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## **Law in Virtual Worlds**

**By Rónán Kennedy**

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This article considers the application of real-world law to virtual worlds, new shared spaces that are being created on the Internet. These computer-mediated environments are often fantastic places where magic works, people can fly, and physical appearance can be manipulated at will. However, they are not a fairyland of happy ever after, and they throw up legal issues that are simultaneously novel and familiar, involving questions of intellectual property, crime, and freedom of speech. This article considers the principal issues that have arisen to date, the few instances of litigation and legislation that involve virtual worlds, and how this area of law might develop in the future.

Although these environments have existed only for a short time and have been the subject of sustained interest only for a number of years, they have generated a large amount of academic commentary and a small amount of litigation. This is because the possibility for new ways for human interaction that these worlds create is a source of great fascination and because a great deal of money is being spent on and in these worlds. The academy is keen to explore the theoretical and doctrinal difficulties that are presented by the confluence of innovative technology and intellectual property law. Everyday users of these systems, who invest a great deal of time and often significant amounts of cash in playing the games and developing their virtual identities (and may even derive significant incomes from these new frontiers), are more interested in protecting their individual interests.

It would be tempting to write virtual worlds off as a type of game or a more sophisticated virtual reality system. In fact, these games are part of everyday life for many people worldwide and will become increasingly important as a communications tool and as a method of commerce. It is true that in certain circumstances the law is reluctant to intrude into the rules of a game, but it will do so if the court feels that it is necessary.<sup>1</sup> Although some have called for separate treatment of VWs, regarding these worlds as somehow distinct from the real world and entitled to develop their own courts and laws,<sup>2</sup> as individuals invest their time, personality, and finances into these environments, the legal rules that apply to all of the other aspects of their lives are sure to follow.

In the longer term, VWs are likely to become a very popular interface to the Internet, which means that many of the issues that are being dealt with now in these limited environments will reemerge in a wider context. It would be tempting to assume that these problems can be dealt with in the same manner as similar circumstances in the real world, but often the functioning of the Internet means that private law issues such as contract and intellectual property intrude in ways that have not been an issue previously.

Attaining a proper understanding of the legal issues thrown up by virtual worlds requires a clear focus on what is the real reality (not the virtual reality) of these games. On one hand, they look and feel like games, which might lead the uninformed observer to regard them as trivial and not worthy of careful consideration and certainly not of the protection of the law. In fact, they are becoming significant platforms for human activity and business, with real money being exchanged for virtual goods and services.

On the other hand, once we begin to take them seriously, they look and feel in many ways like the physical world, which makes it tempting to analyze legal problems there by straightforward analogy to existing rules. However, these spaces are computer-mediated. This means that issues of intellectual property arise throughout. Many control access through end user license agreements (EULAs) for software, overlaying contract law as a tool of governance. Also, activities that would be illegal if they were to take place in the physical world may not be criminalized when they are represented on a computer screen. All of this makes examining the application of the law to virtual worlds challenging, complex, and captivating.

### **Virtual Worlds: An Overview**

Virtual worlds have been part of the development of computer technology since they became capable of interactive use.<sup>3</sup> One of the earliest computer games was Colossal Cave, where the player explored an underground network of tunnels. However, these games were limited to textual descriptions of location and to a single player at a time; any interaction was with characters controlled by the computer.

As computer technology developed, with greater processing power and increased networking, programmers developed multi-user games. Although these were still limited to textual descriptions, more than one player could be in the same game and interact with others. These games were generally developed on a non-commercial basis, often just for fun, as the Internet was only available for educational and scientific purposes at the time and commercial networking was limited. These games went under a number of labels: Multi-User Dungeons (MUD), Multi-User Shared Habitat (MUSH), Multi User Shared Experience (MUSE), and so on (collectively known as MU\*, meaning anything multi-user).

As computer graphics improved, the Internet was opened to commercial traffic and more individuals obtained access to broadband at home, online games became more sophisticated. Rather than being text-only, they used graphics to illustrate the player's interaction with the game world. Many built on the success of tabletop and computer-based role-playing games and were based in fantasy worlds inspired by the works of authors such as J.R.R. Tolkien. Commercial games became increasingly complex, with a wide array of races, creatures, and objects, vast maps to play in, and lengthy quests for players and groups of players (often known as guilds) to complete. This new genre is commonly known as a Massively Multi-Player Online Role-Playing Game, or MMORPG. Some games are deliberately non-competitive, without the quest element, and are more of a place to hang out, socialize, and (often) to sell virtual goods and services. These are often known as Virtual Worlds, or VWs. (For brevity, both types of environment will be referred to as VWs in the remainder of this article; from a legal perspective, the same considerations apply to both types of environment.)

## Play in Virtual Worlds

These increasingly complex games have increasingly high development costs, often in the millions of dollars. Ongoing maintenance costs are also high, as the physical hardware and Internet connections required must keep pace with the number of users, while the game itself requires continual changes to ensure that it remains an entertaining and challenging environment for players. Most games therefore charge an initial fee for the game software, along with a monthly subscription fee and perhaps fees for optional modules or upgrades that are released over time. In order to keep players playing (and thus paying month by month), MMORPG characters (also known as avatars, the on-screen representation of the player) will start at a very low level, with only basic skills and equipment, and through time, bring their characters up to a higher level (a process known as leveling) and enable them to undertake more heroic and exciting quest and adventures.

These game worlds will generally have some form of internal economy, where players can buy and sell from each other and from computer-controlled characters. There will be a common currency, such as gold pieces. Merchants may be human- or software-controlled. The latter may be programmed to buy low and sell high, offering opportunities for arbitrage. If they are mis-programmed, players can make massive short-term profits from exploiting the error, leading to floods of money and inflationary pressures. The game developers may have to create means of removing money from circulation, such as short-lived, frivolous decorative items that act as gold sinks.

Although the game developers would often prefer to keep the game economy separate from the real-world economy, the business model that most adopt makes this very difficult. Leveling a character to a point where it can begin to have real adventures takes time, and players with busy lives in the real world don't have this time to give. Therefore, they will often circumvent the limitations of the game by buying game currency, weapons, and equipment or even pre-leveled characters for real-world money from other players.

This real-money trading, or RMT, has become a major industry in recent years, with some players making a living out of meeting the demands of others and companies (often located in low-wage economies) setting up production-line facilities where players do nothing but level up characters or collect items for re-sale, playing for monetary reward rather than fun (known as gold farming).

Responses to this phenomenon by developers have varied. The initial response was hostile, with most not wishing to see the creation of a secondary market in in-game property. However, this has shifted to a realization that this was a valuable opportunity in itself, and some developers offered an officially sanctioned market for game goods (for example, the Sony Entertainment Online Station Exchange). Others made the game currency directly convertible to real-world currency (for example, *Second Life*). One game, *Entropia Universe*, offers a debit card that allows players to access game money in the real world.

The response of players has also been mixed. Although many obviously enjoy the options that it gives them (as they continue to purchase items through RMT), some are against it. For example, in an ongoing class action suit, *Hernandez v. IGE*, a player in *World of Warcraft*, one of the most successful MMORPGs, is claiming that the actions of

the defendants (Internet Gaming Entertainment, one of the most successful RMT companies) have diminished the gaming experience by spamming, gold farming and so on.<sup>4</sup>

It is difficult to give an accurate estimate of the overall size of the MMORPG/VW market, as information on sales and subscriptions is often considered to be commercially sensitive. However, there may be as many as 16 million active subscriptions to MMORPGs worldwide,<sup>5</sup> and estimates for VW users are as high as 36.5 million, with perhaps 10.5 percent of those being active.<sup>6</sup> The amount of RMT is difficult to estimate, as much of it is a black market, not sanctioned or even permitted by the game developers, but has been put at \$2 billion.<sup>7</sup>

Online computer games may seem like a frivolous past-time and one that shouldn't concern lawyers any more than a game of snakes-and-ladders, but this is a lot of money to spend on things that don't really exist. With a large number of people involved in a market of that size, problems arise with real-world repercussions.

Some of these issues are obvious: With financial transactions, theft and fraud can, and do, arise. Intellectual property questions also abound: Copyright claims are used as a means of controlling RMT; copyright also arises with game characters and settings; and trademarks are infringed. Freedom of speech is a problem, as elsewhere on the Internet. While not as high profile, social policies on taxation, gambling, and banking are also important and likely to lead to regulation in the near future. To begin with, however, the particular nature of the legal environment must be understood.

### **Legal Issues in Virtual Worlds**

Virtual worlds are strange environments from a legal perspective. Although they look and feel like the real world, the commercial context in which most operate, the impact of intellectual property law, and the way in which game developers use contract law to protect their interest make them legally distinct.

Consider, for example, a game of marbles in a playground. Player A may win marbles from Player B in the game itself. If B complains to a law enforcement official that A has stolen his or her marbles, the response is more likely to be that B has lost his marbles. A has won the items under the rules of the game.

Alternatively, A may seek to exchange marbles with B, because B has more attractive, or lucky, or rare marbles. A may even offer B money for a particularly desirable marble. B may think that A is taking the game too seriously, but there is no legal reason to prevent the exchange. Observers or other players cannot legally prevent this exchange from taking place. If A goes too far, they can simply refuse to play with him.

By contrast, consider the same interactions in the context of an online game. If A obtains items from B in the normal course of play (even by in-game theft), that at least stands in the same way. However, if A seeks to trade with B outside of the game world, many legal issues arise. A and B have entered the game under an EULA, which may prohibit this trading. Because the game is computer-mediated, every interaction with it involves copying, so the developers may be able to raise copyright as a bar to trading. The items in question may have been created by Player C, who did not authorize the

copying. Player D, who objects to player A's having an advantage, has a contract with the game developers and can seek to have player A excluded. These issues combine to create a mesh of new legal problems for players.

### **Crime in Online Games**

Given the amounts of money involved, it is inevitable that crime is a feature of online games. Fraud is probably the most common problem. This occurs during RMT, which is a system that depends very much on mutual trust. The common means by which RMT takes place is for the buyer and seller to agree to a price outside the game, through a dedicated Web site or an auction such as eBay. They will agree to a mechanism for money transfer and arrange to meet at a specific location within the game, where the transfer of the item will take place. The potential to defraud is obvious—if the seller is paid first, he may not turn up; if the buyer is to pay later, he may never pay—and the injured party will often have no recourse, as the sale may not be officially sanctioned or even permitted. A complaint to the game developer may even lead to the closing of the injured party's account, as both of the parties to the trade are in breach of the game's EULA.

Theft is another issue. Here, it is important to distinguish between in-game and out-of-game theft. Characters in a MMORPG may steal from each other, and some character types specialize in this type of activity, but this is arguably part and parcel of the risks that a player takes within the game. The courts are unlikely to intervene unless there is actual cheating (actions that are not permitted by the rules of the game) taking place.

Out-of-game theft is a more serious matter. Here, a player attempts to obtain access to another player's virtual items through subterfuge. This will involve the type of social engineering attacks that have become well known in other parts of the Internet, such as phishing (establishing look-alike Web sites that fool unsuspecting users into entering their passwords) and other means to obtain unauthorized access to a player's account. In extreme cases, some have resorted to kidnapping as a means to obtain a password.<sup>8</sup> Once this is obtained, the criminal will transfer the goods to another account and sell them for money.

Criminal law applies in virtual worlds as it does in the real, although not always in the way that the players might expect or like: It looks at the real consequences of actions, not the on-screen representations.<sup>9</sup> However, because existing laws may not encompass VW conduct that has harmful effects, real-world legal systems are taking steps to come to grips with these new forms of crime. Korea has enacted legislation that outlaws the use of hacking software or engaging in large-scale RMT in VWs;<sup>10</sup> the courts in China have affirmed that the theft of virtual property is punishable as criminal behavior;<sup>11</sup> and the British government is considering legislating to deal with crime for virtual worlds.<sup>12</sup>

### **“Property” Disputes**

Issues of property and ownership are fundamental problems in VWs. The initial question is whether any of the items involved are proper objects of property law to begin with.<sup>13</sup> These are, after all, games. Just as the law would be reluctant to intervene in a game of marbles, it is likely to be reluctant to intervene with minor disputes over game

items. However, as we have seen, these items may have significant monetary value, and a dispute over ownership may have very real consequences for those involved. Where should the courts draw the line? One suggestion is to adopt a “rule of permeability”:

The more the boundaries between a virtual environment and the real world are permeable, the more the virtual property in that environment is “like” property in the real world. At some point along this spectrum of permeability, virtual property is sufficiently like real-world property to be legally treated as common law property.<sup>14</sup>

Applying this rule is only a beginning. The fundamental difficulty with online property disputes is determining who owns what. Contract law serves as a gatekeeper to VWs and often changes the legal ownership of content from what the player expects. A player who devotes a great deal of effort and time to developing a character in an online game, investing in possessions and property and creating a personality and provenance for it, will find that the EULA will prevent the re-use of this character in another context, such as a comic strip, because the game developer owns the copyright to everything in the game, including user-generated content.<sup>15</sup>

In the most interesting VW litigation to date, *Bragg v. Linden Research*,<sup>16</sup> the plaintiff was engaged in buying and selling land in Second Life. Linden Labs alleged that he had exploited a flaw in their software in order to purchase land at below market value and froze his account and assets. He sued, claiming essentially that the land that he owned in the game was his property and could not be seized by Linden Labs. The case eventually settled, but not before the court decided, as a preliminary point, that the Second Life terms of service (TOS) were a contract of adhesion and that the clause in the TOS that required that disputes be referred to arbitration was procedurally and substantively unconscionable and thus invalid.<sup>17</sup> The unfortunate consequence of this, for observers, was that there was no court ruling on whether the plaintiff’s argument would have been accepted, but a judgment on the issue is only a matter of time.

### **Copyright Infringement in Virtual Worlds**

Given the nature of the technology, copyright issues are the most obvious source of legal problems in VWs. These arise in a number of ways: when players create characters, trade within the world, and trade outside the world.

#### **Copyright Infringement in Character Creation**

Players in online games will often not respect (or even understand the scope of) the intellectual property of others. They will re-use and appropriate elements and characters from other fictional worlds into whatever game they are playing, particularly when they create their own characters. This may constitute non-literal copying and has given rise to litigation in one instance, although it was inconclusive. NCSOFT publishes *City of Heroes*, a MMORPG in the superhero genre. Players in the game can create their own characters. Marvel Comics claimed that this system allowed players to create characters that resembled characters owned by Marvel, such as Wolverine or the Incredible Hulk. The case was settled, and no changes to the character creation system were made.<sup>18</sup> The question of when VW inspiration becomes infringement is still open.

### **Copyright Infringement within Virtual Worlds**

As commerce within VWs develops, copyright litigation follows. Linden Research, which operates Second Life, has blazed an innovative trail in IP-based commerce online, stating that players *own* what they create within the game world. Players can therefore establish businesses within the game, selling goods, including clothing, items of furniture, and so on. Players also buy and sell plots of land, on which they must pay rent to Linden Research and from which they can earn money from tenants and visitors.

There have a number of lawsuits arising from this commercial activity. However, the important cases to date were settled before they went to a full hearing. One, *Bragg v. Linden Research*, has been noted already. The other two involved relatively straightforward accusations of copyright infringement. Although the Second Life software does contain mechanisms to prevent unauthorized copying, this does not always operate correctly. In at least two instances, individuals seem to have deliberately exploited flaws in the system to copy content created by others. In one case (*Eros v. Leatherwood*), the item involved was a virtual bed that would animate the avatars of players who were in it in order to simulate sexual activity. This detail led to a great deal of media attention for the case.<sup>19</sup> In the other (*Eros v. Simon*), the defendant had allegedly duplicated a large variety of items created by a number of different businesses.<sup>20</sup> Both cases were settled.

There is therefore no clear precedent on what rights players can claim in virtual goods. It is significant, though, that the courts were prepared to accept the cases and that, once the unusual context is removed, the disputes are no different from other Internet or copyright cases.

### **Copyright Infringement in Real-Money Trading**

As mentioned, RMT involves the transfer of in-game items from one player to another. The EULA for the game will often prohibit the sale of game items for real money and seek to use copyright law and contract law as a means of enforcing this prohibition. Because everything that takes place in a game world requires the duplication of content, and thus involves the copyright of the game developers, this is enforceable once the offending behavior comes to their attention. The game developers would prefer players to spend their money in the game rather than outside the game. They will also want to reduce the scope of secondary markets, as they are generally called upon to intervene when fraud occurs, even though they derive no benefit from it.

However, as they will generally not apply the large resources required to stamp it out entirely, RMT continues. What has proved somewhat more effective is to prohibit the major Internet marketplaces, such as eBay, from auctioning in-game items. While the alternative of a statutory prohibition on RMT does have the attraction of presenting a possible simple solution, it is likely to lead to a black market and to leave innocent users who have lost property due to theft or negligence without recourse.<sup>21</sup> It would also remove the option for VW operators to allow RMT as a business model, as some do.

### **Trademark Infringement in Virtual Worlds**

Although it seems that trademark infringement is rife in the commercial VWs, such as Second Life, there has been very little litigation to enforce marks in this context. As a



trademark owner is required to police its use or risk losing it, this is liable to become more important as VWs become more popular. Playboy is investigating what seems to be widespread unlicensed use of its marks<sup>22</sup> Miss Universe seems to have begun complaining about similar behavior,<sup>23</sup> and a Second Life user is suing Linden Labs for alleged infringement of the SLART trademark.<sup>24</sup> If high-profile enforcement and litigation results, this may lead businesses to devote more attention to protecting their own marks online.

It may not always be the case that the use of a mark within a game constitutes use in the course of trade.<sup>25</sup> It may also be that the real and virtual markets are sufficiently different that a claim for trademark infringement is not possible, but the possibility of a claim for trademark dilution remains. Game developers should be conscious that, if claims against a user were to be successful, the developer of the VW might be responsible for secondary infringement.<sup>26</sup> The approach of the courts to trademarks in VWs is not yet clear. The City of Heroes litigation included allegations of trademark infringement, but the case settled.

### **Freedom of Speech in Virtual Worlds**

Online games, to date at least, are private spaces, developed and managed by commercial entities or a community of open source programmers. The developers will often have strict policies on freedom of speech, banning offensive character names and conversations. Although the banning of players for speech leads to calls of censorship, for example when a player was banned for posting a story involving the rape of an underage girl in Everquest,<sup>27</sup> there have been no legal challenges to the enforcement of acceptable behavior policies.

While some scholars have argued that players and their avatars should be considered separately in incidents of alleged defamation and that the courts should give VWs wide latitude to resolve such cases under their own rules, the reality is that the courts can and will intrude into virtual worlds when people feel injured by speech.<sup>28</sup> Virtual worlds may be examples of company towns, seemingly private spaces where individuals can exercise their free speech rights, even when the local infrastructure is provided by a private entity.<sup>29</sup>

### **Political Speech in Virtual Worlds**

Hate speech is relatively straightforward as an issue: It will be prohibited not only by company policy (and thus by contract law, as stated in the EULA, which players assent to when they enter the VW) but also by domestic law. This may be a lower standard of protection for speech than in the United States where many VWs are hosted. If the VW is hosted in the United States, it does not need to comply with foreign law, but the tendency is to do so, as providing an environment that permits hate speech is not conducive to success as a business.

However, other forms of political speech can prove more problematic. Some VWs, such as Second Life, have a tradition of encouraging a climate of robust debate. This can lead to political activities that verge on the surreal. For example, a protest against the National Front establishing a presence in Second Life involved pig grenades attached to flying saucers.<sup>30</sup> Some forms of speech are better characterized as apolitical, taking the form of

random, pointless disruption of activities. This phenomenon is known as griefing.<sup>31</sup> However, none of these activities are likely to raise any direct legal issues, unless the protest extends as far as property damage.

### **Sexual Activity in Virtual Worlds**

Sexual speech is more complex. Regulating sexual activity in the online environment has always been problematic. The early text-only MU\* environments were often used for sexual fantasy, and with the graphical possibilities of VWs, this usage predictably exploded.<sup>32</sup> Much of this does not present any particular legal problem. Consenting adults playing out their fantasies in the privacy of their own homes through the medium of the computer screen is generally not illegal in and of itself.<sup>33</sup> However, two particular issues may cause concern.

The first is that the fact that these worlds have a functioning economy with a connection to real-world cash that has led to the development of online escorts—players who specialize in providing sexual services in online games. It is questionable whether this is legal, although it is more similar to a telephone sex service than to prostitution in reality.

The second is that some of the sexual activity that occurs is “ageplay”: a player’s using a character of a different age from the player’s actual age. This itself is not a problem, and the possibility of adopting another identity is often one of the attractions of the online world, although many may find the idea of an adult pretending to be a child odd, if not disturbing. However, when a character purports to be a child and engages in sexual activity in a virtual world, this may be criminal conduct. Although this type of virtual child pornography is not illegal in the United States, it is in many other countries and is also likely to be disapproved of by the game developers.<sup>34</sup> German police have conducted an enquiry into this type of behavior in Second Life,<sup>35</sup> which has led to a ban on ageplay in that VW.<sup>36</sup>

### **Financial Activity in Virtual Worlds**

#### **Virtual Banks**

As the economies of VWs are connected to the real world, financial institutions such as banks have begun to appear. However, these occur in an unregulated way, and there have been instances of fraud. A fraudster operating in the EVE Online MMORPG set up the Eve Investment Bank, offering a high rate of return, but absconded with approximately \$125,000 worth of game currency.<sup>37</sup> One of the principal banks in Second Life, Ginko Financial, collapsed in August 2007, and Linden Labs has since banned banks from that VW.<sup>38</sup> VWs also offer a means by which criminals may engage in money laundering.<sup>39</sup>

This will lead to the regulation of banks in VWs. There are indications that this is beginning to occur. For example, Entropia Universe has sold banking licenses to banks within that VW.<sup>40</sup> However, this is private regulation under contract law, rather than public regulation with the force of the criminal law behind it. As it already seems that some transactions in VWs may be transactions in securities and thus subject to securities laws,<sup>41</sup> it is only a matter of time before legislation to deal with this is enacted.

### **Taxation of Income from Virtual Worlds**

Many people are now earning incomes from VWs. If the hype is to be believed, the amounts involved can be substantial, and some claim to have become millionaires as a result.<sup>42</sup> If this income constitutes real money, it is taxable in the real world. How and why and when this occurs is not yet clear, as revenue services worldwide are only beginning to investigate the phenomenon.<sup>43</sup> (The initial response of one IRS agent to an enquiry from a journalist regarding the taxability of his RMT income was, "That's so weird."<sup>44</sup>) It may be that tax will be imposed at the point at which in-game property is cashed out into the real world.<sup>45</sup>

### **Gambling**

Some players in VWs offer gambling as a service. Concerns about the consequences of real-world regulation have led to gambling being banned from Second Life.<sup>46</sup> However, VW operators, such as Linden Labs, may not be vulnerable to prosecution under the Unlawful Internet Gambling Enforcement Act because it is (technically) not an Internet Web site and because it has no actual knowledge of the gambling that may take place on its systems.<sup>47</sup> UK online gambling law may extend into VWs, although all developers may need to do in order to comply is to obtain a license.<sup>48</sup>

### **Future Legal Issues in Virtual Worlds**

There have been, as yet, no proposals for legislation in the United States that directly deal with VWs, although Congress has held hearings on the topic.<sup>49</sup> The government of the United Kingdom is considering the possibility of legislating for VWs.<sup>50</sup> For the moment, however, the developers rely on contract law as an instrument of government,<sup>51</sup> although as it is not a sufficient tool for the regulation of large online communities and other legal rules, such as property, criminal and constitutional law will have to have a role in VWs in time.<sup>52</sup>

Although the most prominent areas of law in the short history of VWs have been intellectual property, particularly copyright, it is unlikely that any ground-breaking precedent will emerge in these domains in the near future. Once the courts begin to analyze the legal issues, it will become clear that VWs are subject to the same types of legal regulation as the rest of the Internet, and commercial pressures will push game developers to settle cases.

Government regulation is more likely to develop in the area of banking, taxation, and gambling. As occurred with the advent of computer technology in the wider context, specific types of harmful behavior related to RMT may require specific legislation to ensure that it is criminalized. The particular problem of ageplay may also lead to legislation, although modern child pornography statutes are widely drafted to capture computer-generated images.

In the longer term, virtual worlds will become mainstream as end-users can afford more sophisticated and powerful technology. As more everyday activities are mediated through a three-dimensional computer representation, everyday legal disputes will involve intellectual property in new and confusing ways. The challenge for lawyers will be to ensure that virtual reality does not obscure reality and that the legal issues raised are dealt with consistently.

## Notes

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<sup>1</sup> See Allen Chein, “A Practical Look at Virtual Property,” 80 *St. John’s L. Rev.* 1059, 1071 (2006).

<sup>2</sup> F. Gregory Lastowka & Dan Hunter, “The Laws of the Virtual Worlds,” 92 *Cal. L. Rev.* 1 (2004).

<sup>3</sup> For more detailed histories, see Lastowka & Hunter, *supra* n.2, 14-29; Daniel C. Miller, “Determining Ownership in Virtual Worlds: Copyright and License Agreements,” 22 *Rev. Litig.* 435, 439-443; Edward Castranova, “On Virtual Economies,” 6-11 CESifo Working Paper No. 752 (2002), available at [http://ssrn.com/abstract\\_id=338500](http://ssrn.com/abstract_id=338500).

<sup>4</sup> Benjamin Duranske, “Hernandez v IGE,” *Virtually Blind* at <http://virtuallyblind.com/category/active-lawsuits/hernandez-v-ige/> (2008).

<sup>5</sup> Bruce Sterling Woodcock, “Total MMOG Active Subscriptions,” *MMOGChart.Org*, at <http://www.mmogchart.com/Chart4.html> (2008).

<sup>6</sup> Rick van der Wal, “Hype Cycle Benchmarking in 2008,” *Digital Adoption*, Jan. 6, 2008, at <http://digado.nl/hype-cycle-benchmarking-in-2008.html>.

<sup>7</sup> Tristan Louis, “How big is the RMT market anyway?,” *Virtual Economy Research Network*, Mar. 2, 2007, at [http://virtual-economy.org/blog/how\\_big\\_is\\_the\\_rmt\\_market\\_anyw](http://virtual-economy.org/blog/how_big_is_the_rmt_market_anyw).

<sup>8</sup> Jesus Diaz, “Gang Kidnaps Gamer to Get Password Using Fake Orkut Date,” *Gizmodo*, July 20, 2007, at <http://gizmodo.com/gadgets/sex,-crime-and-videogames/gang-kidnaps-gamer-to-get-password-using-fake-orkut-date-280966.php>.

<sup>9</sup> See Orin S. Kerr, “Criminal Law in Virtual Worlds,” forthcoming *U. Chi. Legal F.*, available at <http://ssrn.com/abstract=1097392>.

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