 2007) is a kids world. It does not have 3D representation, but rather 2D approach. It has no ability to use money. Penguin Club is presented here to show that you do not have to be a 3D3C real world in order to be successful.<sup>10</sup>

- Second Life is the prime example to a full 3D3C world. It now has “full” (more than 3) stars in all the factors. Graphically it is less powerful then WOW, although the addition of reflective water and amazing skies in mid 2008 bring it one step closer to four stars.<sup>11</sup>

- Activeworlds is a platform for worlds and not a special world. It supports 3D and some of the features needed for community, creation, and commerce. It is really for the world owner to make a decision as to how to use the various factors in their world.<sup>12</sup>

- Sony Home for the Sony PlayStation 3 is a new addition to the realm of virtual worlds. While at this point we do not know how it will exactly behave, early demos present a superb graphics as well as ability to create items. The ability to program objects and commerce is unclear for me. Note that if Sony Home turns into merely an arena to playing games (as some of the previews suggest) it will loose its ability to “play” in the area of virtual worlds.

- Google Earth is here because – in theory – it can become a virtual world or an infrastructure to build and run worlds. With Sketchup, Google’s simple and free editing tool, one could create 3D objects easily. We are still missing structured community and commerce but 3<sup>rd</sup> party tools, as well as Google tools like “Open Social” (for community) or Checkout (for commerce) or may close that gap.

In this initial and cursory analysis, I have outlined some of the intended qualities of the 3D3C factors. The factors are designed to be *comparative* (how is the 3D of WOW compared to

the one of IMVU), *relative* (IMVU did not have many social features when it started, as it developed it gained more stars), and *explorative* (Google Sketchup is an option for creation).

This analysis also reveals some of the limits of the 3D3C factors, as they do not fully uncover the intricate nature of field. We did not cover physics (yes for SL, no for Activeworlds), voice, real devices, and so much more. The 3D3C definition is designed to be a top-level starting point. As such, these factors alone are complex and deep because their nature often goes beyond their usual usage – and that is the focus on the next three sections that will cover Community, Creation and Commerce in greater length.

## ***Community***

### ***Background***

Since the 1970s the term CMC (computer-mediated communication or community) has been used sporadically (Harasim, 1989; Rice, 1992). While Rice says that "there is little theoretical or empirical research in this area" he, with others, published a few hundred papers about the topic.

Such pre-1995 research dealt mostly with text-based systems that were used by computer users. The "textiness" and the "computer-ness" have changed dramatically with the emergence of the internet. As of 1996, with the rise of HTML, even novice users can use CMC with relatively easy-to-use Graphical User Interfaces (GUIs). (For a good summary of this age, see Rheingold, 2000)

The emergence of virtual worlds gave the term virtual community a completely new meaning. For the first time, users could DO things together (mostly fight monsters, but also fish and visit places). Community became a key factor in virtual worlds.

Then in 2003, MySpace changed the picture of communities. MySpace recreated the landscape of virtual communities because it used new web technology (like DHTML and CSS) to support user-generated content (UGC). Other players like LinkedIn and FaceBook repackaged and enhanced the model. The Social web was reborn (yet another word for "community").

Yet, when we look at Real Virtual Worlds, and we take Second Life as an example, we find many community structures and facets. Most users start as loners. Their anonymity detaches them from their usual friends and allows them to roam the new world and to meet new aspects of community. Let us examine some of these aspects.

### ***The Individual***

In SL, the profile is the main communication instrument by which users greet new people and old friends from the past. It has a number of tabs.

The "Second Life" tab includes a picture, the user's SL date of birth and the groups the user belongs to (if the user clicks on one of the groups he will get its profile). Further information: whether the avatar has a Partner or not, is in a general description area called "About." You will notice that the SL profile is akin to the MySpace or FaceBook page.

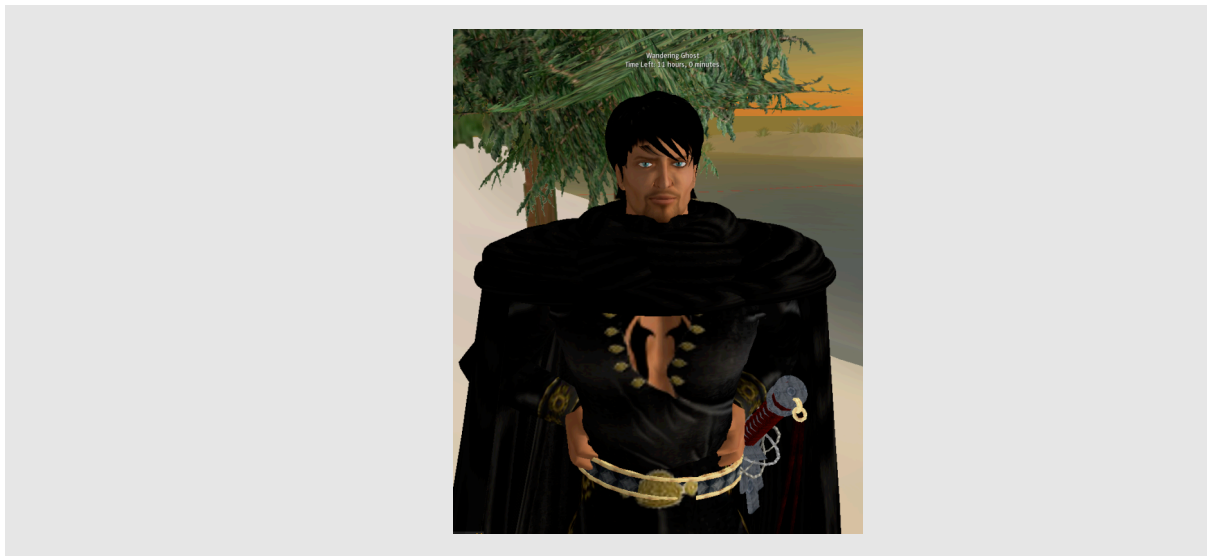


**Figure 3.2-a: Example of a Second Life profile**

Then there is the “Web” tab, with a reference to a detailed description (for those who have a personal page or a site); the “Interests” tab, where the avatar describes its topics of interest and its aims; the “Picks” tab, displaying the places best liked; the “Classified” tab where notices may be posted (for a fee) and they will be entered into the world’s built-in search engines. The next tab, the “First Life” tab, is the place for the avatar to describe its real life user. Many write in the style of “Keep SL and RL separate” or “Only for Friends.” Others spell out where they live, their gender, age, and additional basic details. Finally, there is the “My Notes” tab where the user can record any comment such as when he met a certain avatar, what he knows about her, what she considers important, etc. This tab is visible to the composer of the notes only – no other avatar may view it.

A common course for the individual usually is to emulate real life: renting a room, renting a house, building a house and furnishing it. During this time the character amasses assets, gains new friends, and learns the secrets of getting around in the new world. This could eventually lead to a mansion, a yacht or a plane – all with just a few dollars. Anyone could become rich.

Another direction is role playing. Here, too, there are multiple opportunities. In the following Figure, we see Roberto in the role of a typical Gor warrior. As such, he is part of a world taken out of the John Norman books. (Gor, 2008, April 13) This is an entire culture with laws, costumes, and behavior patterns, akin in scope to the Hobbit civilization or the Star Wars saga.



**Figure 3.2-b: Roberto in his typical Gor outfit**

### ***Partnership and Family***

The next social structure is the “Partnership” (in SL jargon). This feature supports a public declaration of relationship with a partner. Avatars (usually veterans) frequently join up as pairs. They live together, do things together - all very cozy. I once saw two avatars, both dressed in bunny outfits, lying embraced in a wooden hut. These two people were AWAY (meaning, not at their computers at the time), and a caption read: “We’re so in love that we’re always together here.”

Virtual relations are not new. For example, *Love Online: Emotions on the Internet* is a 352-page book and one of the important academic works on the subject (Ben-Zeev, 2004). Its author, the current President of the University of Haifa in Israel, provides a good starting point for the understanding of the basic concepts of “love” on the Internet. He proposes a number of ways to distinguish between various types of relationships in the Internet. In particular, there is a distinction between net-sex and net-romance. Net-sex concerns sex taking place between two people in different locations, and net-romance deals with romantic relationships between two people. Of course, there are variations and combinations of sex and romance, a flirt and a fling, remote sex and visual sex, with one partner or two – the only limit is imagination.

Another enhancement, which could be even more far reaching, is the “Family.” People may create their own virtual families. Not only mom, dad and kids, but also grandparents, cousins, neighbors, etc. Some detailed family descriptions are hilarious. By the way, due to the name-allocation methods of Second Life, family members usually have different surnames – quite an amusing situation.

### ***Groups***

The social dimension now extends to the “Group.” There are various thematic groups and communities. For example, the Fur culture is a large and amazing culture; it flourishes in and outside SL. (Fur Culture, 2008, June 8) The Fur people have their own locations where they spend their leisure time, party, live or just meet with other Fur people. Their outfits, which are of

the most elaborate in Second Life, include ears, tails, whiskers, and other essentials for Fur people.

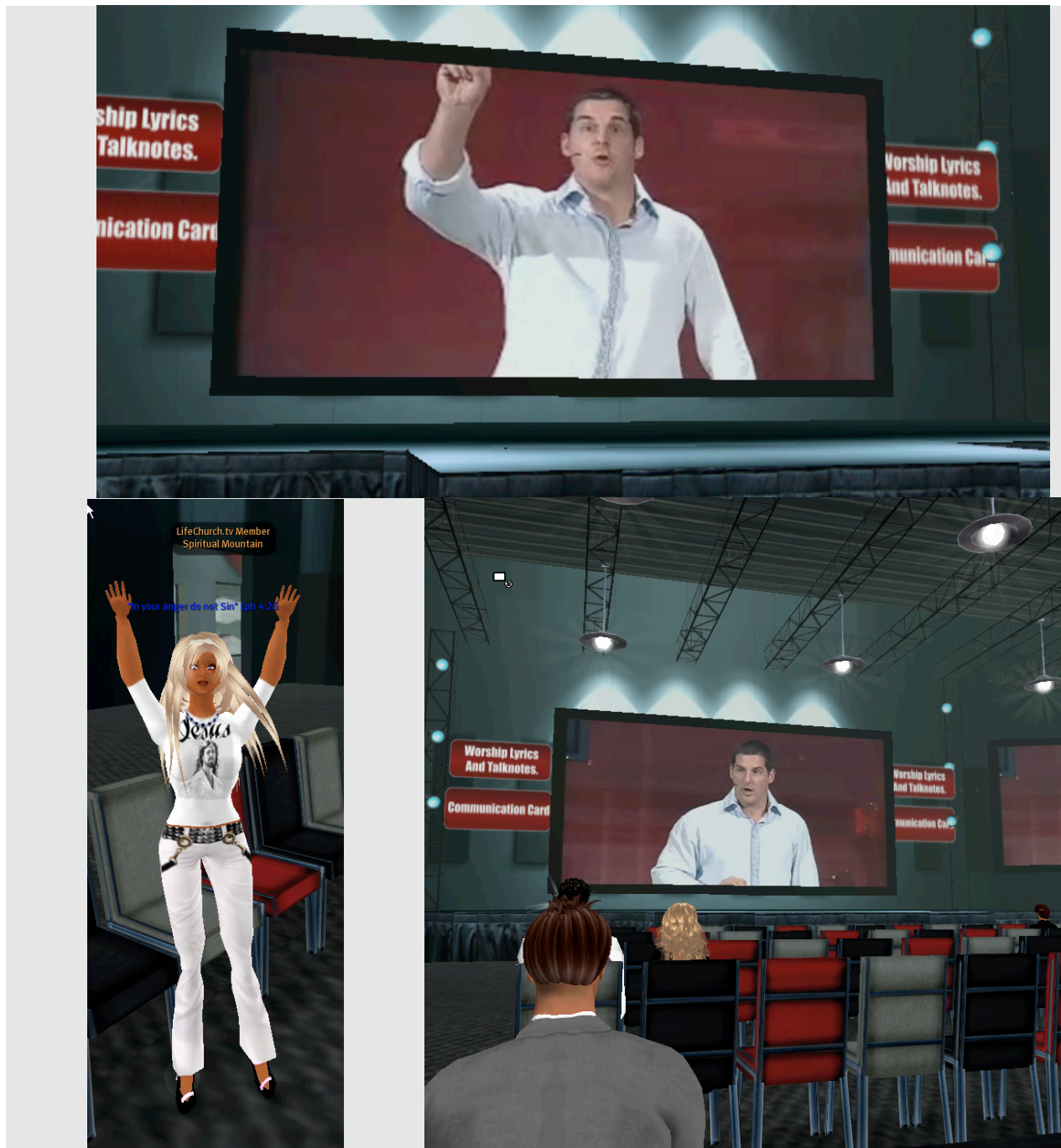


**Figure 3.4-a: The world of the Fur group**

A group could include thousands of members or just few. They could all share a life-style and an economical infrastructure. Linden has made great investments in group-managing tools, and they allow role creations, permissions and various other features within the group. Groups may purchase real estate with common funding. There are thousands of groups in SL, at various stages of maturity. In fact, anyone can create a group for L\$100 - such as the “Yesha’s Friends” group. Most groups are used for messages and communication. Thus, I could notify all my friends in my group of an event.

One interesting example to a community is a group called LifeChurch. LifeChurch is the virtual group of one of the modern American churches. The real LifeChurch is centered in Oklahoma and is led by a charismatic priest. It has about ten branches all over the United States and in all of them sermons are screened alongside a rock group. They definitely speak the language of today’s youngsters.

The church decided to open another branch – this time in Second Life. They employed the services of a Anshe Chung Studio to build a full-size church, with video screens, stages and lighting. The following pictures were taken at a sermon I attended. The sermon was named “Experience,” and indeed, that’s what it was. Please pay attention to one of the participants at the sermon – in particular, her shirt exhibits a novel way to worship the Lord.



**Figure 3.4-b: A Religious experience in the virtual world**

Another community activity, more of an ad-hoc nature, occurred in 2007 Holocaust Memorial Day. A virtual ceremony was led by a young American named Carter Giacobini. It included the lighting of memorial candles and the reading of the Kaddish in Hebrew and in English. The ceremony lasted for about a quarter of an hour and was one of the most moving I had ever attended. People from all over the world assembled for a unifying event together. The ceremony was repeated several times that day for the benefit of users worldwide in various time zones. Please note the text in the pictures.





**Figure 3.4-c: Holocaust day ceremony in the virtual world**

The last two examples demonstrate cross-global communities. These ceremonies became meaningful because of their linkage to the real world. For the participating avatars this is a singular medium for their respective spiritual experience.

### ***Conclusion***

The word “community” means different things to different communities. We have only touched about the main features of the term when it comes to virtual community. We did not cover crime, law, avatar rights, grieving, or many other aspects of communities in Real Virtual Worlds. Much of what we know regarding internet-based communities (from the early mailing lists, to the latest 2008 FaceBook craze) is exacerbated in virtual worlds.

What is interesting about Real Virtual Worlds is the ability to define the different terms of the community in a technical manner. For example, “leadership” has a concrete set of permissions. A leader can also appoint sub-leaders and give them certain permissions. In that sense, Second Life has done a good job in defining a set of tools to define permissions. While more can and should be done to further facilitate communities, already SL’s pre-defined “switches” allow community leaders to shape and build their communities. Of course, the Community takes a new level of meaning when you add the Creation factor.

## *Creation*

### ***Background***

The Sims (2008, June 6) focuses on the lives of virtual people called “Sims,” placing the player in control of their virtual world and their daily activities, such as sleeping, eating, reading, and bathing. Will Wright, the game's designer, calls it a "digital dollhouse." Many choices lead a player's sim to a large family or a lonely life.

Sims was the first game that enabled and encouraged users to build their own content (still for themselves with no multi-user effect). An earlier version of creation in games allowed users to design their own levels. (Level Design, 2008, April 30)

But the dawn of web 2.0 and user generated content really exposed the various motivations for creation. What led people to edit Wikipedia, to write Amazon comments on books, and to publish videos in YouTube? Can we harness this energy of creation? A platform that enables and facilitates individual and communal creation is destined to blossom. Let's examine some of the facets of creation in virtual worlds.

### ***My Avatar***

The word Avatar originated in Hindu philosophy. (Avatar, 2008, June 8) It means incarnation on a different level. In the Real Virtual Worlds, the avatar becomes the visual representation of the user or player.

In SL, the avatar has a face, body, limbs, etc. Many of the body parts may be modified by changing their size, shape and color. The user can also add on various accessories such as jewelry. Here Journey models as an avatar. Note her flowing hair, her dark skin, her blue eyes, the lace blouse, the sparkling necklace, the spectacles and the earrings.



**Figure 4.2-a: Journey models an avatar**

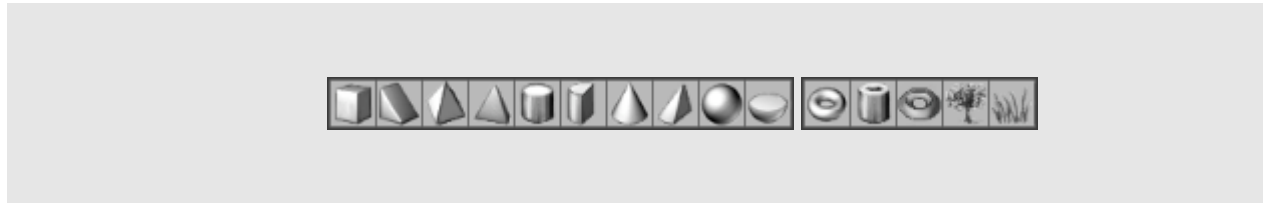
Any relationship with an avatar begins with the outward image followed by the profile. The avatar is the first place of creation when you can modify your looks in various ways. As you



advance in your skills, you will further shape your avatar using skins, clothing and accessories – you will enjoy the fruits of the SL fashion industry.

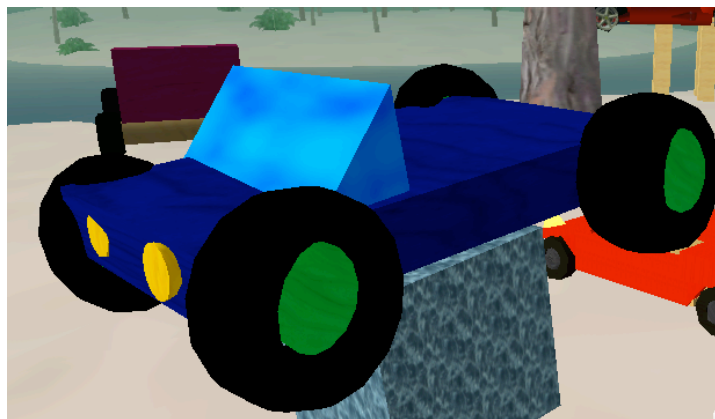
### ***Objects***

The object is a three-dimensional shape: cube, tetrahedron, cone, sphere, etc. Complex objects are those containing holes or predefined shapes (for instance, shrubbery or trees). The objects have properties such as position, color, and behavior. An object with “Texture=Wood” could look like a block of wood. An object with the property “Z=1” would be positioned a meter above the ground. An object with the property “Behavior=Physical” would follow gravitational laws.



**Figure 4.3-a: Simple and complex objects in Second Life**

The entire world of SL is built up from these primary objects, or, as they’re called in Second Life jargon, the Primitives (or Prims, for short). Furthermore, objects may be merged and joined. For example, a simple car may be assembled from ten objects: body, four wheels, four yellow lights and a windshield. A more complex car would have dozens of component objects.



**Figure 4.3-b: A Simple car with 10 objects**



**Figure 4.3-c: A Complex car (Ferrari) with 30 objects**

In addition to properties such as position and appearance there are properties such as “Lock”: can the object be easily shifted or modified (similar to file locking); “Physical”: does the object obey the laws of physics – like falling, being pushed, etc., as opposed to being immovable in space; “Phantom”: the object does not occupy physical space in the world so people and objects can pass through it. Phantom objects are usually used for curtains, swimming pools, and lighting in clubs.

From the visibility point of view an object may possess properties such as “Shininess,” “Color,” “Hollowness,” and “Transparency.” We also find “Flexible” objects, which give the sense of realism to hair, curtains, armchairs, or a scarf and other clothing. It should be noted that flexibility is processed on your personal computer and is not dependent on the servers and, therefore, does not degrade performance. The type of “Material” determines the sound made by the object when it collides with another (wood, metal, glass, etc.).

One of the unique properties of objects in SL is that they are programmable. A special programming language – LSL (Linden Script Language) – allows the objects to act and activate. Thus, planes fly, cars go, doors open, wheels revolve, robots walk, trees grow, etc. Programming is not for intended for every user, but it is a vital component for the experts to create unique products, services, and environments.

```

default
{
    state_entry()
    {
        llSay(0, "Hello, Avatar!");
    }

    touch_start(integer total_number)
    {
        llSay(0, "Touched.");
    }
}

```

**Figure 4.3-d: An example of simple Linden script**

In the example above the object will say “Hello, Avatar!” when it (the object) is activated. When touched, it will say “Touched.” More complex scripts could run into tens and hundreds of lines and could handle characteristics of the object such as changing its shape, moving it, rotating it, or making it a component of a larger object, etc. Naturally, when the user can create scripts (which are actually pieces of code) she permits the creation of bugs, viruses, and other glitches common to computer environments.

To sum up, the objects in Second Life are the atoms of which this world is made. The integration of physical and shape properties, together with the capability of programming, result in almost unlimited flexibility. Add to that intellectual ownership and creator's rights, and we get a full and fertile infrastructure for commerce and social activities.

## *Land*

Just as in real life, land is the basis for all activities in SL. Linden elected to use land as the focus of their business model. Each and every room, apartment, club, mall, factory, gallery, or any other type of edifice anywhere in the virtual world must be located on a given piece of land. This is one choice, other Real Virtual Worlds may choose a different model. In the current architecture, it makes sense to charge for land since land is translated directly into a computer that needs to have resources (electricity, network, maintenance, etc).

In SL, The basic unit of land is called a “Simulator” (SIM). Every SIM is a square of 256 by 256 meters, or 65,536 square meters. Each SIM is managed by a computer with one CPU (actually, there are cases wherein a computer with several processors could manage multiple SIMS – but we won't go into these technical details here). It is important, however, to note that each SIM contains all the land attributes and data, the buildings, roads, cars, etc. When the avatar is on the SIM all these elements are activated by the simulator.

In this next Figure (upper left) nine SIMs are displayed. The blue house indicates where my own house is located. The yellow dot is the representation of the current location of the avatar.



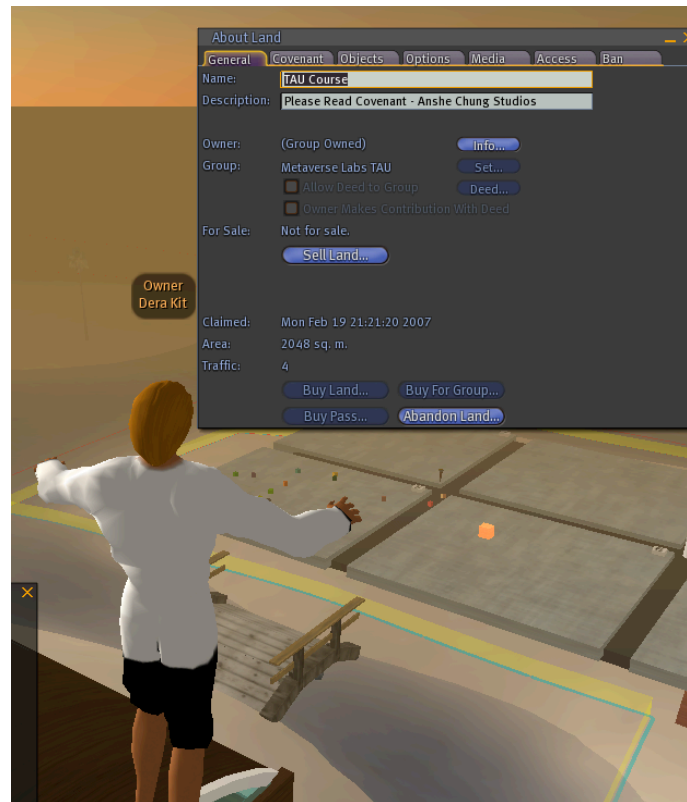
**Figure 4.4-a: Various land representations**

There are two types of land – land on the main continent (Mainland) and private land. The Mainland is managed by Linden that sells off small parcels. Private land is managed by private

entities who may own just one island (a single SIM) or tens or hundreds of islands (like the area owned by Anshe Chung). Cities may be built along a specific theme – most of our real cities are represented in SL. For example, Amsterdam was sold recently for 50,000 USD (Reuters, 2008, June 8). Location *does* have some importance, especially when someone is trying to attract user traffic, but due to the fact that getting from one place to another is very rapid (teleporting) location is not that critical. By the way – if you’re interested in purchasing your own island you’ll need to shell out about US\$1,000 (prices dropped in April 2008 and created a minor turmoil in the real estate business in SL) and an additional US\$300 per month for storage on the servers.

Land is defined not only by its physical shape, size and location, but also by the rights it possesses and the attributes associated with it. You can look up the land attributes under World → About Land. Several tabs allow you define the properties of the entire region. The “General” tab contains the name and description of the land, as well as the owner and group rights in the area. Here, too, is the place where you prepare the land for sale and determine its price.

The “Covenant” tab defines the basic rules of the area. The owner of the SIM usually writes it. The covenant could define, for example, that no high-rise building will be permitted on the land or that only family-style homes are allowed, etc. Here the landowner defines what a good neighbor really means. Some areas have empty covenants, with nothing defined – these regions typically become islands of chaos, unruliness, and a motley of building styles. On the other hand, areas may be defined as not to have commerce on them at all. These are usually intended for private homes. Perhaps this is the time to clarify that dedicated residents invest a great deal in their homes. This is one of the most popular pastimes for players. The covenant permits – in a typical Linden fashion – inherited definitions. The continent owner defines the continent’s attributes. The SIMS (the actual islands) inherits these attributes as their own rules. These, in turn, are passed on to the land lots. Some of these rules are enforced by technological means (i.e., who may enter the area). Others require human management – supervisors could, for example, measure the heights of buildings or the usage of advertising billboards, which are prohibited in residential areas.



**Figure 4.4-b: About land – main features**

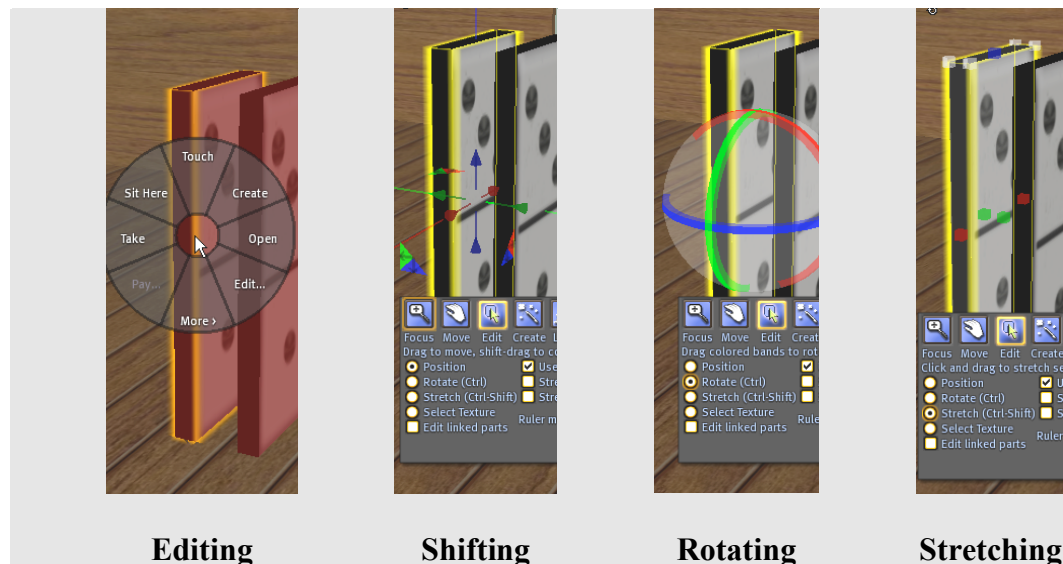
## *Editing*

Linden has faith in the citizens of the SL world. They see themselves as providers of an infrastructure that permits residents to build, live and experience the world. Many objects may be created, from the very simple to the very complex – from a chair or a bed to a plane, to a watch or a magic carpet that brings the resident to 15 different places.

I distinguish between two levels of editing:

- Arranging – which is mainly positioning, relocating and organizing.
- Making – which is mainly the building of new objects, combining them, adding textures, sounds, integrating objects, and composing blocks of code.

The next example shows a line of domino tiles. A panel appears with several functional options. You can move, rotate or stretch the tile. If the owner of the item has permitted it, additional functions will be available and you may change the texture, unlink, set a price, etc. If the user wishes to advance from simple arranging (such as shifting furniture around the house or organizing the pool) to complex and flexible making he will need several hours to get acquainted with the various options.



**Figure 4.5-a: Editing for everyone: editing, shifting, rotating and stretching**

## ***Conclusion***

The Creation factor of the 3D3C is a combination in the middle between the forces of Wikipedia, YouTube and FaceBook, and the forces of the Open Source movement of Linux, Firefox, and MySQL. I claim that the unified nature of 3D3C Real Virtual Worlds has tremendous wealth. (For an initial discussion on the field see for example, Benkler, 2006).

Creation is the human trait that drives many of us individually and, more importantly, advances us as small and global groups. 3D3C Real Virtual Worlds offer creators a space that includes a managed audience (community) as well as optional monetary pay.

## ***Commerce***

## ***Background***

Amazon was the first player that convinced us that it is OK to buy online. It is ok to give some website our credit card number and “hope” to get the book in a few days. Then, eBay convinced us to buy from different people, not only we are giving our credit card number over the net, we are giving it to someone based on how they were rated on a web page. Then, PayPal, allowed us to transfer money in the internet via every site.

While this is major progress it is still difficult today to start a web site that sell things. You have to connect with credit card companies or connect with larger shop makers, you have to develop a user authentication scheme and you have to develop a way to connect with your clients. Not a simple task. In contrast, for example, if you are an artist in SL that wants to sell paintings virtually, you assign a price and that is it. (If you want to also send your customers a real painting, you will need to get their address and ship them the item directly – money can still be received via SL).

It is often hard to digest that “yes, people do pay for virtual shirts.” A common response is “do you mean to tell me people pay \$2 for a shirt they will not own.” In talks, I often have to repeat the fact that “yes, this is real money that you can buy milk with.”

Real money in online games is not new. EBay allowed you to buy items in WOW, Ultima Online and other games (Dibbell, 2006, Castronova, 2005). What is unique is the embedded nature of commerce and the real/virtual exchange of L\$ that is supported by Linden.

### ***Linden Dollars***

Many games, particularly role-playing games, have a monetary component. Money is the human standard for evaluating worth, for exchange for products and services, and for any economical transaction. Linden’s innovation was the support for exchanging virtual money to real money, in addition to the common exchange of real to virtual money. Linden was one of the first companies that authorized people to sell the virtual money for real money, officially and legally.

At the top right of the panel we can see how much money we have available. In this case we have L\$1,811. The adjacent button has the logo “L\$” on it. Clicking this button will bring up the panel for acquiring L\$ cash.



**Figure 5.2-a: Cash acquisition panel**

We enter the amount of Linden Dollars we require and we get it on the spot (and naturally, our payment method to the Linden company is duly charged). That’s it – easy, simple, and immediate. Henceforth, we may use this cash to buy products (such as attire, body parts, cars, land) or services (such as entrance to a club, builders costs, or dancers fees). Commerce – with the Linden Dollar at its core – is integrated into the basic operation of Second Life. You can pay any avatar by clicking on it and clicking the “Pay” button. Or you could buy any product by using the “Buy” function.

Every object in SL is owned by someone. The owner has some rights to the object, but not all. Every object also has a “Creator” who is fixed and immutable. A part of SL’s philosophy is



the recognition of the rights of the contents creators. The creator and the owner may decide whether a certain object may have the properties of “Modify,” “Copy” or “Transfer,” which allow other users to change, duplicate, or pass the object to others.

Moreover, every object has a price, which is an integral property determined by its owner. As this is a virtual world an object may be copied numerous times, thereby proliferating objects (such as trees, cars, houses, etc.).

The sales mechanism is integrated within the object. For example, let us assume that I have created a red car, priced it at L\$100, and positioned it on the ground. Anyone who sees it may buy it by clicking a button. Actually, he’d be buying a copy of the car. If I, as the creator of the car, had enabled the appropriate properties, the buyer could subsequently sell it or change its color. Perhaps I would give him the permission to change the price. On the other hand, if I did not give him the permission to transfer it, he could never transfer the ownership of the car to anyone else. The right to copy is not the same as the right to transfer. Copying means creating duplicates for self usage and not for transfer. Transferring refers to the changing of ownership of objects.

### ***Services***

If you wish to make money in virtual worlds be prepared to invest time, money, and a lot of thinking and energy. Today only a few actually make money in SL. Very few. But many make the attempt – they open a club or a shop and try their luck. But only a few persevere, and find a stable business niche that provides a steady income. In fact, there are two ways to make money: inside the world and outside of it.

Outside the world you can profit from providing services to those who would like to learn, use, experiment, and just experience. There are a number of companies who provide consultation, construction and other services such as Electric Sheep, Anshe Chung, Millions Of Us, Virtual Italian Parks, and Rivers Run Red. This is a burgeoning area which will grow even more with the development of virtual worlds – but we shall not cover this issue here.

Inside the world are a number of different business types, each requiring its own level of investment in terms of time and money.

**Camping** – you may actually can make money in SL by doing nothing. Some places pay just to have a character in the world. In general, this is called “camping.” It began with special chairs that paid avatars just for sitting in them. These chairs create green dots on the map, which attracts other avatars looking for people (often called “replacing expensive electricity for cheap lindens”).





**Figure 5.3-a: A paying chair**

There are many camping stations today in the form of street cleaners, window cleaners and guards. You can usually see the paying price of a chair in the title – in the case above: L\$4 for every 12 minutes.

**Escorts** – a popular “occupation” in SL. Many women (and men) try out the oldest profession in the world. Ms. Sireen Toll works for two to three hours a day, and earns only US\$10 (including tips). When she was interviewed, she said: “It’s nice – I like to help others. Besides, I welcome the break from being an Australian 19-year-old first year law student. LOL. [Laughing Out Loud] With what I save, I hope to open a clothing shop. I work at the Sins Club.”



**Figure 5.3-b: Ms. Sireen Toll in her place of work**

The process is usually simple: you post an advertisement on the notice board, you *rendez-vous* at the club, you present your escort card with the price per unit of time, various activities, preferences, and limits – and off to work. There is an entire industry dealing in brokerage, accessories, and interest groups that form a robust community regarding this topic. Having said that, it must be remembered that after two or three weeks, escorting becomes somewhat boring, and many drop out in favor of other activities.

**Host, dancer, guard, companion,** etc. are other kinds of occupations. All of them require the character to invest time and be paid by the hour – including hosts at a club, restaurant, counselors, dancers (not too complex), guards (requires equipment such as a gun), companions, and “Personal Shoppers” (who assist advanced avatars with their shopping). These jobs also involve being nice to customers, but there is no sexual aspect (which is characteristic of the escorting profession). Salaries are a few tens of Linden Dollars an hour.

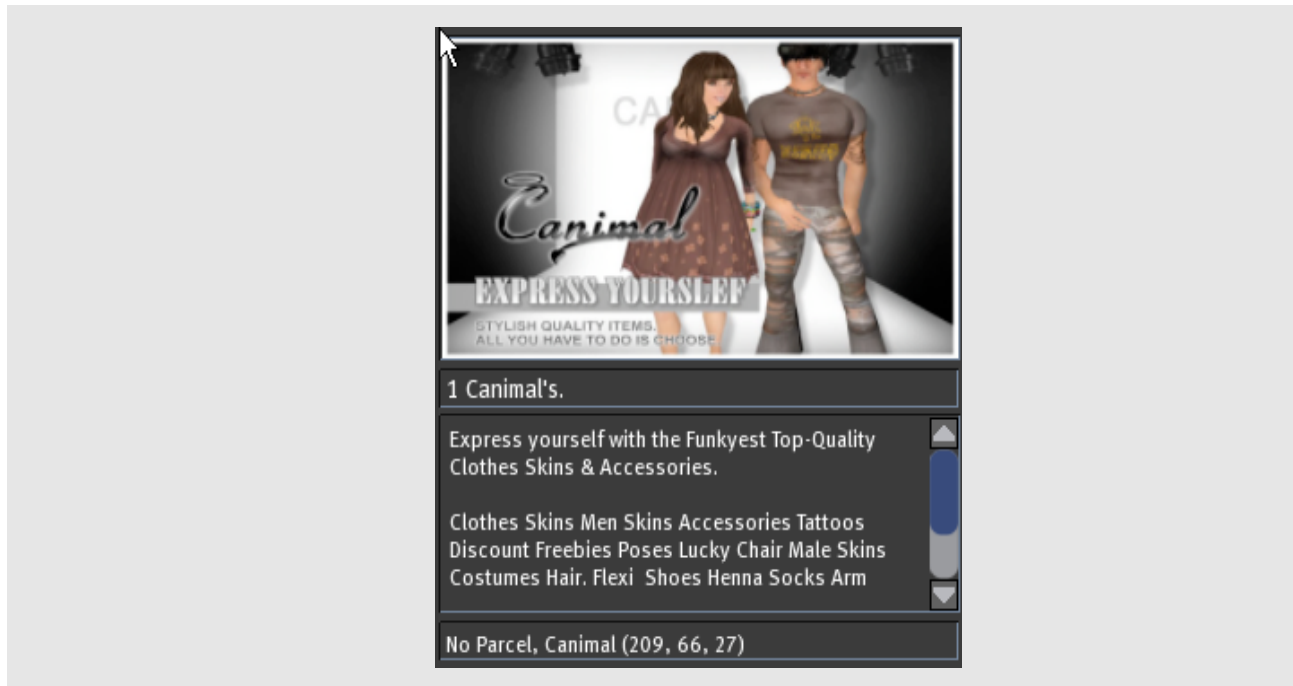
**Owning a shop, club or recreation place** – avatars in Second Life love to buy and have a good time. There is an abundance of malls and shops selling clothes, hair, furniture, clocks, robots, diving equipment, etc. If an user wishes to own a shop he will need products, and he will need to make contact with the producers in order to sell the goods. Another option is opening a club. Here the user needs to invest more in the place, equipment and supplies, dances, hiring staff (hosts, dancers), and DJs. Clubs pop up and disappear all the time. Managing a successful club is quite a complicated and demanding job, and most clubs do not make a profit.

### ***Products***

**Product developers** – there is a large demand for products in SL as many users spend their time buying, visiting malls, etc. You can manufacture cars, games, houses, furniture,

clothes, clocks, sleds, hovercrafts, flowers, dances, expressions, television – in fact, if you can imagine it you can create it.

Maya Hofner is a full time fashion designer in SL. She quit her job as a graphics team leader at an advertising company, for a virtual occupation under the name of Canimal Zephyr. Her creations for women (and for men) are considered highly prestigious in SL. She owns an island where she sells her products from her own shop. One fashion critic says “I don’t like begging... but please, Canimal... give us more and more.”



**Figure 5.4-a: Maya's Canimal shop**

**Real estate brokers** – buying, developing, leasing, and selling land is a profitable business, albeit somewhat intricate. Land areas acquired from Linden are empty and arid. The new owners redesign them, parcel them into lots, erect houses and then sell or lease them. Leasing houses and residential areas is lucrative – but it demands constant handling and a critical mass. In addition, there is a lot of competition.

## ***Conclusion***

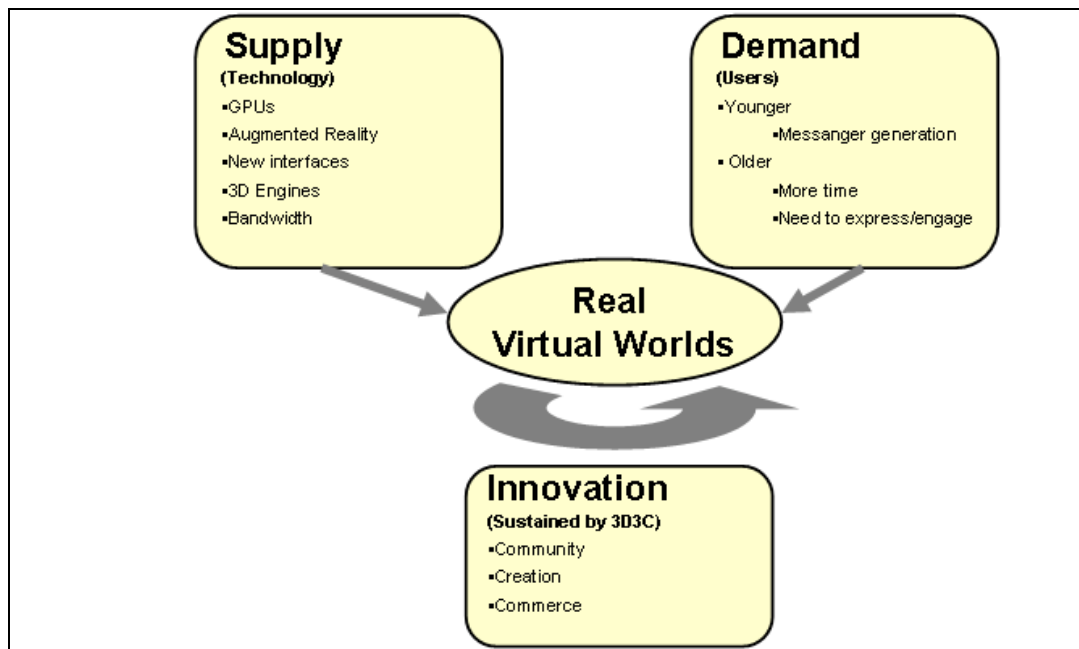
To sum up, there is a certain aura regarding “SL work” and making money in the new world. Many recommend (as do I): it is better to work in the real world. In the virtual world it is far more fun to water-ski, dance in a club, scuba dive, or listen to a concert rather than taking care of customer service, handling Grievers, paying for the land, etc. Just whip out your credit card, invest a few tens of dollars, and have a good time.

Yet the inclusion of commerce into the fabric of the world, together with the realistic look of 3D, the access to the managed community, will drive creation. The four factors reinforce themselves and create a closed sustained loop of innovation.

### ***Conclusion: Towards Real Virtual Worlds***

In the first part of this work, we have exposed the parents of Real Virtual Worlds “virtual reality” and “gaming worlds”. In the second part, we defined Real Virtual Worlds, using the Second life example, a formal definition of 3D3C, and a sample comparative analysis of different worlds. In the next three parts, we delved into a deeper discussion regarding the different aspect of Community, Creation, and Commerce.

I chose to conclude this work depicting the driving forces that will continue to push virtual world forward.



**Figure 5.5-a: Supply, demand, and sustained innovation for Real Virtual Worlds**

Real Virtual Worlds enjoy both a healthy *supply* and a growing *demand*. The supply side stems from a more affordable and powerful technology. New advances in Graphics Processor Units (GPUs) coupled with new interfaces like the Nintendo Wii, 3D engines like Havok Physics, and abundant bandwidth are bringing Real Virtual Worlds closer to the personal and enterprise user. At the same time, the demand is growing from both the young and the old. On one hand, we have a group of younger, messenger-crazed users that crave interaction and, on the other hand – perhaps more importantly – we have the older folks that have more time, more money, and a need to express themselves.

These supply and demand forces are just the beginning. I claim that the long-lasting booster of Real Virtual Worlds is the combination of 3D, Community, Creation and Commerce.

When combined into one system these factors create something that is bigger than the simple addition of 3D3C. The immersion of the 3D world, the engagement of the community, the ability to express, and innovate that stem from creation and – most critically – the ability to gain from it economically (read: money) is what will propel Real Virtual Worlds.

With technology acceptance, we will enjoy a constant stream of creations, services, and products. Things like art, medicine, learning, and shopping will be enhanced by virtual galleries, home treatment clinics, learning kiosks, and family-owned stores.

However, there is one major roadblock to this vision: lack of standards. In the internet, we were able to overcome this block with a well-oiled system of standards that facilitates innovation and growth. We were unable to overcome this block in the gaming world where major game companies have their own systems.

“We shape our tools and thereafter our tools shape us.” Thus wrote Marshall McLuhan, author of “Understanding the Media.” (2008, June 6) We can consider Real Virtual Worlds as a new tool, a new medium, crawling and advancing, preparing to pounce on us in the next years. A medium combining entertainment, learning, and work into one experience.

It is for us to help shape the field – to install checks and balances so that we will be able to arrive at an optimum between the value and the danger. I am rising to the challenge. How about you?

## Notes

<sup>1</sup> For more info regarding Sensorama as the first virtual world patent, see: Sensorama. (2008, February 26).

<sup>2</sup> For a review of Augmented Reality see Bimber, O., & Raskar R. (2005).

<sup>3</sup> For a review of numbers of users in virtual worlds see <http://www.mmogchart.com> and <http://mmogdata.voig.com> (Retrieved 17:49, June 8, 2008).

<sup>4</sup> For World of Warcraft sales in one day see: <http://www.virtualeconomies.net/2007/01/23/50-of-wow-users-bought-crusade-in-first-24-hours/> (Retrieved 17:49, June 8, 2008)

<sup>5</sup> The term “Metaverse” first appeared in 1992 in a science-fiction book named Snow Crash by Neal Stephenson. The Metaverse was described as a three-dimensional world in which human characters spent their time, played, worked and lived. In Stephenson's words, “the Metaverse [is] my invention, which I came up with when I decided that existing words (such as ‘virtual reality’) were simply too awkward to use.”

<sup>6</sup> See Susan Vega Show, 2008, June 8.

<sup>7</sup> An earlier version of this table was first presented in Metanomics, a virtual broadcast, hosted by Bloomfield (Ed.), 2007 See <http://www.dryesha.com/2007/12/video-of-3d3c-metaverse-metanomics-talk.html> and <http://www.metanomics.net/> (Retrieved 17:49, June 8, 2008)

<sup>8</sup> To buy WOW gold see for example <http://www.power-level.net/> (Retrieved 17:49, June 8, 2008)

<sup>9</sup> To buy and sell IMVU cash see for example: <http://imvu.anshechung.com/index.php> (Retrieved 17:49, June 8, 2008)

<sup>10</sup> See [http://corporate.disney.go.com/news/corporate/2007/2007\\_0801\\_clubpenguin.html](http://corporate.disney.go.com/news/corporate/2007/2007_0801_clubpenguin.html) and <http://venturebeat.com/2007/08/01/disney-buys-club-penguin-in-700-million-deal/> (Retrieved 17:49, June 8, 2008)

<sup>11</sup> New Graphical Processor Units emerge from the likes of Nvidia and AMD-ATI. Coupled with better 3D algorithms, we should expect the graphics to become better and better. The number of stars should be adjusted to relative market conditions.

<sup>12</sup> Activeworlds has been active since 1998 in this field. See *Active Worlds*, Retrieved 17:49, June 8, 2008 from <http://www.activeworlds.com/>

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