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Escaping the Gilded Cage
User Created Content and Building the Metaverse

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Abstract

Ever since science fiction awoke imaginations to the promise of real, shared virtual spaces, technology has been chasing this dream. However, despite the enormous technical advances of the last decade, the concept of a broadly appealing online world has not yet been realized. At the same time, the rise of massively multiplayer online role-playing games has brought millions of players into online, persistent state worlds, where they spend tremendous amounts of time and money each year living, trading, fighting and dying. Players learn how to customize and to create within the online spaces, as well as how to extract this value back into the real world. Interestingly, this behavior exists even within worlds that don't explicitly allow user created content and in those that explicitly ban economic gains. The pervasive nature of user created content and free markets, while at odds with the desires of online game developers, demonstrates the opportunity for a different kind of online world. This Article will show how proper economic and legal decisions can be used to harness the power of player creativity to maximize the virtual world's growth in order to build an online space as rich and complex as the real world.

Introduction

In 1992, Neal Stephenson's science fiction novel *Snow Crash* introduced readers to the concept of the Metaverse. While other science fiction had described immersive online games¹ and virtual spaces,² Stephenson was the first to describe an online environment that was a real place to its users, one where they interacted using the real world as a metaphor and socialized, conducted business, and were entertained:

Hiro is approaching the Street. It is the Broadway, the Champs Èlysées of the Metaverse. . . . [I]t does not really exist. But right now, millions of people are walking up and down it. . . . [O]f these billion potential computer owners, maybe a quarter of them actually bother to own computers, and a quarter of these have machines that are powerful enough.

. . . [T]hat makes for about sixty million people who can be on the Street at any given time.³

In Stephenson's vision, the world's wealthiest and most connected people spend their time in the Metaverse. Coming on the heels of the pioneering virtual reality and interface work of Autodesk's John Walker and VPL Research's Jaron Lanier,⁴ the vision of such a real place, with its social and economic opportunities, was enchanting and seemed almost within reach. Entrepreneurs and technologists immediately set out to build the Metaverse.

Unfortunately, creating the Metaverse proved to be an extremely difficult technical problem. While multiple graphical chat environments came and went during the 1990s, none of them achieved anything close to the complexity and realism portrayed in *Snow Crash*.⁵ This period instead saw another type of online space establish itself as dominant: the "massively multiplayer online roleplaying game" ("MMORPG"). Others have done an excellent job of covering the history of MMORPGs,⁶ so this article will not cover that ground. As of late 2003 there are over a million MMORPG subscriptions in the United States alone, although some players subscribe to several online games.⁷ The successes of MMORPGs combined with the failed attempts to build the Metaverse have left the concept of a broadly appealing Metaverse out of favor and out of reach.

The time has come to rehabilitate the idea of the Metaverse. Technological advances in three-dimensional graphics, network connectivity, and bandwidth have just begun to enable online spaces that embody the Metaverse concepts of user creation and broad use. Conventional MMORPGs are demonstrating the desire for online worlds that are economically linked to the real world, and also that social interaction is the dominant reason for users to spend time in-world.⁸

However, MMORPGs are also demonstrating that the market for themed worlds is limited and is showing signs of leveling off.⁹ Many MMORPG products have launched under the auspices of bringing online roleplaying to the mass market, but none have succeeded.¹⁰ The Metaverse has the potential to open dramatically larger markets by giving its users the vibrant complexity and dynamics of real-world cities rather than simple, repetitive gameplay.

This article will argue that creating a defensibly real, online world is now possible if its users are given the power to collaboratively create the content within it, if those users receive

broad rights to their creations, and are able to convert those creations into real world capital and wealth. This would be the Metaverse of Stephenson's imagination.

The Need to Create

The scale of the Metaverse is difficult to comprehend. As graphics capability has increased, the cost of creating video games has increased as well. Nowhere is this more apparent than with MMORPGs, as Gordon Walton recently pointed out:

The primary business challenge we face with art is that the costs for first-class art continue to rise faster than our market is expanding, and the MMOGs [massively multiplayer online games] require tremendously more art assets than the vast majority of standalone games.¹¹

MMORPGs are big. Really big. They have to provide hundreds of hours of gameplay to hundreds of thousands of players. While the challenge of entertaining players for this amount of time is helped by unscripted player-to-player interactions, much of the experience has to be designed and built by the game developers. This has led to large teams and lengthy development cycles, often involving thirty or more developers working at least two years.

However, no matter how large a game world might become, it shrinks when compared to the Metaverse as described by Stephenson. Currently, the most ambitious MMORPGs target tens of thousands of simultaneous players in a shared space,¹² but a broadly appealing real online world might need to handle millions. Centralized planning fails on this scale, and some type of distributed creation is needed if there is to be any hope of creating an online world that dwarfs the complexity of real-world. The world's users provide a tremendous resource that must be leveraged to help create on a scale never before seen.

User Creativity

The Sims was the first mass-market game to heavily utilize player created content. *The Sims* allows the player to control the lives of a number of virtual Sims who go about their day attempting to find happiness. Part of their happiness comes from the possessions their homes are filled with, so purchasing items like better chairs and stereo equipment is a focal point of the game. Will Wright and Electronic Arts understood that users would be able to supply more content to each other than the developers could create, so they released the tools to create content

before the product was shipped. They now claim that over 80% of the content in use was created by the players.¹³ Beyond customization, players have also built stories around screen shots captured in *The Sims*. Over 77,000 of these albums are posted and traded actively among players. The most popular album has been downloaded over 300,000 times!¹⁴

This desire by players to make online worlds their own extends into games that do not support the type of customization allowed by *The Sims*. In *Ultima Online*, a fantasy themed MMORPG that was the first major U.S. hit, users who wanted to decorate their homes came up with elaborate strategies for combining in-world objects in order to create images that look like real-world items. For example, there are several different techniques for making pianos¹⁵ that involve dozens of different objects, ranging from wooden crates and chessboards to fish steaks and fancy shirts.

User creation does not end at the borders of the game. Machinima is the creation of movies within synthetic realities¹⁶ and very often the synthetic reality of choice is an existing game engine. It is a relatively new phenomenon,¹⁷ but it is spreading and achieving some mainstream success, including the establishment of a professional organization, the Academy of Machinima Arts and Sciences. *Quake* and *Unreal*, both extremely popular first person shooter games where the player has full control over the camera and movement within the environment, are widely used by machinima creators. Film types include simple linear narratives, parody, and abstract exploration of the genre. These films demonstrate the quality and variety that a determined creator can produce when given the right tools.

Other forms of user created content that extend beyond the game are mods. Mods rely on the fact that many first person shooters, and some other games, allow users to modify some combination of artwork and gameplay. The more flexible the engine, and again *Quake* and *Unreal* are standouts, the more variety in the mods, turning the original first person shooters into everything from driving games to architectural walkthroughs. Web sites devoted to mods¹⁸ provide reviews and audiences for mods, prominently featuring the most popular mods. The mod community acts as a training ground for artists and developers who want to work on games. Particularly solid work is widely distributed and can provide the creators an entrée into the game development industry.

In Defense Of User Creation

Some game developers, artists, writers, and musicians have a fear of user created content. They say it takes a professional to provide superior content that will engage users and cause them to return. Raph Koster addressed this concern at the 2002 Game Developer's Conference:

There's an intense amount of learning, craft and skill that goes there, and I hate to say this to all the film directors, writers, poets, painters and everyone else out there in the world: Get over yourselves; the rest of the world is coming.¹⁹

While it is clear that not everyone can create great content, it is a certainty that some can. There are many examples that illustrate the point. *Counter-Strike* is a mod for the first person shooter ("FPS") *Half-Life*. In 1999 two avid FPS players,²⁰ working outside of the game development world, created a game with the perfect blend of online teamwork, realism, and exciting gameplay to resonate with players. *Counter-Strike* spread virally through mod sites and quickly became the most downloaded mod. It was such a superb product that Valve Software, the creator of *Half-Life*, decided to package and distribute *Counter-Strike*. Four years later, *Counter-Strike* is by far the most played online FPS, with tens of thousands of users typically playing at any time.

It is also important to look at the desire of people in general to express themselves through creation and customization. Examples abound, from the popularity of karaoke, cell phone faceplates and ring tones, to the 1.4 million active weblogs.²¹ People want to be perceived as creative by customizing their surroundings. People want to have their moments on the stage. In many cases, it seems that users are just waiting for access to the right tools.

Productivity In Second Life

Second Life, an online world built by its users that launched in June 2003, is taking the first steps on the path to the Metaverse. Unlike other worlds that have attempted to allow user created content, *Second Life* users create using built-in tools. These tools enable creation collaboratively in real-time instead of using separate programs. This allows users to create iteratively and interactively, while sharing the act of creation with other users. This encourages teams to work together on larger scale projects and creates the strong interpersonal bonds that are critical to online world success. Production occurs in-world, so there is no separate submission or pre-approval process to inhibit creation.

Due to the in-world tools and lack of a submission process, *Second Life*'s users have been able to create an amazing amount of content. At the end of May 2004, users had created more than one million objects, over 300,000 objects with scripted behaviors, and over 300,000 pieces of clothing.²² Well over 99% of the objects in *Second Life* are user created, and users have responded positively to the idea of creating the world that they live in. Users also run classes and events to ensure that new residents understand how to create and customize within *Second Life*. Twenty-five percent of *Second Life* users are in-world more than 30 hours per week; many of those hours are spent interacting and educating newcomers.²³ As knowledge spreads through the community, derived works become more important because users improve and innovate based on what has already been created.

In *Second Life*, creations are bought and sold within the virtual environment, so users provide a market for each other. They can be creators, consumers, or both. Over 10,000 different people used *Second Life* in May 2004.²⁴ Those people engaged in 250,000 player-to-player transactions and spent over L\$29 million.²⁵ L\$, or "Linden Dollars", are *Second Life*'s in-world currency. At the end of May, the total value of the *Second Life* economy was more than L\$52 million.²⁶ The average transaction price was L\$91 and there were 28,000 objects for sale in-world, nearly double the number of virtual game goods for sale on eBay from all other online games combined.²⁷

There is also a high degree of participation in creating the world and the economy. Forty-two percent of *Second Life* users create objects from scratch using the built-in modeling system, and more than 44% have successfully sold an object to another user.²⁸ Seventy-seven percent have bought one or more objects from other users, and 90% have modified their avatar.²⁹ The average user spends more than one hour per week just on their avatar's appearance.

The collaborative nature of *Second Life* has also led to a strong and diverse social network, with users linked by both group memberships, chatting, and internal instant message ("IM") buddy lists. In *Second Life*, chat provides a local method of communicating, such as saying "hello" to an avatar standing near you, while IM provides a private method of communicating over any distance. In *Second Life*, IM requires both participating users to have met and exchanged "calling cards" prior to engaging in IM. Again using October 2003 data, 2017 users sent 1.6 million lines of IM and 2.96 million lines of chat.³⁰ Sixty-eight percent used IM and communicated with an average of fifteen different friends, while the top 10% of

connectors communicated with over 150 different people!³¹ Sixty-nine percent of users belong to at least one group and there are ten groups with more than one hundred members. While it has been argued that conflict is required to build strong social bonds, this is obviously not the case in *Second Life*.

True Creation

The desire to create and customize is a powerful force, and the distinction between mods and the *Ultima Online* piano illustrates a critically important point. Mods allow the creators to actually change the behavior of the game. The piano, on the other hand, is not a piano and cannot be played. It may look like a piano, but it is only a stack of crates and fish steaks. This is an excellent example of the difference between crafting and creation.

Crafting Versus Creation

Crafting is not creating. While nearly synonymous in normal English usage, it is vitally important to understand what is meant by crafting in MMORPGs. Crafting is the process of advancing your character, or “leveling”, through repetitive generation of game objects.³² Leveling relies on a complex system of skills and progressions that allows the player to unlock new abilities, visit new portions of the world, and generally become more powerful. The objects generated through crafting are chosen from the thousands provided by the developers,³³ and may be used by the crafting player, sold to other human players or sold to non-player characters (“NPCs”) added to the game solely to act as buyers. These automated buyers are important because user leveling produces large quantities of items that are not useful or desired, so the NPCs are required to drain the unwanted items from the system.

In the real world, objects are created out of component parts of lesser value. A watch, for example, may be built from a few ounces of metal and a piece of glass. Despite the fact that the raw materials have negligible value, the watch may be extremely valuable due to time and effort added in order to create a functional watch. This critical type of added value is everywhere in the real world but is conspicuously absent from virtual worlds--the *Ultima Online* piano can't be played.

Many crafting systems involve the gathering of “raw materials,”³⁴ and newer MMORPGs are adding more complicated schemes,³⁵ so it might appear that crafting adds value in the same way as real-world creation. This is not the case. Developers use crafting based on “raw materials” to slow the rate of production, to limit the crafting of the best items, and to extend the life of content by obscuring which items are the best. Production is slowed because users must take the time to acquire the correct combination of raw materials. Crafting of the best items is limited through artificial scarcity of raw materials. By presenting the users with a larger design space to search through, these items take more time to discover and to spread through the community. However, the users are still just choosing from the set of objects that the developers built into the game, and competitive pressures combined with communication between users will force rapid convergence onto the best items. The value of some of these items will be increased due to scarcity but this is fundamentally different from the value added in real world creation. Users can’t truly innovate because they are still just choosing from the items supplied by the developers.

Therefore, crafting will not work for the Metaverse because crafting has three critical problems. First, new content will not be created because the players are simply reusing content that was provided by the developers. Second, when users craft they are not adding value in the way that real-world creation does. Third, most of the objects that users take the time to craft while leveling have no market.

Users of the Metaverse need the ability to create. They must be able to create truly new objects, to add value and innovate during the process of creation, and the market must be allowed to determine which creations have real value. This requires an entirely different approach to creating in-world objects.

Atomistic Construction

Developers have long understood that creation requires a paradigm shift away from crafting. Atomistic construction, which relies on simple, easy to manipulate pieces that can be combined into large and complex creations, provides one solution. Referring to atomistic construction, Raph Koster stated at the 2002 Game Developer’s Conference:

So we can move to a meta-level of the crafting experience. We can try to take a step up and say, “We can do what Lego did,” which is give them the building

blocks [. . .] that's a different level of authorship than what we are used to, but it's a really *exciting* area of authorship.³⁶

Despite this knowledge, atomistic construction is not widely used because it is extremely difficult to implement. True flexibility only appears when the components assembled in arbitrary ways function and exhibit both predictable and emergent behavior. The balance between the two is critical.

Predictable behavior allows users to have some idea of how to explore the design space they are offered. People are better able to approach problems when some constraints are applied. Predictable behaviors such as “objects fall under the effect of gravity” or “objects collide with each other” provide these constraints.

Emergent behavior occurs when a set of rules interact in interesting and unexpected ways to allow experimenters and innovators to create truly new creations. For example, users working with the predictable rules of gravity and collision could have a contest to see whose catapult could throw an avatar the farthest or a user could attempt to build a chain of dominoes across the landscape.

While simplified online examples exist,³⁷ a real-time, interactive, fully three-dimensional, physically simulated implementation that allows multiple users to create collaboratively in a shared world is only just becoming technically feasible.³⁸ *Second Life* is the first and only persistent state world to offer its users this palette for online creativity, and it provides an exciting glimpse of the future of user creation and world building.

Atomistic construction becomes even more exciting when it exists in a collaborative environment where users can leverage their strengths. Specialization abounds in *Second Life*, with users focusing on everything from acting as project managers, salespeople, agents and event coordinators, to creating script code to add behavior to objects or creating the two dimensional textures that are applied to the objects. The combination of these users would allow an event coordinator to plan a wedding that required the project manager to hire builders and artists to build a new church. The coordinator could hire the caterer, dressmakers, and others to complete the objects and clothing for the wedding. Finally, skilled photographers would be in high demand to take in-world snapshots to create the wedding album. This importation of real world skills into the online space is very different from roleplaying online worlds, where random values

combined with the users' time in-game produce "skills" and "powers" that only exist within the limited framework of the game.

Building a motorcycle in *Second Life* demonstrates the power of atomistic construction. It is important to understand that nowhere in the *Second Life* software is there an object called a motorcycle. Instead, the physical simulation supports moving objects and motor forces, so users rapidly began exploring different types of vehicles, including realistic motorcycles that could be driven and sold to other users.

Motorcycles in *Second Life* are made up of a combination of geometric shapes and textures applied to provide color and detail. The geometry is constructed within the online world, so other users can help with the construction and provide feedback. The textures are uploaded into the system and can consist of everything from basic colors to details of engines and tires. The textures are actually positioned and aligned in-world, so again other users can assist in the process. For sounds, the user can upload audio samples to be played when the motorcycle is driven.

Second Life is running a full physics simulation at all times. Simple physical behaviors like falling and bouncing don't need to be created by the residents and are instead as simple as dropping an object. However, the computational power required to fully simulate a motorcycle down to the chemical energy in its internal combustion engine is beyond current server hardware. Therefore, in order to generate higher-level behaviors and effects, a scripting language is used. A script is a small piece of source code that is attached to objects in the virtual world that provides behaviors when it executes. For a motorcycle, the script handles the user's control inputs, triggers animations, plays sounds, and generates the forces to move the motorcycle. The result is a motorcycle that looks, sounds, and behaves something like a motorcycle in the real world. In addition, the flexibility of atomistic construction means that the user could modify a basic motorcycle to make it into a flying motorcycle that trailed ghostly, flaming skulls.

Looking ahead to the Metaverse, atomistic creation has another tremendous advantage because it scales with computing power. While the end of Moore's Law has been promised for years, for at least the next decade or two raw processing speed will continue to increase at approximately the 18-month doubling rate predicted 35 years ago.³⁹ Commodity server machines currently can simulate around 15,000 objects that range in scale from a centimeter to tens of meters, with many of those objects engaging in behavior and physical interaction at any

time. The real world operates on a much smaller scale, from 100 times smaller for even simple mechanical systems to 100,000 times smaller for chemical and biological processes. While computing a real-time simulation of complex mechanical or chemical processes is years away, every doubling of computer performance moves atomistic creation closer, opening up new creative opportunities. One can easily imagine a world where a motorcycle is actually simulating the motion of its engine, the transfer of torque through its transmission, and the complex friction and impulse calculations required as its tires spin loosely in a pile of small, irregular pebbles. Atomistic construction allows the system to smoothly expand what it simulates with increased computing speed in a way that conventional content creation through crafting cannot.

Economic Opportunities

Currently, the strength of online worlds is judged primarily by the number of subscribers they have. As online worlds grow and become more tightly meshed with the real world, a more appropriate measure of strength will be the health of their internal economies, the strength of their social networks, and the level of real-world wealth they generate. Less game-like virtual worlds with vibrant internal economies powered by diversity and innovation become interesting destinations, even for more casual users who do not have dozens of hours per week to spend in online worlds.

The tremendous variety enabled by atomistic construction combined with a free market and widespread participation has allowed *Second Life* users to explore a wide range of in-world professions. Some have become entrepreneurs, opening stores, bars, and strip clubs, and searching out creators to provide goods and services for them. Others choose more altruistic motives and live off of the weekly L\$ stipend. Fads follow innovation and waves of new ideas have repeatedly swept through the population, from wings to protest marches.⁴⁰ With rapid evolution and such a strong in-world economy, it was inevitable that users would want to own their creations.

The Question of Ownership

The status quo in online worlds is that their Terms of Service (“TOS”) include language that, to varying degrees, grants the rights to a user’s creations to the service’s operators. While there has

been some user unhappiness related to these terms, most current online games offer such limited opportunities for creation--chat for example--that it has not become a pressing issue. However, using the TOS to block transfers of virtual goods is a major source of discontent and will be addressed below.

In worlds like *Second Life*, where user creation is a major component of the world and gameplay, a fundamental tension exists between asking the players to create the world and then having the world operators take ownership of everything they make. Users are now starting to recognize this. It was clear that the right choice was allowing users to retain as many rights as possible to their creations.

There is currently a spirited intellectual debate around the question of virtual goods and property.⁴¹ This article will not attempt to do that topic justice. While the argument that virtual goods are property might be flawed when applied to content created by the game's developers, it is clear that content built using atomistic creation is property and needs to be treated as such. Returning to the previous motorcycle example, intellectual property issues apply to it at many levels. The design of the motorcycle could be sufficiently new as to warrant protection. The script that provides its behavior could be particularly clever. A distinctive symbol could be used to let consumers know who built the motorcycle. Perhaps the user would want to write a graphic novel in the real world based around their avatar and motorcycle, and then option the movie rights. Clearly, there are laws that apply to all of these situations. Rather than attempting to recreate intellectual property law, *Second Life's* developers decided to allow real world laws to reach into the virtual world. In November 2003, *Second Life's* terms of service were changed to allow users to retain real-world intellectual property rights to their virtual creations.⁴² The results of this decision will be closely watched in the years to come.

The real-world intrusions into virtual worlds raise important questions. Can play occur in worlds that allow real-world trade in items and currency?⁴³ Does commoditization weaken designers' 1st Amendment protections in creating games?⁴⁴ As with virtual property, a complete review of these questions is beyond the scope of this article,⁴⁵ but a few comments are warranted before moving on to why free markets and innovation are required to build the Metaverse.

The assertion that commoditization prevents play is refuted by the real world, where play clearly exists alongside extensive commoditization. Understanding this requires an important change in perspective, pulling back from tight focus on any particular game within the world to

the level of the world itself. While the virtual world as a whole may be commoditized, various activities within it will choose whether or not they want to be and will apply combinations of technical and social techniques to achieve their goal.

The freedom to create is even more interesting. Yale's Jack Balkin argues that commoditization could apply as a litmus test, where virtual worlds that choose to tightly integrate with the real world lose their 1st Amendment protections.⁴⁶ Commoditization-as-litmus test seems a poor choice for two reasons. First, as this article demonstrates, commoditization is a fundamental part of large virtual worlds. Second, basing 1st Amendment protection on commoditization would be akin to arguing that National Public Radio has greater free speech than a for-profit broadcaster. Perhaps a richer vein would be to approach the regulation of commerce between the real and virtual worlds from the standpoint of consumer protection.

Commoditization, Free Markets and Innovation

Currently MMORPG developers are in a race that they cannot possibly win as they try to stay ahead of the users who choose to commoditize their games' content and currency.

The users are engaged in a highly efficient, distributed search to determine the games' weaknesses in order to exploit them for wealth and fame in both the real and virtual worlds.

Raph Koster has suggested that humans work on puzzles until they master them,⁴⁷ and MMORPG players have the advantage of being extremely well connected to each other.

Therefore, each patch and expansion pack becomes an attempt to stay ahead.

MMORPG gameplay drives its players to treat in-world items as commodities, because most players immediately realize in order to advance their characters they will have to make enormous time commitments to the game. Simultaneously, they learn many of the other players are students with significantly more free time than players with full-time, real-world jobs. Rather than simply not playing the game, time-constrained users can make the rational economic decision to use real-world currency to advance their character rather than time. It is debatable whether or not this is fun, but it certainly has the effect of allowing users to bypass the game designers' wishes about game pacing, advancement, and progress. It also creates a market in real-world currency for game items, game currency and characters,⁴⁸ and rewards cheating⁴⁹ despite MMORPG developers' attempts to block the buying and selling of in-world content.⁵⁰

Real-world markets for game items and currency reduce the amount of time players take to experience developed content by making it available to anyone willing to purchase it. In addition to attempting to block these markets, developers have converged on two approaches to stretching developed content: shards and instantiated spaces. Shards allow parallel exploration of the same content while instantiated spaces reuse content and support rapid development of specific experiences and quests. Shards also reduce the number of users a specific cluster of machines needs to support. They have the disadvantage of breaking the world up into relatively small populations and economies that cannot interact in-world--in other words, into parallel universes--but information about content and exploits still flows freely between residents of different shards. Information about instantiated spaces also moves between users and the rapid development cycles generally associated with small experiences puts limits on their flexibility and variety. So while these techniques extend the life of content, the users continue to rapidly consume existing content and to demand more.

Despite these challenges, developers and publishers should not cling to prohibition. Not only does banning users and attempting to block real-world transactions effectively criminalize and marginalize a large section of the user base, it also fights one of the great benefits that free markets and competition bring to economies: innovation. As has already been discussed, online games have a tremendous creative resource in their players and atomistic creation provides limitless creativity. By allowing those users to freely compete in open markets, developers allow innovation to provide tangible benefits both to the innovator and the world itself.

Recently, “The Sleeper,” a supposedly invincible monster in *EverQuest*, was killed through heroic effort and teamwork on the part of hundreds of users.⁵¹ The knowledge of how to kill that monster is now available to any *EverQuest* player who wants it, and the developers are now in the position of having to spend development time and money to create a new invincible monster for the game. There was a clear desire to avoid this extra work. Indeed, the first serious attempt to kill “The Sleeper” was stopped by *EverQuest* developers.

In a world where user created content rules and free markets allow creators to compete with each other, demand for a new invincible monster would drive users to create multiple successors. Developers would not have to fear their users’ ingenuity. Many of these successors would rapidly be exposed as flawed or uninteresting, but there would be some that were exciting and worthwhile. A monster could be introduced with a new play mechanic that challenged

players to defeat it in previously unexplored ways. By allowing free markets within worlds with true creation, developers grant their users power to innovate and to compete with the developers themselves. Developers should welcome this competition. The developers have enough inside knowledge, and the ability to alter the underlying source code, so their content should be cutting edge without needing tariffs or their equivalents to protect their place in the market. If a world's users are producing better content than the developers, then the developers should get out of the content business!

Of course, it may be inevitable that the residents of virtual worlds supplant developers. In the real world, innovation is the driving force behind sustained economic growth, but what factors maximize innovation? While obviously a complex issues, property rights⁵² and information cost⁵³ appear to be the primary drivers, although significant tensions exist between the two.

Not every creator wants to capitalize on her work, but the potential to monetize creativity can be a powerful motivation. In virtual worlds, business can provide a context for creation. This is especially important in generalized spaces like the Metaverse, where the lack of a clearly defined game or progression can lead to confusion. Ownership, as will be discussed in the next section, is also necessary to support economic links to the real world. Historically, intellectual property law created limited monopolies in order to provide incentive for creators to invest the required time, effort and money.⁵⁴ These protections are just as important for virtual world creators as they are for creators in the real world. However, these protections must be balanced against the cost of information.

Information cost is a critical component of any economic activity. The lack of information leads to distrust, increased transactional costs and, ultimately, to less innovation. Reductions in information costs, which also encompass travel and communication costs, have driven the transition to less centralized forms of government, from bands to monarchies to democracy, and corresponding increases in efficiency and economic strength. Decentralization has been so effective, that modern businesses are following society's lead, with even large corporations adopting democratic and market-based approaches.⁵⁵ Large potential payoffs aren't sufficient to force innovation, so laws and regulations that limit information flows actively impede economic growth. As Nobel Laureate Douglass C. North explains:

[T]he most fundamental long run source of change is learning by individuals and entrepreneurs of organizations. . . . The greater the degree of monopoly power the lower the incentive to learn.⁵⁶

Before the modern era of strong intellectual property, balance was maintained between protections and information costs, but now it is shifting towards the creator.⁵⁷ Fortunately, better intellectual property regimes exist.

In the real world, Creative Commons provides a set of licenses that attempt to maintain a better balance between the rights of creators and the cost of information.⁵⁸ Creative Commons recognizes that not every creator needs or wants their works to be completely protected. In fact, many creators want to enable wider distribution and copying in order to increase awareness of their works.⁵⁹ Creative Commons allows those creators to take advantage of licenses built on top of existing intellectual property law that allow numerous choices about modification, attribution, and commercial uses.⁶⁰ Creative Commons becomes even more exciting within the context of virtual worlds.

Virtual worlds, as has been pointed out,⁶¹ have enormous potential for infringement. Everything is fixed, so many behaviors not normally protected in the real world, such as conversation or dancing, immediately become protected in virtual worlds. As such, it is easy to imagine a situation where legal concerns overwhelm the ability to share information, thus damping innovation. Creative Commons provides a method for avoiding this trap.

By allowing creators to easily choose licenses that best match their needs, and by allowing other creators to easily search for Creative Commons licensed content, a virtual world that used Creative Commons would provide far lower information costs than those did not. Much like the real world, creators would quickly take advantage of Creative Commons licenses to give away older and more commoditized creations in order to raise awareness of their products and to gain new customers. New creators would be able to easily find learning material and would increase the overall competitive level within the virtual world. More importantly, Creative Commons provides a means for residents to share within a legal framework that functions both within and outside the virtual world.

Creative Commons, with its emphasis on copying with some limitations, naturally aligns with virtual property. Virtual items, after all, have no marginal cost of reproduction. Code and regulations attempt to prevent duplication, but this is clearly artificial scarcity. In fact, there are

many that believe that attempts to prevent copying are simply doomed to failure.⁶² Virtual worlds will, out of necessity, pioneer solutions to virtual and digital property long before the real world does. By succeeding at this, their economies will enjoy a dramatic competitive advantage over the real world's.

By making the right intellectual property decisions, virtual worlds have the potential to be far more innovative than the real world, while still providing sufficient incentive for creators. This creative power leverages commoditization rather than fearing it. This is critical, because commoditization of virtual goods is happening whether developers want it to or not. Neither buying nor selling is an isolated behavior, and users are voting with their feet, using eBay and specialized auction and purchase sites, especially for worlds that explicitly ban it.

PlayerAuctions, a site that grew as a result of eBay's ban on *EverQuest* items, boasts over 100,000 members.⁶³ Level 50 *EverQuest* characters cost \$500 or more. It is easy to see why worlds without true user creation are scared of commoditization. Fortunately for the Metaverse, free markets encourage exactly the kind of innovation that it will need.

Generating Income and Capital

The commoditization of virtual goods is not enough to create the free markets the Metaverse requires. Players and businesses are already providing users with the advancement they desire, often taking advantage of cheats⁶⁴ and cheaper labor markets⁶⁵ in order to meet demand, but MMORPG operators are responding with legal action⁶⁶ and account shutdowns.⁶⁷ These responses are justified by TOS prohibitions on generating income via the product, although they are not yet a comprehensive attempt to stop item and account sales. The Metaverse must not do this.

Creating the Metaverse is such a tremendous undertaking that it will need to happen in a distributed fashion, requiring the commitment of time and resources from its diverse set of early users and creators. Current MMORPGs demonstrate conclusively that virtual goods can have significant real-world value, and any world that hopes to bootstrap itself into the Metaverse must allow these real-world economic opportunities. Distributed creation combined with atomistic construction's ability to add value to every creation means that the Metaverse must allow moneymaking activities and must allow users to own their creations. However, ownership is critical for another only recently understood reason.

New insight comes from Hernando de Soto's work in developmental economics, *The Mystery of Capital*.⁶⁸ In brief, de Soto argues that when property does not have recognized titles and proofs of ownership, it is not fungible. Thus, the vast majority of the third world's population, despite having valuable assets like homes, land, and businesses, cannot leverage these assets because they do not legally own them. The ramifications are far reaching. Some may not be able to obtain telephone service because their home is not at a legal address, while others are not able to insure their business because there is no business license on record. Most relevant to the Metaverse, untitled property cannot be used to secure loans or to set up a legal business.

On the way to the Metaverse, individuals and businesses will create objects of significant value, and many will be handsomely rewarded for it. However, for some of these creators, the short-term gains will not be their ultimate goal. Instead, these entrepreneurs will see the opportunity to leverage their wealth to create the next opportunity. Individual investors and venture capitalists will be approached first, but if those options fail, the digital entrepreneurs could go to a real-world bank and apply for a loan, using virtual property as collateral. Virtual pioneers are going to have a hard time convincing the bank to give them the loan, but consider how much more difficult the process would be if they do not actually own the property. In the real world, lack of ownership is a fatal flaw in attempts to establish successful free markets.⁶⁹ It would be a mistake to think that virtual worlds will be any different--free markets and property rights are prerequisites to innovation.

In fact, one of the few missteps in *Snow Crash* is that its main character has significant virtual wealth but not real-world wealth.⁷⁰ For the Metaverse to be successful, virtual wealth must be convertible to real wealth.

To the Metaverse

A decade after the first glimpses of the Metaverse, technology is now on the cusp of enabling real, shared online spaces. MMORPGs continue to advance technology and educate users about virtual worlds. They demonstrate that real world wealth can be generated in online spaces. At the same time, MMORPG developers are fighting a rear guard action against the very users who are benefiting from this wealth while struggling to create enough content for their users to consume.

The Metaverse needs to be built differently. It will be so enormous that only distributed approaches to creation have any hope of generating its content, thus users must build the world

they live in. It must expand through viral growth and produce an increasing supply of active creators who create wealth within a generalized virtual world. These residents will draw in the casual users to play games, provide an audience and become customers. This provides both the supply and demand for the Metaverse's enormous free market of goods and services. This free market requires creators to have ownership and rights, thereby generating both wealth and capital in order to fuel growth. Only then the Metaverse tip and the world, both real and online, will never be the same.

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