

How Open are Societies in the Virtual?

Towards an Assessment of the Distribution of Power Between Users and Operators*

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Abstract

Virtual environments such as massive multi-player online games and virtual worlds are expected to have an increasing impact on peoples' lives. These virtual environments are not mere play, but are hosting virtual societies and communities. From this perspective, it seems pertinent to ask, what is the degree of freedom that users are experiencing in these virtual environments? In this paper, we try to analyze this question with the help of four lenses—social, ethical, technical, and legal—that expose different viewpoints from which this matter can be looked at. We focus our discussion on two stakeholders—the operators of virtual environments and its users—and look at the distribution of power between them. While our analysis is only a first step towards understanding this question, we believe that our lenses are a useful approach to structure the discussion.

1 Introduction and Background

“Information technology is not in fact neutral in its values; we must be intentional about design for democracy.” – Pottie [40]

The idea of open society was first proposed by Henri Bergson and further developed by Karl Popper. According to Wikipedia, “in open societies, government is responsive and tolerant, and political mechanisms are transparent and flexible. The state keeps no secrets from itself in the public sense; it is a non-authoritarian society in which all are trusted with the knowledge of all. Political freedoms and human rights are the foundation of an open society.”¹

A key attribute of each society is its degree of freedom. The discussion on free societies is mostly grounded upon the physical world that we live in and consequently freedom is often compared among countries and governments. For example, Reporters Without Borders annually publishes a press freedom index that ranks most countries in the world. The importance

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¹http://en.wikipedia.org/wiki/Open_society

of Internet-related freedoms is increasingly recognized, again most prominently in relation to governments. An example of an assessment of freedom on the Internet is a report from Freedom House that compares 15 countries based on three categories: obstacles to access, limits on content, and violations of user rights [17]. Of course, when it comes to freedom there is not strict separation between the physical and the virtual. The 2009 questionnaire of the press freedom index is mostly based on physical threats (e.g., imprisonment), but also has questions on the Internet (e.g., blocking of sites and autonomy of Internet Service Providers).²

We refrain from defining freedom in this paper (keeping in good company), but assume that even though freedom can be defined as “the absence of necessity, coercion, or constraint in choice or action” (Merriam-Webster’s Online Dictionary), it should not mean that there are no rules and total absence of order—freedom must not be confused with anarchy [28, p. xvi]. For example, a free society is still regulated, for instance by law and (behavioral) norms.

The concept of freedom in the context of society can be studied from many different angles. Lessig argues for a free culture [28], while Stallman argues for free software [46]—both are linked to a free society. The *Free Culture Research Workshop*³ in 2008 had a session on *Free Culture in Society* that did ask: “how can we develop a more nuanced understanding of ‘freedom’, that is more inclusive of different perspectives?” In this paper, we explore freedom for virtual societies and communities, which we believe has been a neglected field of study. Our guiding question is: What factors are influencing the degree of freedom that users of virtual environments are experiencing? We explore this question with the help of different *lenses* (or viewpoints) that guide the identification of factors. The lenses that we use are the following: social, ethical, technical, and legal.

Freedom in virtual environments has different stakeholders. In this paper we focus on the *users*⁴ of the virtual environment and the operators that run it. Other stakeholders are lawmakers and regulators.⁵

Our interest in studying freedom for virtual societies is grounded in the believe that society is increasingly shaped in the virtual rather than the physical realm. Also, there are increasing interactions between the virtual and physical, exemplified by location-aware mobile services, augmented reality, and ambient intelligence. Generally, one can expect that virtual environments will enable increasingly rich social interactions, enticing users to increasingly define their lives in the virtual.

When we speak of the “virtual” we have a broad notion in mind. A virtual space can be as rudimentary as an electronic mailing list (e.g., LISTSERV) or a bulletin board [43], and as complex as a 3D virtual world (e.g., Second Life) with social networking sites in between (e.g., LinkedIn). It is often overlooked that massive multi-player online games (MMOGs) spawn vibrant societies [39]. All of these spaces seem to have in common that they enable users to represent themselves with an avatar⁶ and provide mechanisms for communication among users. Communication among users (through their avatars) entails that multiple users have access to the virtual space and that they can perceive representations of each other. In the following, when we do not want to single out a particular kind of virtuality, we use the term *virtual environment*.⁷ Even though we believe that our discussion is applicable across most virtual

²http://www.rsf.org/IMG/pdf/quest_en.pdf

³http://cyber.law.harvard.edu/fcrw/Main_Page

⁴We use a rather technical term here so that it is generally applicable.

⁵Bartle identifies three stakeholders for MMOGs: real-world government, game developer, and players [5].

⁶We follow Wikipedia’s broad definition of an avatar: An avatar is a computer user’s representation of himself/herself or alter ego whether in the form of a three-dimensional model used in computer games, a two-dimensional icon (picture) or a one-dimensional username used on Internet forums and other communities, or a text construct found on early systems such as MUDs.

⁷We do not attempt to give a definition or classification of the different kinds of virtual environments here,

environments, our arguments are probably best understood by having in mind a virtual world such as *Second Life* or *There*.

The rest of this paper is organized as follows. Sections 2–5 discuss the social, ethical, technical, and legal lenses, respectively. Section 6 emphasizes some points and offers key observations, and Section 7 concludes.

2 Social Lens

“Users take it personally and feel very emotional when it comes to their virtual community. To them, it’s as real as the real world.” – Powers [41]

The social lens focuses on virtual environments as persistent social spaces. It seems plausible that virtual environments have the potential to spawn societies and communities. Ford argues that “over time, particular avatars become adopted as prosthesis or extensions of self. These online personae take a place among other persons to form communities. Users identify as members of a virtual community and as particular representations in an environment” [15]. In fact, Pearce has done an ethnographic study with a group of players of *Uru*, a MMOG based on *Myst*, and her account strongly supports the notion that a society did form within the game, including an in-game culture [39].⁸ Nardie’s experiences as a Night Elf Priest in *World of Warcraft* also suggests that MMOGs host communities [33].

When we discuss freedoms in the context of a real society, the role of government in society is paramount. For a virtual society, operators are functioning in the roles of government and “gods/deities” [5]. The operators bring the virtual environment into existence (acting as “gods”) and define policies that apply to the environment (acting like governments). Within this framework, which is controlled by the operator, users can exercise control (in the role of “citizens”). From this perspective, one can analyze the distribution of power based on the form of government.

For example, one can distinguish between authoritarian (rule of the few)⁹ and democratic (rule of the many). Virtual environments where the operator is a commercial entity are, not surprisingly, defined by an authoritarian style where the operator exercises broad control in all aspects of the environment. This is explicitly recognized by the operator of the *EVE Online* MMOG: “the inhabitants of *EVE* could view their society as a dictatorship, since they have had little direct say in how it has been governed” (quoted from [12]). Unlike authoritarian governments, operators cannot be toppled by the users (in a virtual revolution) [16]. The only true choice open to users is to abandon the virtual environment. However, such a decision is not without costs. The higher the costs, the more stakes the user has invested in terms of time, effort, financial resources, and social capital. Thus, while each virtual environment comes with the freedom to leave, it is often not a true choice.

The authoritarian governing of virtual environments may give the impression that commercial operators seek total control. But total control can be hardly a desirable objective because

but refer to the work of others [45, ch. 1] [6] [44] [9].

⁸In the following, we give a brief account of *Uru* and Pearce’s study. In *Uru*, a player belongs to a certain *hood* (similar to a guild), which has a player as mayor. The founding of a hood can be seen as the beginning of a society. This is apparent from the mayor of one hood who after more and more players joined her hood “realised [she] would have to become organized and set some ground rules” [39, p. 89]. *Uru*’s culture is defined by the (emergent) story of the game, artifacts within the game (e.g., each hood has a central fountain where avatars can gather), special language (e.g., users greet each other with “Shorah!”, which means peace in the D’ni fictional language), and common characteristics of the players (e.g., they “tended to value intelligence and problem solving” [39, p. 81]).

⁹According to Wikipedia, an authoritarian government is one in which political power is concentrated in a leader, typically unelected, who possess exclusive, unaccountable, and arbitrary power.

it precludes users from exercising free will, resulting in a virtual environment that is predetermined. Thus, even authoritarian operators have to grant freedoms to users. For example, users are exercising control within the virtual environment with their avatars, interacting with the environment and other avatars. This may seem trivial, but it leads to *emergent behavior* [34]—and *emergent authorship* [38]—that is for the operator both unexpected and—the moment it is happening—uncontrollable.

Ondrejka defines emergent behavior as follows: “Emergent behavior occurs when a set of rules interact in interesting and unexpected ways to allow experimenters and innovators to create truly new creations” [34]. In her Uru study, Pearce encountered several examples of emergent behavior: the exploitation of flaws in the game’s collision-detection to play “avie bowling” with a traffic cone, hide-and-seek, and D’ni Olympics [39]. These examples illustrate that emergent behavior even happens in environments that are authoritarian and tightly controlled. Generally, emergent behavior is a double-edged sword: It seems an important element for users to be creative in the virtual environment, but it threatens the control of the operator.

Operators of virtual environments have come up with mechanisms that allow users to provide input. The City of Heroes MMOG allows content creation in the form of new in-game stories and missions [12]. While this is a form of user-generated content, it is tightly controlled. The MMOG A Tale in the Desert has an in-game mechanism that allows users to petition for new “laws” that may be incorporated into the game by the operator. Users first have to gather support from other users that sign the petition and then users can vote on the law. If there are enough votes for the law “the developers reprogram the game to enforce the law”^{10,11} Even if operators do not provide mechanisms in the virtual environment that allows users to exercise influence on them, emergent behavior can have this effect. This is illustrated by the famous “tax revolt” in Second Life [35]. Previously, Second Life had a rule to “tax” users for the virtual objects that they did create. The rationale for this was that objects in the virtual world take real-world resources to process, store, and transmit. However, this scheme resulted in very high taxes that effectively prevented users from creating on a large scale (e.g., experiences such as gardens) [35]. Frustrated over these new rules, users did stage protests within Second Life in the form of billboards, piles of tea crates (reminiscent of the Boston Tea Party), and setting fires to structures.¹² Indeed, Second Life did change the rules.

The perhaps most advanced model of user participation in a commercial setting is EVE Online. The operator, CCP Games, has established the Council of Stellar Management (CSM), which consists of nine elected representatives from the user community. It functions as follows: “The purpose of the CSM is to provide players with “societal governance rights.” The CSM is elected by player vote, one active account [has] one vote, with the candidates receiving the highest votes winning. The CSM is then empowered to identify the issues of concern to players and to pass them on to CCP (via the CCP Council) for resolution. Topics are raised by players through discussion threads. If a topic receives sufficient support it must be considered by the CSM. CSM members are instructed that in casting their vote regarding whether a matter should be brought before the CCP Council, they should consider whether the issue would benefit EVE society as a whole, rather than merely a select group within that society. The CCP Council is then obliged to consider and respond to as many issues put to it by the CSM as possible

¹⁰<http://www.atitd.com/lawmaking.html>

¹¹The operator makes a distinction between laws and features request. The former are essentially changes to the game that could be passed by a government in the virtual environment, while the latter are changes that require “godly” powers. This is probably the result of: “After a series of proposed referenda that would have altered basic features of the game system, the designers backpedaled and declared certain “feature requests” off-limits [16, fn. 115].

¹²Interestingly, a protester describes the users as “subjects” of Mad King George Linden (http://nwn.blogs.com/nwn/2003/09/tax_revolt_in_a.html)

in person at a meeting in Reykjavik, Iceland (the headquarters of CCP). Each member of the CSM serves a term of six months and is only allowed to serve two terms (consecutive or non-consecutive)” [12]. EVE Online shows that a key challenge that all commercial operators are facing is that of “adjusting to the role of managers of a community rather than merely providers of content” [12].

The main risk for users is that the operator wields its authoritarian power to change the environment without an effective mechanism for users to intervene. One such scenario is given by de Zwart: the “tension between community and controller is common as the platform matures and the developer seeks to accommodate the interests of the largest number of users (or possibly potential users) sometimes at the expense of the early adopters” [12]. From the larger perspective of society, the operator is able to redefine it at will. For example, the operator could erase or change objects in the game that are cultural artifacts. Imagine that a real government had control over books in the sense that it could change the content of published books, or erase whole books. This would allow to redefine a culture and its history. Intriguingly, Amazon has exactly this power within the Kindle “virtual environment”—and made already use of it.¹³

It is an interesting question whether operators that are not driven by commercial interests could support more democratic forms of government. Shirky proposes the Nomic virtual world¹⁴ (as a thought experiment) in which the “constitution” gives users the ability “to both own and alter the environment” by incorporating mechanisms that change the rules as part of the game, thus “making mutability a move in the game.” The Nomic virtual world is inspired by Suber’s Nomic game.¹⁵ In the game there are so-called “immutable” rules that are more difficult to change than “mutable” one, having this effect: “Because the players can first vote to make an immutable rule mutable, and then can vote to change the newly mutable rule, Nomic works a little like the US Constitution: there are things that are easier to change and harder to change, but nothing is beyond change.” Another example is the agoraXchange pilot,¹⁶ a non-commercial MMOG with a geo-political theme where users can discuss and vote on game characteristics. The game has four “decrees” on which the game is based and that cannot be changed. The operators, which describe themselves as “initiators and coordinators,” have been “influenced by various aspects of successful Internet collaborations, including self-regulating community weblogs, open source programming models, and large scale collaborative projects.”

A big looming question for more democratic virtual environments is, will the resulting environment be superior—or at least not inferior—compared to more authoritative government styles? Grimmelmann voices this sentiment: “The players may have as much to fear from other players’ influence on game designers as they do from the whimsy of the designers themselves” [16]. The key point is that in order to find out whether democratic forms of virtual environments are actually viable experimentation is needed. There are a large number of commercial operators with many variations on the authoritative style. It would be desirable to have an equal variation of democratic styles, but such a push can probably only be seriously pursued by operators that are not—or not too much—constrained by commercial and economic interests. Experimentation with democratic styles could lead to the “building [of] a palette of viable political systems”¹⁷ and to emergence of best-of-breed democratic government forms.

¹³<http://www.nytimes.com/2009/07/18/technology/companies/18amazon.html>

¹⁴<http://www.shirky.com/writings/nomic.html>

¹⁵<http://www.earlham.edu/~peters/nomic.htm>

¹⁶<http://agoraxchange.net/>

¹⁷<http://www.shirky.com/writings/nomic.html>

3 Ethical Lens

“The implicit ethics for civil engineers tended toward company loyalty. That is, in the first instance, engineers quietly assumed, despite the ultimate ideal of serving humanity, that they owed obedience to their employers.” – Mitcham [32]

The ethical lens can help in finding answers to what constitutes moral behavior for operators and users. If we assume that virtual environments host societies and that people are increasingly shifting their lives to these virtual societies—and hence increasingly define themselves through them—, then moral obligations and the question of what is a moral conduct assumes a higher importance in these virtual environments and societies as well. Specifically, *computer ethics* applies to the operator because it is concerned with “how computing professionals should make decisions regarding professional and social conduct”.¹⁸ Besides, *information ethics* addresses “the ethical issues arising from the development and application of information technologies . . . concerning informational privacy, moral agency (e.g. whether artificial agents may be moral), new environmental issues (especially how agents should behave in the infosphere), problems arising from the life-cycle (creation, collection, recording, distribution, processing, etc.) of information (especially ownership and copyright, digital divide).”¹⁹

There are several ethics-based discussions and frameworks that can provide guidance for ethical issues surrounding virtual environments. Based on the observation that we live in an “information society,” Mason proposed in 1986 to assess its ethical implication focusing on the concepts of privacy, accuracy, property, and accessibility (referred to by the acronym PAPA) [30]. Mason’s work has been influential for IT ethics; for example, Parrish uses PAPA to analyze information sharing on social networking sites [37].

Virtual worlds ethics in general [51] addresses a wide spectra of issues such as: the ethical implications of the “illusion of reality” in virtual worlds, the ethics of virtual worlds design, the relationship between the ethical and legal, virtual worlds as tools for education and health-care/elderly care, the ethics of virtual world communities, experience of the disabled in virtual worlds and privacy and integrity in virtual worlds. Kerbs discusses issues of addiction and cyber-stalking [20]. Moreover, there are important ethical concerns for virtual worlds relating to trust, gender, psychological issues (e.g., interpersonal relations and emotional growth), social issues, and virtual crime (e.g., virtual racism, virtual sexual abuse, virtual pornography and pedophilia, and virtual theft). In general, relevant questions of so-called artificial evil are addressed by Floridi and Sanders [14].

Søraker evaluates in his dissertation the value of virtual worlds by contrasting them with the actual world [45]. His work is a much needed step towards a better understanding of the true impact of virtual environments for users. He focuses on the well-being of the individual user only, but lays the foundation to broaden the research towards societal and cultural issues.

In the context of computer games, Dodig-Crnkovic and Larsson state that Kantian duty ethics places demands on the conduct of game creators in the sense that “by merely focusing on sales and profit, game developers fall into the trap of treating the players as mere means (to an end), thereby violating the categorical imperative to treat humanity ‘as an end in itself, and never simply as a means.’” [13]. This notion readily extends to the operators of virtual environments.

Brey analyzes a number of ethical issue surrounding virtual environments based on Kantian duty ethics and consequentialism. He states that operators of virtual environments “have the moral duty to reflect on the way behavioral options and their consequences are designed in

¹⁸http://en.wikipedia.org/wiki/Computer_ethics

¹⁹http://en.wikipedia.org/wiki/Information_ethics

them” [10]. Specifically, operators have to evaluate what kinds of “patently immoral actions” are enabled by the environment and how such actions should be treated. Brey recognizes that while operators should consider to discourage—or exclude by design—immoral actions they may also want to avoid paternalism of adult users. Thus, when it comes to freedom, operators have to walk a fine line between granting freedoms to users and restricting freedoms based on ethical concerns.

One can argue that the operation of a virtual world entails fulfilling of “professional duties.” For example, since operators fulfill the role of computing professionals, the ACM Code of Ethics and Professional Conduct²⁰ applies to them. This code requires that ACM members²¹ contribute to society and human well-being, and more specifically have “an obligation to protect fundamental human rights and to respect the diversity of all cultures.” Furthermore, for organizational leaders the code states: “Because organizations of all kinds have impacts on the public, they must accept responsibilities to society.” It is an interesting question if this responsibility readily extends to virtual societies or not.

An example that illustrates a pressing ethical issue is the question if the operator has moral responsibilities when terminating a virtual environment. While in the past operators have terminated MMOGs (including Uru, cf. Section 2) and virtual worlds in beta stage (e.g., Koster’s Metaplace [22]), recently a rich virtual world, There, was shut down. This world did exist for more than six years and had over 1 million members.²² There had its own economy based on the Therebuck and user-generated content. The company’s FAQ²³ sheds light on how the termination was handled. It looks like users were not consulted before making the decision. The operator announced the closure only one week before, but it offered a buy-back of the Therebuck and free paint-gun refills. The buy-back is based on conditions (e.g., being a developer in good standing) and follows a rather clumsy procedure involving the mailing of checks. The operator announced that it will keep the chat feature (ThereIM) “going as long as we can.” To get developer assets such as model files and textures required to send an email with “Submission IDs” and the requests had to be received one day before the closure. The operator did not sell email addresses or other user information. It decided to not make its software open source.

The closure of There has prompted reactions that show that users have been affected at an economic and emotional level.²⁴ Currently, it appears that commercial operators are purely driven by economic concerns. This explains the short time from notifications to closure. Similar to There, Metaplace also announced shutdown about a week before. If operators would acknowledge responsibility towards users, they could plan ahead such that a more user-friendly shutdown became feasible. From an ethical perspective, an operator should make a serious effort to keep the environment operational, even if this means a financial disadvantage. This could be achieved, for instance, by “freezing” the state of the environment if there are no more financial resources to keep it operational, and by “donating” it to an entity that can keep it operational. Such an entity could be set up by dedicated users. The shutdown of Uru by the operator Cyan Worlds shows that a more gentle shutdown is feasible indeed.²⁵

²⁰<http://www.acm.org/about/code-of-ethics>

²¹While the code is directed at ACM members it has broader reach. Courts look to such codes when making decisions (e.g., about liability claims) [1].

²²[http://en.wikipedia.org/wiki/There_\(virtual_world\)](http://en.wikipedia.org/wiki/There_(virtual_world))

²³Official link: <http://www.there.com/info/faq>; backup link: http://www.thereinfo.com/?There.com_is_closed:FAQ.

²⁴To give one representative example: “I was sadden[e]d to hear this news. It came out of the blue and has been very shocking to everyone. ... There are many people that make a living on [T]here, and got one week[']s notice of losing all income. That just doesn’t seem right” (<http://www.virtualworldsnews.com/2010/03/therecom-shutting-down-on-march-9th11.html>).

²⁵http://en.wikipedia.org/wiki/Uru:_Ages_Beyond_Myst

“a small group of dedicated fans, many of them the Uru Live beta testers, were allowed to maintain their unofficial servers, called ‘shards’. Cyan released binaries of the original Uru Live servers and coordinated with the fan shards so that players could verify their authentication keys, necessary to play the game. The shards were often unstable and no new content was released; rather, they provided a place for fans to socialize. . . . While Cyan devoted its time to Myst Online, it promised not to shut down Until Uru in the meantime, although it would offer no new authentication keys. . . . Cyan reacquired the rights to the game and announced that it would give the Myst Online source code and tools to the fans, making the game an open source project.”

From the perspective of the PAPA framework, the shutdown of a virtual environment would fall under accessibility. When proposing PAPA, Mason discusses accessibility mostly from the viewpoint of the social and economic impacts of the digital divide [30]. Parrish refocuses accessibility to access control of personal content by the users (through mechanism provided by the operator) [37]. Both did not see the threat that users may lose access to digital system and information completely. This loss includes virtual assets (e.g., user-generated content and virtual money) as well as virtual social capital.

A key problem that we see is that there is no visible “yardstick” to assess and compare the conduct of operators in terms of ethical concerns. If such a yardstick in the form of a dedicated code of ethics was available and acknowledged, users could more easily put pressure on operators by pointing to the code. More generic codes of ethics such as the one from ACM can be valuable to provide overarching principles to operators, but there need to be more specific codes as well. For example, Kuntze et al. discuss ethical codes specifically for virtual worlds in the context of medical therapy [25]. In a sense, there is an analogy with the legal lens (cf. Section 5), where the more generic legal framework also needs a mechanism to account for the idiosyncracies of virtual environments.

4 Technical Lens

“If the history of computing and technology teaches us anything, it is that what at first glance appear to be obscure protocols and technical debates are in fact social practices with significant cultural consequences.” – Boellstorff [8]

This lens addresses the technical infrastructure of virtual environments. As the introductory quote illustrates, technical characteristics have a strong impact on other lenses. There are many technical characteristics of a virtual environment that impact the power distribution between users and operators: software architecture, availability of the source code, technical standards and protocols, digital rights management, and so on.

Virtual environments typically have a client-server architecture. The server side could be a single machine, but in practice it can scale up to massive distributed server farms. It has been reported that Second Life can accommodate about 40 users per server [24]. The client (or viewer) that connects to the virtual environment is an application that is typically provided by the operator for download. Depending on the environment, scalability and performance requirements for the server- and client-side and the network can differ significantly. For example, comparing World of Warcraft and Second Life, Symborski found that Second Life had more than 20 times the bandwidth load [47].

The physical servers are under the direct control of the operator. The same holds for the software that runs on the servers. Users have control over the client in the sense that it runs on their own hardware, but legal restrictions typically grant only the right to execute the client

software. Specifically, there are reverse engineering restrictions. The prohibition in Second Life's Terms of Service is a representative example: "you may not modify, adapt, reverse engineer (except as otherwise permitted by applicable law notwithstanding such limitation), decompile or attempt to discover the source code of the Linden Software."²⁶

Many commercial operators see the client software as a competitive advantage and trade secret. Another reason may be the operator's hope to prevent users from tampering with the client to gain unfair advantages (i.e., the idea of security through obscurity). Indeed, one of Koster's design rules for virtual world is: "Never trust the client. Never put anything on the client. The client is in the hands of the enemy."²⁷

If source code of the client or server infrastructure is available, users have an additional channel to influence the evolution of the virtual environments. It is encouraging from the user perspective that commercial operators are moving towards open source. Second Life did release its client as open source under the GPL in January 2007. While such a move means a re-orientation in (software) development practices for the operator, it can hope to reap benefits from user input (e.g., bug reports, bug fixes, and novel development tools and approaches). For users, open source can mean more choice and innovation. For example, besides the Official Second Life Viewer, there are now several third-party viewers.²⁸ Some of these are "radical experimental viewers" that advance the state-of-the-art [52], or make Second Life more accessible for users with disabilities (e.g., TextSL). Linden Lab has not open sourced its server infrastructure yet, but it does not seem to rule out this possibility.

Besides open source viewers, there are also open source projects that target the server infrastructure, or both client- and server-side. RedDwarf Server (spun out of Sun Lab's Darkstar project) is implemented in Java and licensed under GPL v2.²⁹ It has interesting technical features to address scalability and persistence [50]. Open Cobalt is an open source project for "constructing, accessing, and sharing virtual workspaces for research and education" written in Squeak and made available under the MIT License.³⁰ Interestingly, Open Cobalt eschews a dedicated server infrastructure by "leveraging a peer-based communications protocol to synchronize identical simulations running on a distributed set of machines." This means that the infrastructure "operates with data stored on people's own computers"³¹ (violating Koster's design rule). The perhaps best known open source project is OpenSimulator (or OpenSim), under BSD license.³² It is a server platform compatible with Second Life in the sense that the same viewers can be used for both. There are commercial operators such as InWorldz³³ who run virtual worlds based on OpenSim.

As discussed, virtual environments that are based on open source allow users to more directly influence its technical direction. However, since the operator runs the server software on its own technical infrastructure, there is no fundamental shift in the power balance. The operator may yield more power to the user, but it is not required to do so. For example, from the user perspective, InWorldz is not fundamentally different from other commercial operators even though it runs open source software.

Open source coupled with open standards promises to give users more power because they can migrate from one virtual environment to another more easily. For example, Second Life compatible viewers can be used across different virtual environments. Thus, a user may continue

²⁶<http://secondlife.com/corporate/tos.php>, effective date: April 30, 2010

²⁷<http://www.raphkoster.com/gaming/laws.shtml>

²⁸<http://viewerdirectory.secondlife.com/>

²⁹<http://www.reddwarfserver.org/>

³⁰<http://www.opencobalt.org/>

³¹<http://chronicle.com/article/After-Frustrations-in-Second/64137/>

³²<http://opensimulator.org/>

³³<http://inworldz.com/>

to use a familiar viewer when switching virtual worlds. Movement of avatars across virtual environments is another example that gives users more autonomy. OpenSim's Hypergrid is a protocol that allows to interconnect regions run by different operators. Users can "teleport" their avatar to a different provider, which hosts them as a "foreign user."³⁴ There is also an emerging standard to interconnect virtual worlds, the Virtual World Region Agent Protocol (VWRAP),³⁵ in which Second Life is involved.

Tools for data export, import, and transformation make it possible to migrate virtual objects from one environment to another. For Second Life, the Second Inventory tool can be used.³⁶ This kind of operability allows large-scale migration of user assets. To single out one example, the creator of Soror Nishi Beach moved her creations from Second Life to InWorldz because of high Land Use Fees:³⁷ "I am paying 650% more per prim [in Second Life] than I would in InWorldz."³⁸

The OpenSim Archive (OAR) format allows to export and import data (e.g., objects and terrains). This allows users to move content from one region or grid to another. Winkler states that "however, most content creators lack the ability to generate OAR files, so they are limited to developing on each grid or region where they want their content to be available" but believes that "technology advances will enable these content creators to readily move their content around and make it more widely and readily available" [53]. According to Korolov, "Second Life and OpenSim are currently the only examples of cross-vendor compatibility as individual objects and scripts can be moved from one platform to another with little or no modification" [23]. The rather ambitious MPEG-V project wants to enable interoperability between a virtual world and the real world or other virtual worlds.³⁹ If such standards are in place, they have the potential to mitigate the risk of vendor lock-in for the users. In principle, if there are multiple environments that adhere to the same standards then users can easily migrate between them. For example, in the best case a user would be able to directly transfer data (e.g., virtual goods and the look-and-feel of the avatar) from one operator to another.

As mentioned before, the benefits that users can reap from open source are mitigated if run by a commercial operator. Thus, a logical next step for more user control would be to replace the commercial operator with one set up by users for users. This could be realized, for instance, with a community-driven foundation that operates the virtual environment. Such a scenario would have been rather difficult to realize not too long ago from a technical perspective because a virtual environment typically requires huge computing resources in the form a server farm.

However, the emerging paradigm of cloud computing seems to provide a viable solution because it offers elastic computing resources available on a pay-as-you-use basis coupled with little up-front commitment [2]. For example, Amazon's EC2 sells computing resources in the form of a virtual machine for a few cents per hour and new instances can be added in a few minutes. Clients can immediately use the service on the basis of a click-wrap license, paying with credit card. Thus, a virtual environment could be hosted on Amazon's virtual machines. Of course, the cloud provider has to get paid for its services, so cloud-based virtual environments still need a viable business model in some form. Besides Amazon, there are an increasing number of cloud providers. There is also the issue of vendor-lock in the sense that cloud operator may not be easily switched, but, again, emerging open standards should alleviate this concern in the future.

Another issue that is easy overlooked is the fact that virtual environments are based on the

³⁴<http://opensimulator.org/wiki/Hypergrid>

³⁵<https://datatracker.ietf.org/doc/draft-ietf-vwrap-intro/>

³⁶<http://www.secondinventory.com/>

³⁷<http://nwn.blogs.com/nwn/2010/07/losing-soror-nishis-beach.html>

³⁸<http://sorornishi.blogspot.com/search/label/sorornishibeach>.

³⁹http://mpeg.chiariglione.org/working_documents.htm#MPEG-V

Internet. While the Internet is based on open protocols, the physical communication infrastructure is owned by Internet Service Providers (ISPs). Thus, just as other services that use the Internet there is the threat that ISPs may forego the principle of net neutrality [49]. For example, ISPs could slow down or block communications of a certain protocol. Of course, cloud providers could also violate neutrality by discriminating on the code that gets executed on their infrastructure. Currently, “cloud neutrality” seems only a hypothetical concern though.

5 Legal Lens

“The back of an EverQuest strategy guide states: ‘You will rule the Planes of Power!’ Sony Online Entertainment (SOE), EverQuest’s corporate owner, . . . places legal restrictions on player behaviour within Norrath by virtue of a blend of intellectual property rights and contract. So, actually, it would seem that SOE (and not you) will rule the Planes of Power.” – Lastowka [27]

This lens looks at virtual environments from a legal and regulatory perspective. Considerations are, for instance, applying existing law to virtual environments, development of legal theories in response to virtual environments, and possibly dedicated laws to regulate virtual environments.

The power distribution between the operator and users is most palpable in the written contracts provided by the operator: Terms of Use/Service (ToS), end-user license agreement (EULA), guidelines for user conduct, etc. In this paper, we do not discuss the legality of these contracts. In practice contracts between the operator and users come with significant legal uncertainty. From this perspective, one can argue that the foundation on which virtual environments are built resembles rather quicksand than stone.

One concern is that these contracts are difficult to comprehend for the average user. At the same time, they are highly relevant to the user because operators use them to put restrictions on users’ rights and conduct. Thus, users have to read and understand the contracts to assess their rights and obligations. The more users are investing in a virtual environment (e.g., in terms of spent time, depth of social immersion, creation of (privacy-sensitive) content, or accumulation of virtual assets), the more important it becomes for them to understand the contracts. Not understanding or following the contracts can result in the unwanted exposure of private data, loss of virtual assets, or termination of the access by the operator.

Regardless of their legality, the content of these contracts is interesting to analyze because they spell out the obligations that the operator would like its users to meet. Thus, they reflect the de facto distribution of power. The operator typically formulates contracts unilaterally with its (presumed) interests in mind. For example, World of Warcraft’s ToS claims ownership of player accounts and since users have to agree to “no ownership rights in account” the gateway to their virtual assets can be rendered inaccessible “for any reason or for no reason.” Worse, most operators reserve the right to change contracts at any time and seem to expect users to constantly monitor them. For virtual worlds, the following statement is quite typical: “Kaneva reserves the right, at its discretion, to change, modify, add, or remove portions of these Terms at any time.”

On the one hand, the operator may have to change the ToS and other contracts in response to evolution and emergent behavior in the virtual environment. On the other hand, there are little or no restraints on these changes. Consequently, the operator can change its contracts to meet its evolving business needs, which may be detrimental for users. For example, Opsahl of the Electronic Frontier Foundation has tracked the changes of the Facebook privacy policy over the years and concludes [36]:

“Facebook originally earned its core base of users by offering them simple and powerful controls over their personal information. As Facebook grew larger and became more important, it could have chosen to maintain or improve those controls. Instead, it’s slowly but surely helped itself—and its advertising and business partners—to more and more of its users’ information, while limiting the users’ options to control their own information.”

Even if users select an operator based on its contracts, there is no guarantee that it will not later on change its course. Even if the operator strives to be user friendly, it may face economic or other pressures that persuade it to change its course.

In virtual environments that feature an economy, any change to the environment or contracts may disadvantage all or some users.⁴⁰ Users can try to voice concerns and to influence the decisions of the operator (cf. Section 2). For Second Life, there is the SL Democratic Movement⁴¹ (SLDM) which “believes that the governance of [Second Life] by Linden Lab is both in theory and practice completely unbalanced.” The SLDM demands that changes to the ToS are discussed with users before they come into effect and that the ToS becomes more balanced in the sense that users cannot be suspended or evicted at will.

The ToS and similar contracts directly regulate users and users have to agree to them before they can use the virtual environments. There can be also contracts that regulate third-party software that interfaces to the virtual environment. In effect these contracts indirectly regulate users as well. Second Life has the Policy on Third-Party Viewers⁴² that govern certain features and functionalities that (open source) viewers for Second Life have to meet. The policy strives to protect both users and Second Life. Importantly, the policy governs access to Second Life by viewers. It states that “each different version of the Third-Party Viewer must have a unique viewer identifier” and that the operator does “reserve the right to take any and all technological measures we deem appropriate to block a Third-Party Viewer from accessing Second Life.” One can imagine a scenario in which Second Life incorporates these guidelines in their ToS so that it could try to enforce them against tool users and/or tool developers.

Users can challenge aspects of the ToS in court. Second Life had a number of law suits initiated by users. In *Bragg v. Linden* a district court saw the ToS as a contract of adhesion and said “a number of the TOS’s elements lead the Court to conclude that Bragg has demonstrated that the TOS are substantively unconscionable.” Specifically, the court found that “the arbitration clause is unconscionable.” This example shows that courts may recognize that there is an imbalance in bargaining power between operators and users and as a result may refuse to (partially) enforce contracts. However, so far, it seems that legal action has not prompted operators to rethink their approach concerning contracts with users. Grimmelmann makes the point that the operator could use the contracts to give users more power—if they only wanted to: “a suitably motivated [operator] could bind itself through real world measures. It could sign a binding contract with [users] pledging to follow the results of elections; it could also be incorporated with [users] as shareholders” [16].

From a technical perspective it seems feasible that users could run their own virtual environment, replacing the operator (cf. Section 4). From a legal perspective, the users would have to find a suitable legal framework that clarifies, among other things, who owns the technical infrastructure. Shirky is cautious in this respect, saying that “it’s hard for groups to own things without being legal entities. . . . IOUs and social agreements to split the cost won’t get you very

⁴⁰This issue is discussed in more detail by Bartle for MMOGs, who says: “In general, even the tiniest changes to gameplay can have repercussions that ripple through the entire virtual world, affecting things not immediately connected to them” [4].

⁴¹<http://www.sldemocraticmovement.org/faq>

⁴²<http://secondlife.com/corporate/tpv.php>

far.”⁴³ On the other hand, one can imagine users as shareholder as suggested by Grimmelmann, or a business organized as co-operative. Entities such as the Wikipedia Foundations show that user-based organizations can be viable.⁴⁴

6 Key Observations

In this section we offer several key observations—some purposely somewhat provocative—that may impact the current distribution of power.

alternative operators: Virtual environments that are cutting edge and number users in the millions are exclusively run by commercial operators. This can be explained with the high initial development and follow-up maintenance costs. Development costs can range from a few millions to dozens of millions.⁴⁵ It is estimated that the development cost for World of Warcraft was 100 million USD,⁴⁶ and maintenance cost was about 200 million USD for roughly four years.⁴⁷ Maintenance includes staff payroll, hardware support, and customer service.

Because of these costs an operator with little up-front financial resources was difficult to imagine. However, it may now be in reach—at least from a technical point of view—because:

- the open source community has demonstrated that they are capable of “replicating” existing (commercial) software, and also that they are able to innovate on top.
- open source projects have been established that provide client and server capabilities for virtual environments and these projects may catch up to the state-of-the-art of commercial software in the foreseeable future.
- the emergence of cloud computing allows to set up a virtual environment without having large up-front costs and to allocate computing resources on demand on a pay-as-you-use basis.

Less clear is what would constitute suitable business and organizational models. For example, how is revenue generated, and how to realize DMCA compliance?

operator innovation: Currently virtual environments are dominated by commercial operators and these operators are mostly homogenous in their approach on how they run these environments. Indeed, most contracts with users are similar and there is only some variations in the environments that is offered to users in terms of user-generated content, approaches to virtual property, etc.

It is surprising that there is not more variation and innovation on the side of operators, perhaps because of angst of failure. Thus, it seems currently more likely that innovation will come from non-commercial operators. While we are not aware of such an operator, it seems that the infrastructure is in place to make it happen (see *alternative operators* above). The emergence of such operators would have a number of benefits, including

⁴³<http://www.shirky.com/writings/nomic.html>

⁴⁴The Wikimedia foundation was originally planned as a co-operative, but this could not be realized due to difficulties to meet legal requirements of the Florida Statute, where the foundation is organized under (http://en.wikipedia.org/wiki/Wikimedia_Foundation).

⁴⁵According to Ubisoft, a major game for consoles costs around 25 million USD; and games for the next hardware generation may increase to 60 million USD (<http://www.next-gen.biz/news/ubisoft-development-costs-to-double-next-gen>).

⁴⁶<http://kotaku.com/5594862/starcraft-ii-did-not-cost-100-million-to-make>

⁴⁷<http://kotaku.com/5050300/how-much-has-wow-cost-blizzard-since-2004>

- more (true) choice for users.
- highlighting the deficiencies of the prevailing approaches taken by (commercial) operators.
- testing the feasibility of more open and democratic (business) models to “govern” virtual environments.

ethical operators: It appears that commercial operators are (almost) exclusively driven by economic interests and use unbalanced contracts to entrench their interests, perhaps simply to be on the safe side. However, since the operator is ruling a virtual community it can be argued that there is an ethical dimension involved that the operator cannot simply ignore. The more people live parts of their lives in virtual environments, the more pressure operators will face from both users and governments to move towards a less authoritarian model.

It is far from being clear how a more balanced distribution of power could look like and in which environments it would be desirable to start with (but as discussed above at *operator innovation*, more experimental forms of virtual environments may hint at answers). To give one example of a fairly straightforward proposal how operators could move towards a more balanced approach, let’s consider how they could handle the termination of a virtual environment in a more ethical manner.⁴⁸

A commercial operator could promise that if it is forced to shut down a virtual environment, it will enable its possible survival independent from the operator. This would mean, for instance, that the operator

- makes all software open source that is needed to run the virtual environment.
- transfers copyright of content in the environment (or provides a perpetual license to use it), and perhaps other intellectual property rights.
- makes a “snapshot” of the environment so that it can be resumed later on.

If the operator is serious about its commitment, it can codify such a transition in its contracts with users. Such an approach may also provide a guarantee in case of bankruptcy or change of owner.⁴⁹

culture-preserving operators: Several commentators have raised concern that copyright is privatizing an increasingly large piece of today’s culture and that commercial interest to maximize monetization takes precedence over the culture commons. The same observation holds for virtual environments. In a sense, culture is even more locked-in in the virtual than in the real, because it exists solely on the operator’s infrastructure.

⁴⁸Indeed, one can argue that virtual worlds are inferior when it comes to information preservation. Barney claims that digital information and communication technologies “devalue the preservation of communicated information” [3]. Søraker elaborates this point for virtual environments [45]:

“It is a paradox of virtual entities that they are often less durable than physical entities – not inherently, but in practice. Whereas we still have texts that have endured for thousands of years inscribed in clay or papyrus, most virtual entities have a much shorter lifespan. The endless reproducibility of virtual entities means they can last forever – without any loss of quality. This rarely happens in practice, however, and currently the fate of our virtual entities partly lies in the hands of the virtual world providers.”

⁴⁹An analogy provides the handling of personal information in case of bankruptcy. A business that favors an ethical approach could promise to never share such information. Conversely, it could ignore ethical concerns and instead strive to maximize its (financial) gain by making no such guarantees. An interesting case in this context is *FTC v. Toysmart.com* (<http://www.ftc.gov/opa/2000/07/toysmart2.shtm>).

Let's assume Mattel decided to eradicate the culture of Barbie. It could stop to sell Barbie dolls, destroy its stock, shut down its official Barbie web-site, and so on, but of course it could not eradicate existing Barbie objects in circulation because they are not owned by Mattel. Specifically, Mattel could no longer control what people do with copyrighted Barbie material that they have sold or given away because of copyright's first-sale doctrine.⁵⁰ In contrast, the operator of a virtual environment can to a much larger degree eradicate a culture—simply by shutting it down (but there are of course more subtle ways as well, for instance, deleting or modifying all virtual objects that have the same creator). Since the virtual objects that users own are contained within the virtual environment, the first-sales doctrine has no practical relevance (and is probably contracted away anyways). If you acquire a virtual object in Second Life, according to the operator it has to remain within the world and must not be exported.⁵¹

In order to preserve culture and to enable the emergence of a cultural commence, the operators

- should honor the first-sale doctrine in the sense that users are allowed to export virtual objects (even though this may weaken the right of users that sell virtual objects).
- should establish—or at least not impede—something equivalent to the spirit of the Internet Archive's Wayback Machine:⁵² A gateway for users where they can experience “snapshots” of virtual environments.

Mechanisms like these would enable to actually access virtual objects once their copyright expires and to carry them over into a virtual cultural commons.

The above ideas may serve as a starting point for discussion in developing a vision how to make virtual environments more open.

7 Conclusions

“As Lessig famously noted, governance mechanisms may be drawn from a menu of regulatory mechanisms that include norms, markets, architectures, and formal laws. Each of these regulatory modes is apparent and important in governing conduct in virtual worlds.” – Burk [11]

In this paper we have evaluated the distribution of power between users and operators of virtual environments with the help of four lenses: social, ethical, technical, and legal. We see this as a first step towards such an investigation. In further study each lens should be analyzed in more detail. Equally important, there are, of course, interactions between these lenses that should be identified. We believe that the concept of lenses is useful to arrive at a more complementary analysis, while making it explicit that an understanding of this complex issue requires a holistic approach.

⁵⁰The first-sale doctrine is encoded in US copyright law. A similar principle holds within the EU.

⁵¹Linden Lab, Second Life's operators states: “the Second Life ‘permissions system’ does not grant any legal permission to use content outside of Second Life. Even content that is ‘full permissions’ may only be used within Second Life absent a specific license agreement from the intellectual property owner(s) authorizing the content's use outside of Second Life” (<http://blogs.secondlife.com/community/community/blog/2009/08/04/our-content-management-roadmap>).

⁵²<http://www.archive.org/web/web.php>

Besides our lenses, further ones could be added. For instance, research in virtual environments has been addressed by education, library science, psychology, political science, economics, arts and humanities, and sexuality lenses [31]. Especially, an economic lens that explores, for instance, business models would be important. It would be interesting to explore how an operator’s business could be based on an open business model—regardless whether it is based on proprietary or open source software—that is characterized by “doing business in a transparent way by intimately integrating an ecosystem of participants, collaborating in public space.”⁵³

One can also look at virtual environments from the perspectives of text, games, data, and consumers as producers [18] [27]. These perspective may partially crosscut our lenses. The impact and potential that *consumers as producers*⁵⁴ have on virtual environments—in which users are not only passive consumers of information, but actively engage in producing content themselves—remains to be seen, but promises to be disruptive, perhaps also to the power distribution. In previous work, we have analyzed the concept of consumers as producers through social, technical, legal, and economic lenses [21]. A further study of the power distribution between users and operators should weave into the lenses a discussion of consumers as producers.

We have focused our discussion on two stakeholders only: users versus operators. This discussion should be broadened to include more stakeholders, especially real-world governments. Also, users are not a homogeneous group as exemplified by (legal) conflicts among users. Operators are in a difficult position because they have to navigate increasing governmental scrutiny, while listening to users that have complaints about the operator’s policies and about other users’ conduct. Worse, all stakeholders interact in a legal environment that still has to come to grips with virtual environments.

Currently, operators of popular virtual environments are typically commercial entities. All highly successful virtual worlds that we know of are commercial. Users typically have no direct force or mechanism that would allow them to influence decisions that are under the control of the operator. As a result, the distribution of power starkly favors operators. Still, it seems important to stress that ethical issues of virtual worlds cannot simply be reduced to putting the blame and burden on the operator alone. Instead, the ethical lens needs to encompass all stakeholders and the networked system in which they interact.

Our discussion may give the impression that there is an antagonistic relationship between users and commercial operators, but we think this is not necessarily the case. In fact, both users and operators may benefit most if there is a “sweep spot” in the distribution of power along multiple lenses. However, more open virtual environments that provide an alternative to the current (business) model of commercial operators may be able to level the playing field by shifting more power to users and by demonstrating the feasibility of a less authoritarian approach. This in turn may entice—or force—commercial operators to rethink their current approach.

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⁵³http://en.wikipedia.org/wiki/Open_business

⁵⁴Ramifications of this form of information production are discussed by various authors under different terms such as users as conductors [42], user-generated content [26], prosumers [48], consumers as producers [7], remix culture [29], and crowdsourcing [19].

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His main research activities in computer science are centered around software reverse engineering (from source code). His broad interests are to understand the interactions between information technology, law, and society. In previous publications he has explored, among other things, the impact that law has on software reverse engineering and how the concept of consumers as producers manifests itself in virtual worlds. He is a supporter of Creative Commons, which originates from this believe that scientific results should be circulated freely and not under the control of commercial publishers and scientific organizations.

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Her previous research focused on the social impacts of open society on Eastern European transitional countries, following the 1989 fall of the Communist regime. Her interests include observing and analyzing the social impact of virtual technological developments on Eastern European societies.