

Office of the Director of National Intelligence
Washington, DC 20511

DEC 30 2009

Mr. Steven Aftergood
Federation of American Scientists
1725 DeSales Street NW, Suite 600
Washington, DC 20036

Reference: ODNI Case # DF-2009-00035

Dear Mr. Aftergood:

This is in response to your email dated 26 February 2009, received in the Information Management Division of the Office of the Director of National Intelligence (ODNI) on 26 February 2009. Pursuant to the Freedom of Information Act (FOIA), you are requesting, **“a copy of the final report and other finished products (including a DVD) that resulted from a July 2008 ODNI SHARP (Summer Hard Problem) program on virtual worlds and their implications.”**

Your request was processed in accordance with the FOIA, 5 U.S.C. § 552, as amended. A thorough search of our records and databases located two documents (one report and one DVD) responsive to your request. Upon review, it is determined that the report may be released in segregable form with deletions made pursuant to FOIA exemptions (b)(1) and (b)(3). The DVD is denied in full, pursuant to FOIA exemptions (b)(3) and (b)(6).

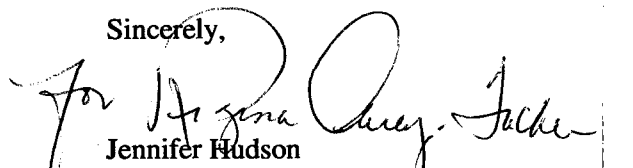
Exemption (b)(1) protects information which is currently and properly classified in accordance with Executive Order 13526. Exemption (b)(3) applies to information exempt from disclosure by statute. The relevant withholding statutes are the National Security Act of 1947, as amended, 50 U.S.C. § 3024(m)(1), which protects, among other things, the names and identifying information of ODNI personnel. Exemption (b)(6) applies to records which, if released, would constitute a clearly unwarranted invasion of the personal privacy of individuals.

You have the right to appeal this determination within 45 days of the date of this letter to:

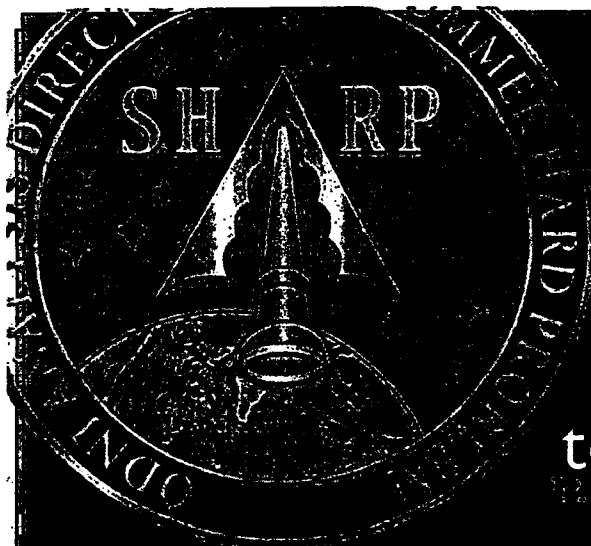
Office of the Director of National Intelligence
Information Management Office
Washington, DC 20511

Should you decide to do this, please explain the basis of your appeal. If you have any questions, please call the Requester Service Center at (703) 874-8500.

Sincerely,


Jennifer Hudson
Director, Information Management Division

Enclosure



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Summer Hard Problem (SHARP) Program 2008
Office of the Director of National Intelligence (ODNI)

technology

culture

3D

Cyberspace

Spillover:

where virtual
worlds

get real

economics

governance

competition

intelligence

SHARP

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The Flip Book: Flip through the pages rapidly to see the transformation of a human face at the bottom, right-hand corner of the magazine.

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Office of the Director of National Intelligence
Deputy Director of National Intelligence for Analysis
Washington, DC 20511

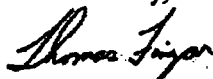
(U) On behalf of the Office of the Director of National Intelligence, I am pleased to introduce this report and accompanying CD titled, 3D Cyberspace Spillover: Where Virtual Games Get Real, produced by our Summer Hard Problem Program (SHARP). These deliverables are intended to stimulate discussion. They are not endorsed by the Director of National Intelligence or the Intelligence Community, nor do they represent the views or policies of the Director of National Intelligence or the Intelligence Community. The information within is drawn entirely from unclassified sources.

(U) Each summer a remarkable event occurs. Over the course of four weeks, professionals from the US Government, academia, the private sector, and state and local law enforcement gather to study, debate, and analyze what has been judged to be a particularly thorny national security problem. The group meets in a secluded location that takes them away from the demands of their offices, so they can think expansively and boldly about solutions.

(U) Participants are encouraged to collaborate extensively with one another and to draw upon their experience while seeking new approaches to the problem being studied. SHARP's overarching goals are twofold: to plant the seeds of cultural change within the analytic community by exposing them to new tradecraft and diverse thinking, and to facilitate the building of networks among analysts and operators from varied backgrounds both internal and external to the intelligence community. This SHARP session employed role-playing to change analytic thinking and to inform the overall analysis. During the session, the participants chose two very creative and unconventional approaches to publicly deliver their findings, because they believed that the essence of the subject matter would be lost in the pages of a conventional report. Therefore, the attached document is presented in magazine style and is accompanied by a visual documentary to introduce the reader to the concept of virtual worlds through example.

(U) I hope you will enjoy reading the report and watching the documentary and discover, as I have, the boundless ingenuity that is unleashed when diverse professionals come together in a pleasant venue with a common passion for solving a problem of national importance. The Office of Analysis is pleased to engender such innovation, and wishes to thank the National Defense University and iD8, a Central Intelligence Agency initiative, for providing session support. Finally, I greatly appreciate the contributions of the National Counter Intelligence Executive (NCIX) for its exemplary leadership as SHARP's first Topic Champion.

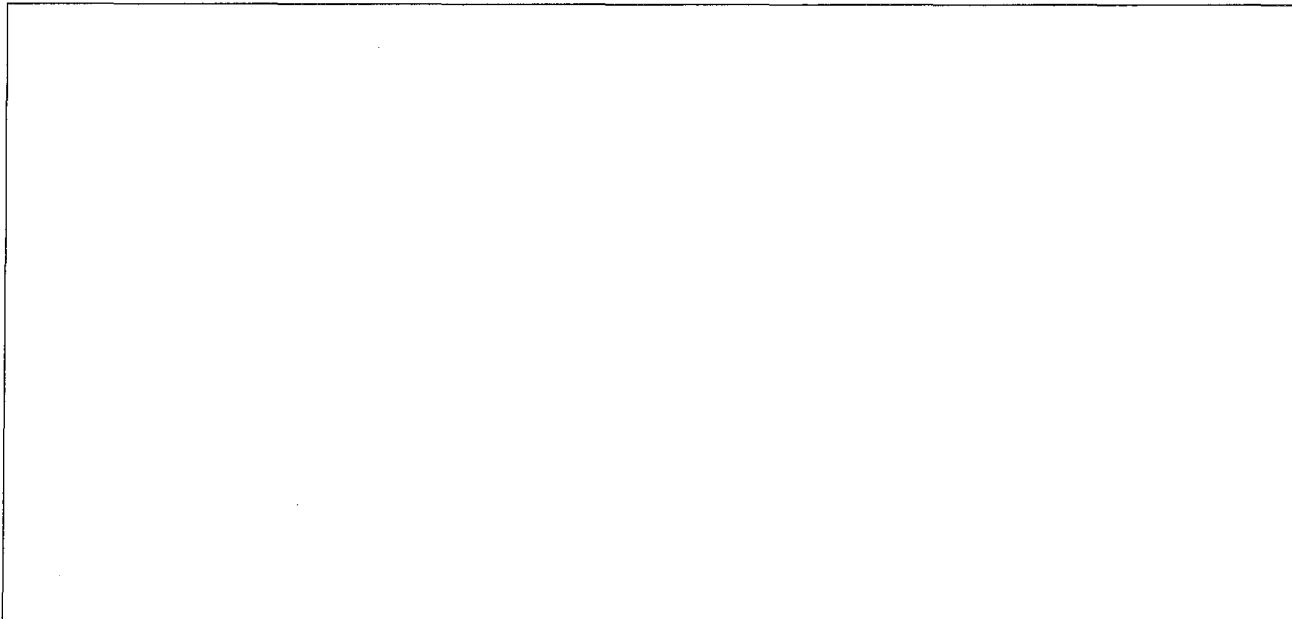
Sincerely,



Thomas Fingar

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(U) Key Findings

(1)
(3)

(U) Technology, Virtual Culture, and Identity

(U) Immersive virtual and gaming environments can no longer be dismissed as a fad. More than 200 virtual worlds are either available or under development, and online games number in the thousands. These environments continue to seize the imagination and trigger creative and technological innovations that show no signs of slowing down.

- Virtual worlds enable rich, vivid, and compelling online interactions. This emphasis on the visual is a revolutionary improvement over more traditional two dimensional, text-based methods of interaction through such formats as e-mail, chat rooms, discussion groups, and web logs.

(U) The standards, protocols, and infrastructure established and adopted for virtual worlds have the potential to directly and substantially affect the future of the internet. The nation that most influences this process will likely dominate the next-generation internet in the same way that the United States was able to dominate the first-generation internet.

- Once a pioneer in virtual world technologies, the United States is no longer leading the race to adopt next-generation internet technologies.
- Because virtual worlds may be a potent means of spreading values and ideologies, the culture that seizes the technological high ground in these spaces will have the advantage in spreading its world view.

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Virtual culture exposes nuanced views of identity and personhood that lurk within rich, vivid, and compelling 3D online interactions. Real world identities of person, group, and nation can blur in digital spaces. In the powerful medium of virtual worlds, online experiences can influence and even alter offline behavior. People will increasingly see their online, virtual identities as extensions of their real selves.

(U) Intelligence, Counterintelligence, and Law Enforcement

(b)(1)
(b)(3)

● (U) As online identities become extensions of real selves, increasing numbers of citizens may expect legal and law enforcement protections in virtual environments similar to those provided in the real world. This will create greater popular outcry for law enforcement and legal protections for virtual world identities that are similar to those of citizens in the real world.

(U) It is likely that adversaries increasingly will use virtual worlds to engage in propaganda, recruitment, coordination, training, and information gathering. Because of the immersive nature of the experience, virtual worlds are a particularly powerful medium to influence behavior, including offline behavior. The online experiences that users carry back to the real world will be subject to manipulation and influence.

**U.S. VIDEO GAME SALES
JUNE 2008**

\$1.6 BILLION

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**FLIP
ME**

(U) Key Findings

(U) Economics and Governance

(U) The economic impact of virtual and gaming environments already rivals that of the mainstream film industry and is rapidly growing.

- Mainstream adoption of immersive virtual world technology in the business sector will likely reduce costs and substantially improve the quality of online education, training, collaboration, and other forms of work. However, a real boost in productivity as a result of these technologies will not occur until the generation currently in school (the "Millennial Generation") and actively using these technologies enters the workplace in force.
- Some currencies based in virtual worlds are gaining global recognition and are convertible to real currency. Within the next five to 10 years a virtual world-based currency could become widely tenderable and freely convertible.

(U) As virtual and gaming worlds increasingly become part of every day experience, governance in those environments will assume greater importance. Governance in virtual and gaming worlds now consists of a mix of corporate end-user licensing agreements (EULAs) and community standards. But as virtual environments generate revenue streams for virtual inhabitants, governments will likely feel compelled to intervene to protect their interests and those of their citizens. Economic activity will also raise issues of virtual personhood or identity, of property and privacy.



(b)(1)
(b)(3)

6% OF BROADBAND USERS
IN THE U.S. VISIT
VIRTUAL WORLDS

(U) China and South Korea

(U) Because virtual and gaming environments are global phenomena, the roles of two key players—China and South Korea—convey a warning about competitive challenges and an example of a highly adaptive model, respectively.

(U) Chinese virtual and gaming environments reflect Beijing's authoritarian political practices. This means that restrictions against free speech and freedom of expression are built into the underlying rules that govern Chinese virtual and gaming environments. If exported, these authoritarian-friendly technologies may become available to other governments and—depending on how the marketplace evolves—could become the dominant standard.

- China's efforts to manage the emergence of its virtual worlds through regulatory pressure, incentives for domestic companies, and standards setting have enabled it to become a global leader in this critical technology. As a result, China may eventually control the software that runs the dominant virtual world used for global commerce, communication, entertainment, and education.

- China's infrastructure and standards enable it to monitor and control domestic users, and Chinese dominance of the global industry may allow the Chinese government to extend this capability to international users, including those in the United States.

(U) South Korea supports its highly competitive online gaming and virtual world industry with an advanced telecommunications infrastructure that serves as a model of adaptation to the changing environment. Because the United States faces similar challenges of adaptation, the utility of the South Korean model becomes a relevant future consideration. The South Korean model uses government-supported infrastructure to enable a free market industry with democratic values. A domestic industry of this type would be capable of setting international standards and leading the global industry.

- South Korea's global leadership in virtual world technologies is largely due to its government-industry partnerships, investments in domestic internet connectivity (for example, high bandwidth), and early adoption of virtual world platforms.



(U) Two key technological innovations—vastly improved 3D graphics and online social networks—are converging to provide compelling interactive online social experiences.

(U) This product represents the views and analytic findings of a diverse group of individuals from government, local, state, and federal; academia; and industry, who came together to focus on Virtual Worlds and produce findings and conclusions. An assumption that is fundamental to the SHARP process is that the participants' varied professional experiences prevent the myopia that might occur if all participants came from the same backgrounds.

(U) Within the realm of virtual worlds and gaming, the group considered several topic areas, including technical, social/psychological, and government issues. It presents findings and conclusions on the relevance to the IC of virtual world technology, some key trends, and issues that need further exploration. Areas of threat and possible concerns are also addressed and the potential ramifications of these concerns are discussed. Identity is one of the threads that is woven through, and binds, the primary issue of where virtual worlds spill over into the real world. This thread is also woven through the seven topical chapters in this document.

(U) Part one presents four focus articles exploring virtual and gaming worlds through the lenses of technology, virtual culture, economics, and governance.

(U) Part two applies these analytic perspectives to challenges to US leadership in Virtual Worlds—first to China's growing potential for dominance and then to the technologically advantageous posture of South Korea. The discussion then turns to the national security implications for intelligence, counterintelligence, and law enforcement in Virtual Worlds.

(U) "Identity" is a theme that appears in each of the focus articles. Insights into the changing aspects and meaning of identity flow as a common theme through these perspectives. Similarly, the assessment will offer the reader selected "Plausible Futures," hypothetical, yet reasonable views of probable evolution in the virtual and gaming environments.

(U) The report presents several key findings and conclusions related to virtual world technology and gaming, but is not an exhaustive dissertation on all new internet technologies. At the start of the session, the group considered what should be excluded from its purview, and thus did not address other large internet related phenomena such as Web 2.0 and social networking sites like Facebook and Myspace and the cultural changes that result from them. However, where these new technologies and cultural changes had direct impact on the topic of virtual worlds and gaming, they are mentioned in the report.

(U) The 36 diverse minds that participated in this SHARP session spanned an area of wide interests driven in common, however, by insatiable curiosity. Their investigations revealed more aspects of the 3D Cyberspace Spillover topic than could be integrated into the body of this report. This additional detail appears in a selection of topic-specific appendices, offered to the reader to communicate these insights and to stimulate further questions.

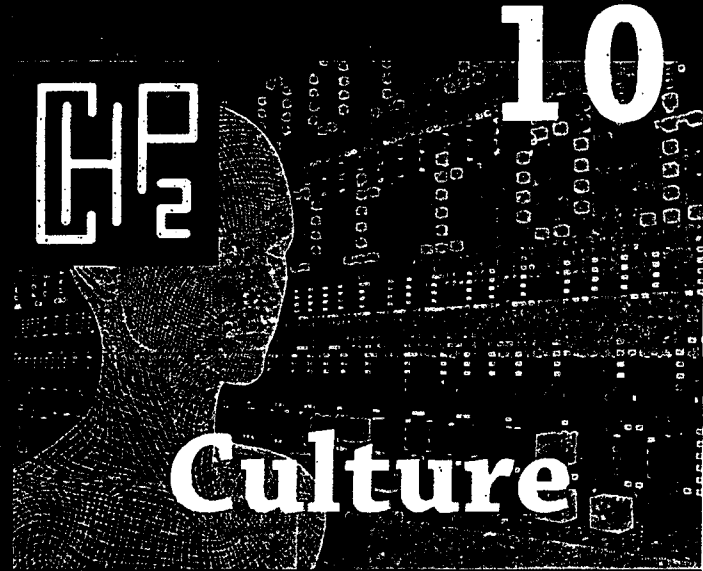


table of contents.



TOC

Not a fad.	2
Technological Innovations: Graphics and Social Networks	3
The Fractured Identity	4
Topical Technology Issues	4
Everyone Wants a Wand:	
The Rise of the Wii	5
Technological Innovation	
in the Next Ten Years	6
Technological Advancements	
Question True Identity	7
How Will Virtual Worlds	
Evolve?	7
The Virtual Wars	8
iGlasses See Into the Future	9
Who are you?	10
A Word on Identity	11
First Mover Advantage: The Diffusion of Memes in Virtual	
Worlds	11
Coining the Term Anamaya	12
The Key Component: Social Interaction	13
Identity and Individual Behavior	13
Potential Threats of Compelling Worlds with No Social	
Norms	14
Group Behavior	17
"Anamaya" and Group Identity in Second Life	17
Pattern Recognition/Systems Thinking and Griefing	19



22

HE

Economics

Real impact in the real world.	20
Discussion: Why Are There Virtual World Economies?	21
Technological Implications for Economics	21
Today's Virtual Economic Landscape	22
Gold Farming in China	23
Currency	23
Technologies Available for Business Education	25
Money, Financial Markets, and Sovereignty: Toward a New "Gold" Standard?	25
Regulatory Framework	26
Economic Threats	26
Why I Bought Montenegro Back in 2010	27

34



Governing 3D cyberspace. 30

- Technological Implications for Governance 31
- Existing Governance Framework 32
- Foundation for Governance in Virtual Worlds:

 - The Virtual is Real 34
 - Rational Expectations of Privacy in Virtual Worlds 35
 - Federal Information Superhighway Project 36

Stiff foreign competition: 38

- China 39
 - Cyber Recreation District Implications 43
 - China's Regulatory System Versus Rupert Murdoch 44
 - Cat and Mouse: Playing Edge Ball 47
- South Korea 48
 - WiBro versus WiMax 53
- In Which Wars are Fought in the Virtual World but Have Real World Consequences 54

42

Competition





60



Intelligence

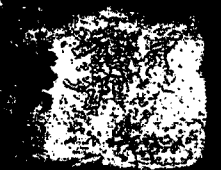
Intelligence, counterintelligence, and law enforcement.	56
Scope of the Virtual World Intelligence, Counterintelligence, and Law Enforcement Security Problem	57
The Exploitation of Virtual Worlds by Political and Religious Extremists and Terrorists	58
Intelligence and the Virtual World	61
Identity Changes and Social Engineering in Virtual Worlds	63
Assuming Another Identity: Avatars for Education	64
Counterintelligence	65
The Technical Environment: A Challenge and an Opportunity	66
Law Enforcement	67
Virtual Prostitution in the Real World	68
Virtual Immortality	72



Appendix 1: History of Virtual Worlds	74
Appendix 2: Types of Virtual Worlds	76
Appendix 3: Demographics of Virtual Worlds Users	80
Virtual Worlds Users	80
Kids & Teen Worlds	81
Console Games	82
Projections and Trends	82
Appendix 4: Today's Virtual Economic Landscape	83
Independent Virtual World Content Creators	83
Appendix 5: Governance in Virtual Worlds	83
Implications for Governance of Different Virtual World Development Paths	83
Consent of the Virtually Governed	85
Appendix 6: International Relations in Virtual Worlds	87
Competing Claims to Governance and Jurisdiction	87
National Identity of Virtual Worlds	87
Ungoverned Spaces	88
Appendix 7: Other Asian Online Gaming Industry	89
Pay-to-Play Versus Pay-to-Upgrade	90



Appendix 8: Examples of Extremist Presence in and Nation-State Manipulation of the Virtual World	91
How Nation-States Manipulate Cyberspace	91
Appendix 9: Plausible Virtual World Geo- Modeling for Simulations	93
Data Acquisition	93
Modeling for Simulation	97
Simulation Testing	98
Running the Simulation	100
Appendix 11: Future Law Enforcement Challenges of Virtual Worlds	102
Virtual World Real Estate Example	103
Appendix 12: Virtual Worlds and Games in Education and Training	103
Introduction	103
Applications	103
Interoperability	105
Funding in Education	105
Appendix 13: Mirror World Simulation	105
Introduction	105
Scenario	106
Lessons Learned	106
Recommendations	107
Appendix 14: Glossary	108
Acronyms	108
Terms	109
Endnotes	116



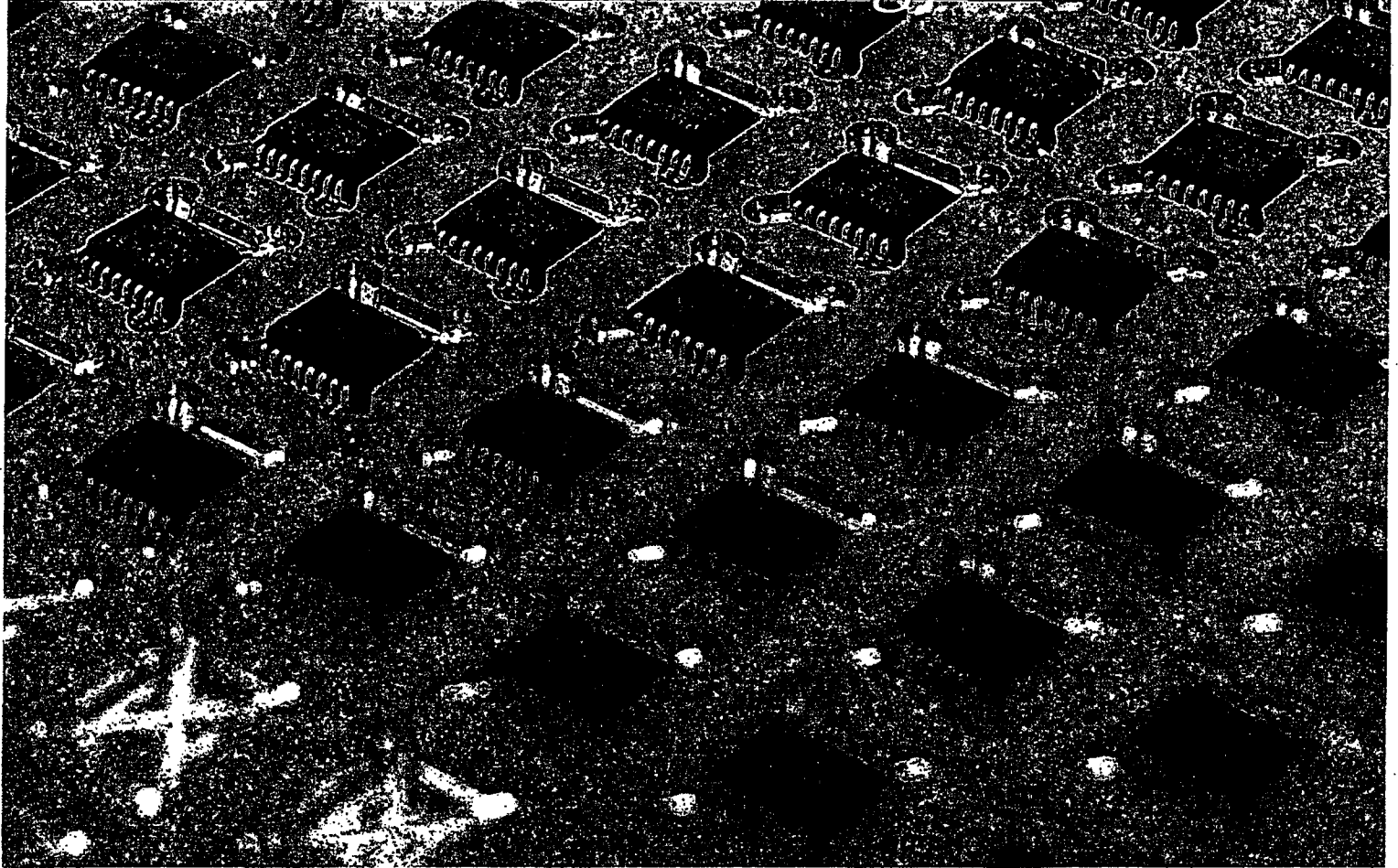
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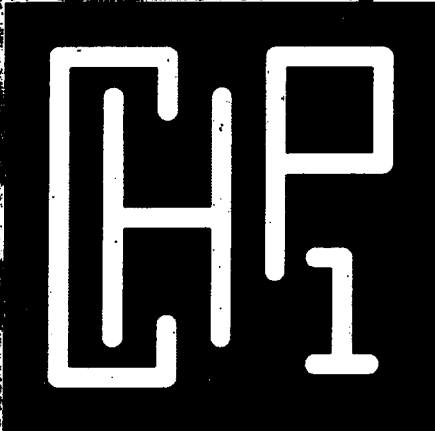
Technology **SHARP**



(U) Not a fad.

**(U) technology and the convergence
of real and virtual worlds**

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(U) This section provides a foundation for understanding virtual and gaming environments explored during this SHARP session. Technological capabilities that build upon this foundation and create engaging virtual and gaming environments are described. Discernable trends in virtual and gaming capabilities provide a glimpse of the growth path for the virtual world and gaming industries. This section concludes by discussing the convergence of capabilities in virtual and gaming environments with the capabilities of social networks.

synopsis

(U) Technology comprises the very foundation of every virtual and gaming environment, and without the capabilities provided by their technologies, virtual and gaming environments would not exist. Paradoxically however, it is these capabilities that are the focus of interest, not the technologies themselves. Understanding the capabilities and exploring the possibilities that technology provides is important to assessing what happens when virtual worlds become real.

(U) Technological Innovations: Graphics and Social Networks

(U) While computers are configured to work within text-based interfaces, humans process information more graphically, in three dimensions. Since the development of personal computers in the 1970s, computer-human interfaces have evolved to embrace the human brain's tendency to process spatially. The emergence of the internet was a communications innovation that presented humans with information in a spatially accessible manner.

(U) With the development of computer interfaces to enable users to connect to a global network, the social aspect of computers has increased exponentially. Humans especially need three-dimensional context to process social information, whether in the real world or, increasingly, the virtual world. The development of these applications drives virtual world technology and industries.

(U) For example, innovations in game graphics have driven the development of an American gaming industry, which has produced more revenue in the United States than Hollywood film-makers since 2003.¹ In 2007, movies that coincided with the release of Microsoft's Halo 3 suffered dramatically from low attendance.² Videogames are the emerging venue for capturing the hearts, minds, and advertising dollars of a generation.

(U) Another key innovation has been the use of computer technologies to enable large numbers of people to pool their knowledge and creative ability. Social networking sites such as Wikipedia, YouTube, Facebook, and MySpace resulted from this innovation.

(U) Virtual worlds take the rich social networks of the so-called Web 2.0 and add a visually rich, immersive environment. Immersion causes humans to act as though the environment were real. Users project themselves into the avatars and demonstrate very real emotional reactions and attachments. Immersion also improves learning efficiency and personal involvement.

(U) For a more detailed discussion of the development of virtual worlds and 3D interfaces, see Appendices 1 and 2. ■



(U) The Fractured Identity

(U) The lack of an international technological standard for virtual world applications has created a fractured identity issue in virtual worlds. Users cannot at this time use one avatar across multiple virtual worlds, but instead must create a new avatar for each virtual world in which they wish to engage. Avatars in these virtual worlds may look different, have different relationships, and act in different ways. The worlds themselves may require different hardware components and use different methods for controlling the user's avatar.

(U) While interoperability and standards offer conveniences, particularly to the user, such a system may not be entirely desirable for either users or developers of these virtual worlds. Users may want to keep separate identities in different worlds for benign reasons (such as privacy) and using the same avatar in two incongruous spaces (such as using a Second Life avatar in the fantasy game World of Warcraft) would prevent a user from becoming immersed within the virtual world. From the developer's perspective, the case for maintaining closed systems is even stronger. It could be a poor business decision to allow users to take their avatar out of a controlled system to spend time in a competitor's virtual world. Doing so, for example, could reduce the amount of in-world advertising the user sees, which could reduce the company's revenues.

(U) The persistence of fractured identities will make the identification of the "anomaly" of targeted individuals more difficult for the intelligence, counterintelligence, and law enforcement communities. Different technologies, graphics, and avatars would certainly increase the complexity of any analytic framework instituted to analyze these worlds. Given the benefits to keeping virtual worlds separate, in particular the business case referenced above, this will most likely be a significant issue for future intelligence analysis.

(U) Topical Technology Issues

(U) Network Infrastructure.

Online infrastructure will likely drive the future of virtual worlds because it enables both the social and graphical elements of virtual worlds. Entertainment companies provide infrastructures, or central hubs, to which users connect before entering the game they wish to play. This way, a user can play multiple games across the internet using a single alias or avatar (provided that the games are under one game provider's system), and rich presence information can be sent to a list of "buddies" who can see whether the user is online, what s/he is doing, and whether s/he wants to be joined within a certain game or activity. They also provide rankings and worldwide scoreboards for players as well as various communication (voice, video, text) options independent of the game being played.

(U) As infrastructures grow, multiple worlds may begin to share a common architecture. An example of online infrastructure is Valve Software's Steam architecture, while in the console industry Microsoft and its Xbox Live service lead infrastructure development. These infra-

structures are the building blocks of a Multiverse: a plurality of virtual worlds linked by a common infrastructure. Similar to the trajectory followed by the development of social networks, one or two of these virtual infrastructures may come to dominate the marketplace.

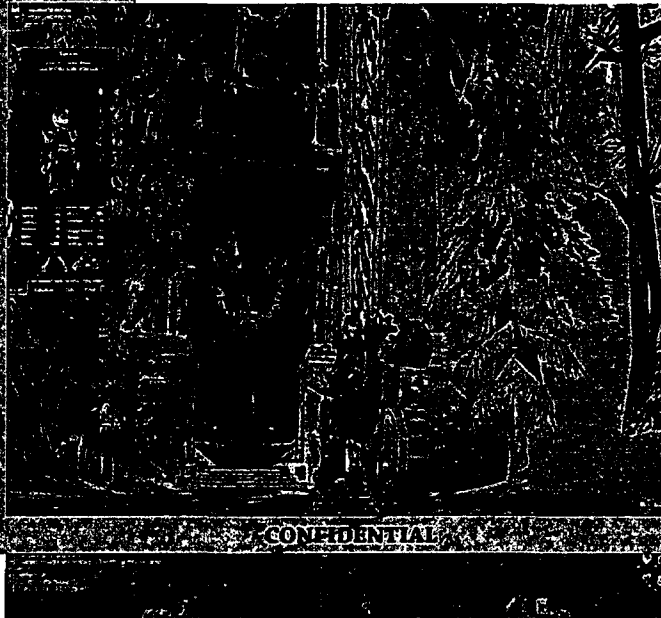
(U) Network services have become a platform for content delivery. Users can directly purchase or obtain new games, videos, or music content that is downloaded straight to their device without the need for physical media. This presents a lower cost of entry for developers to make their software available to a large audience. For example, the Xbox Live Arcade service allows users to download low-budget games at prices ranging from five to 20 Dollars.

(U) Established infrastructures can be attractive to software developers because they provide a common framework around which to design the online portion of their game. They often include anti-piracy measures and also have an existing customer base toward which they can market their software. In addition, the communication already provided by the infrastructure lowers total development costs.

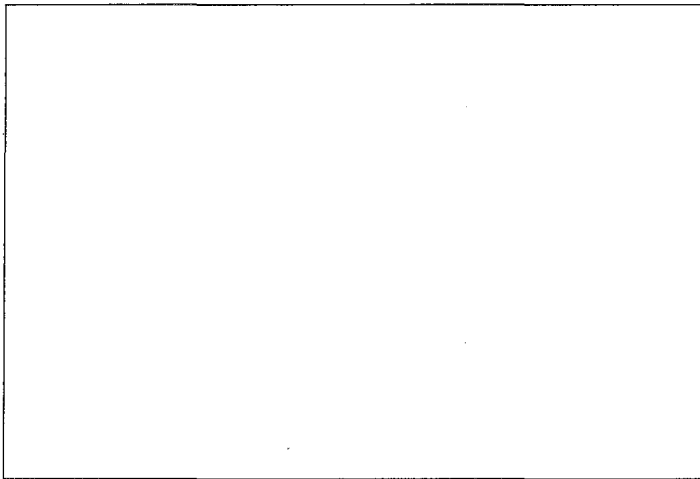
(U) Communications.

Without communications, virtual worlds cannot function. Communication permeates the virtual landscape to enable social interaction. Virtual worlds permit communication through multiple interlinked channels, including text, voice, images, video, and gesture.

(U) Communication in virtual worlds is not like mak-



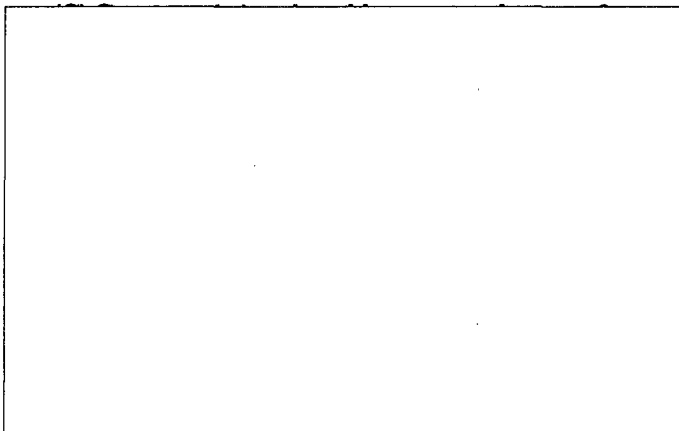
ing a phone call. In the 3D open world, messages typed or spoken are often broadcast to any avatar in the local area or within a specific virtual radius—the user is often not able to directly control who else hears or sees these messages; they may not even know who else is connected into the local area.



(U) Communications can be embedded into the very fabric of the world itself. Billboards, posters, and advertisements can all be customized by marketing companies, or users, allowing them to broadcast music or movies, or even to dispense objects when investigated.

(U) Non-verbal communication methods are also available to users in virtual and gaming environments. Both Second Life and World of Warcraft offer a basic set of gestures built into the avatar, but Second Life goes further and offers users the ability to create their own gestures and animations.

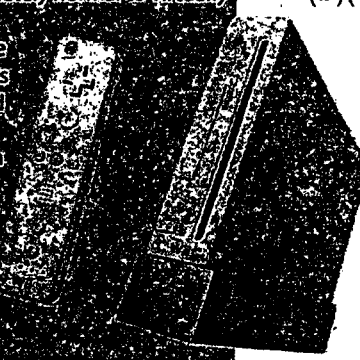
(U) Security.



(U) Everyone Wants a Wand: The Rise of the Wii

Wii

(U) The Wii made standard electronic sensors a standard part of the living room. iPhones can replicate the sound of a lightsaber when waved around. The Wii has made it completely normal to virtually play the air guitar. Microsoft's Surface device allows users to drag, resize, and auto-sort digital pictures as though they were hard-copy. The trend is moving away from the keyboard, which was designed as the modern typewriter, and moving more toward intuitive, natural interfaces designed for the human body.



(b)(1)
(b)(3)

(U) Second Life and other similar applications use a communication protocol called remote procedure call (RPC) as part of its way of improving performance. RPC has a long history of exploitable vulnerabilities, and thus is usually blocked by corporate and user firewalls. Because Second Life requires this protocol, for example, it opens the Second Life user to direct hacker attacks that might otherwise not be possible.

(U) It is difficult enough to secure a corporate network from the constant and persistent threat of malicious external parties but, in an environment where employees travel widely or routinely work at home, using personal computers, laptops, non-corporate-owned machines, and personal digital assistants, security is even more difficult to maintain.

(b)(1)
(b)(3)

(U) Many organizations are now moving their applications to the web and off-premises computers, which means that office-based workers and telecommuters alike have equal access to files and programs. This in turn requires location-independent security means. ■



(U) Technological Innovation in the Next Ten Years

(U) *The Death of the Keyboard.*

Developments in human-computer interfaces (HCI) are critical to the uptake and utility of virtual world technology. Current technology relies chiefly on the traditional keyboard and mouse, or a proprietary controller (sometimes referred to as a "gamepad"). These have provided a barrier to mass market interaction with 3D environments as they are an inherently abstract method of HCI. A range of emergent technologies may be used in the future to interact with virtual worlds. Products such as the Emotiv EPOC, which uses an electroencephalograph to turn brain waves into computer inputs, are beginning to become commercially feasible.⁴

○ (U) *Motion Sensitive and Haptics.* Motion sensitive controls have already revolutionized the home console market. Motion sensitivity provides an immersive interaction with the virtual worlds, allowing the user to move his/her real-world hands or body to initiate virtual-world actions that reflect the user's real action. These platforms are growing in popularity. For example, the Nintendo Wii, which features a motion sensitive remote controller, has consistently outsold home console competitors in 2007 and 2008.⁵

These types of input devices can be combined with a new generation of haptic technology that provides a tactile response such as an explosion (a low rumble), or sword fight. Finely grained haptic technology can give the impression of touching cloth, or a stony surface. Full body haptic technology could even simulate the impact of bullets, immersing the player deeper within the virtual world.

○ (U) *Touch.*

(U) Touch interfaces have existed since the 1980s, but will continue to be developed for future devices. New breakthroughs are predominantly driven by recent advances in "multi-touch" panels (a touch surface where multiple points can be touched instead of just one). Apple's successful iPhone brand has utilized a multi touch surface on a cell phone to manipulate pictures, music, video, and traditional phone and e-mail functions which has driven consumer demand.

(U) Microsoft has invested significantly in multi-touch technology, developing a new user interface for its Windows Vista platform. The new interface, Microsoft Surface, represents a new paradigm in human computer interaction that blends the virtual world seamlessly with the real world.

(U) As proliferation of such technology increases it will profoundly affect the way humans interact with computers. Computers no longer need to be multi-component desk top devices or laptops. Instead, they can be flat panels located on any surface, able to interact with any device, including cell phones, cameras, music players, games consoles, or memory units. Internationally

agreed standards will ensure that future computers like these will lose none of the utility that modern computing provides. Inter-connectedness with every-day devices will create a parallel virtual world that can be geospatially referenced with reality, but which also provides the abstract concepts that are inherent to the current internet.

(U) *The Death of the Disk.* Digital distribution is the replacement of traditional media delivery methods (CD, DVD) with a digital version usually transferred over the internet. This phenomenon can be compared with the popularity of video sharing sites such as YouTube, which enables anyone to reach a worldwide audience from their home. Content creators are no longer relegated to small or local releases of their art. They can now leverage new technology to speak to the world. The virtual world revolution will go hand in hand with digital distribution as each becomes a driver of the other.

(U) As bandwidth and digital rights management matures, the depth and breadth of digitally distributed content will increase exponentially. Traditional methods of delivery such as CDs and DVDs worked as filters to the mass market. Content that was not considered palatable to a general mass audience was often discarded. Yet the rise of digital distribution has diminished the effectiveness of those filters. Users are free to post whatever content they choose and are able to reach an audience that would otherwise be inaccessible. Viral videos created on sites such as YouTube are examples of this breakdown of barriers. Extremist propaganda posted online is another example of this worldwide phenomenon. ▶

(U) Technological Advancements Question True Identity

(U) The virtual worlds presently available require a significant suspension of disbelief on the part of the user. The graphics are primitive compared to the details of real life. Non-player characters can only choose responses from an often short list of prescribed phrases and avatars are controlled via a Human-Computer Interface (the keyboard and mouse) designed for office productivity. In short, current technologies do not provide a wholly immersive experience and maintain a clear separation between the users and their virtual identities.

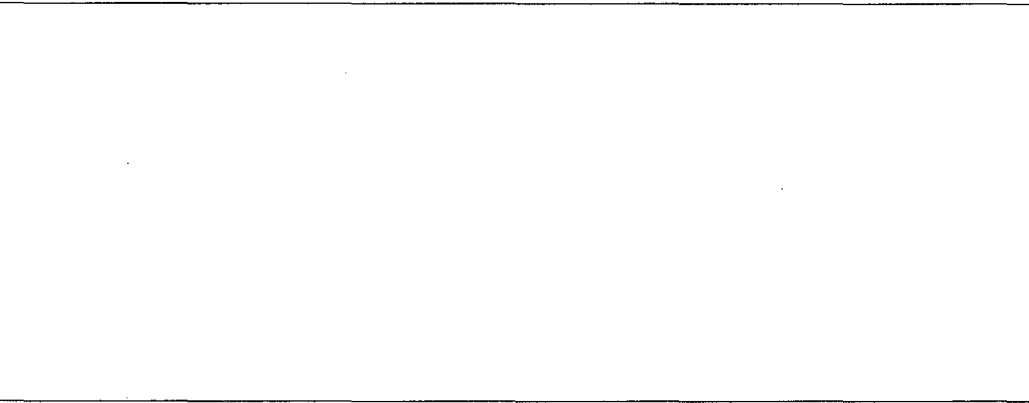
(U) The plausible future technologies described in this section, however, can change this. Photorealistic avatars can trick the mind into believing it is looking at a real human, artificial intelligence can allow non-player characters (NPCs) to engage in rich, meaningful conversations with users, and new, tailored HCs can unshackle the user from the keyboard. Overall, virtual worlds can become a more immersive experience.

(C) What does that mean for the user's virtual identity? Will it be easy for an outside observer to look at a user's avatar and virtual world behavior and identify that user—or will these technological improvements only make it more difficult? Will virtual world users be able to tell the difference between avatars with a real person behind them and those with AI behind them? There are no answers here, only questions.

▶ (U) Traditional developers will benefit from a digitally distributed future, by cutting out retail middlemen and delivering their work to consumers—they have been able to invest in bigger, more spectacular virtual worlds, monetized by the monthly flow of content, rather than the limitations of the single shot, boxed product.

(U) The Birth of Artificial Intelligence. In the context of games and virtual worlds, Artificial Intelligence (AI) refers to “bots,” which are avatars and objects that have roles and functions, but no human directly controls them. AI software and systems respond to in-game events according to rules that are set up by the AI designer. For example, a wolf in World of Warcraft has “wolf rules” and will often attack a nearby rat that also follows its own “rat rules.” For the majority of non-human objects in the game, rule sets are purposefully simple—a wolf only needs to wander, scratch, sniff things, and attack anything that seems to be alive (be it an avatar or that unfortunate nearby rat).

(U) The AI community is becoming increasingly interested in applying AI technology to game and virtual world systems, since they provide real humans upon which to test new AI concepts and technologies. The ability of games and virtual worlds to communicate with the real world presents the opportunity for the application of highly complex rule sets like virtual personalities.



(1)
(3)

(U) How Will Virtual Worlds Evolve?

(U) How virtual world technology evolves will be crucial to fully understanding its potential impact on the world. Three dominant potential growth paths exist, as follows:

(U) Metaverse. This path of development is similar to the growth and dominance of Microsoft and (to a much smaller extent) Google. A single company or organization creates a virtual world that is so useful and compelling that it aggregates a majority of the internet's users. Elements of this growth path include: ▶



▷ (U) *Defacto standards.* Standards developed by the platform "owner" quickly become dominant.

● (U) *Concentrated benefits.* Every innovation within the ecosystem confers benefits on the platform "owner."

(U) *Interlinked Multiverse.* In this path, existing site infrastructure is augmented through the addition of virtual world technology. A multitude of sites will introduce and expand virtual spaces for their customers and users. Examples include an Amazon store or a Facebook "room." Eventually, due to business/customer needs, new standards of interconnection are agreed upon by the major participants to enable virtual spaces to interconnect. This growth path will be characterized by:

- A bewildering variety of technologies and vendors.
- Minimal standards of interconnection.
- Decentralized control, as it is currently with web sites.

(U) *Reality+.* The Meta- or Multiverse may not be a completely virtual environment, but rather an extension of the real world. This growth path is the result of rapid development of methods that add computational layers to existing geographies (structures, objects, and people). This computational layer will create and consume data and allow rich interactions between people in close proximity as well as from remote locations. This growth path will see:

- Bottom-up interaction between locations and mobile devices moving up toward virtual world overlays on existing reality.

● Top down access to location specific data layers through systems such as Google earth.

● Full virtual overlays on existing reality (mixed reality).

(U) *he Emergence of International Standards.* Standards bodies are developing inter-game, inter-world standards for communication, object transfer, account and identity transfer, scripting and other programming standards. These standards would permit, for example, instant messaging between avatars in different virtual worlds or games, transfer of in-world currency and possessions, and most importantly for the user, the ability to carry one identity (name, avatar appearance, possessions, history) from world to world.

(U) There is a push to repeat history, in that virtual worlds are at the same "place" that web browsing was in the very early 1990s when AOL's web browser was based on its own proprietary communications protocol and rendering techniques. AOL users could not access CompuServe data unless they also had a CompuServe account, and there was no crossing of those boundaries except via

email and file transfer which are out of world techniques. That changed with the development of a standard for viewing content, called Hypertext Markup Language (HTML). The development of HTML, a simple text-based markup language that is the basis for all web pages, is a standard that allowed any vendor's browser to view any web site. The result was that the "walled gardens" of CompuServe and AOL morphed into open areas accessible by anyone with a browser. The virtual worlds are similarly in the 1990s because they are walled gardens, and the development of standards for communications, rendering, and most importantly protection of intellectual property will allow users to move across virtual worlds the same way they move across web sites today.

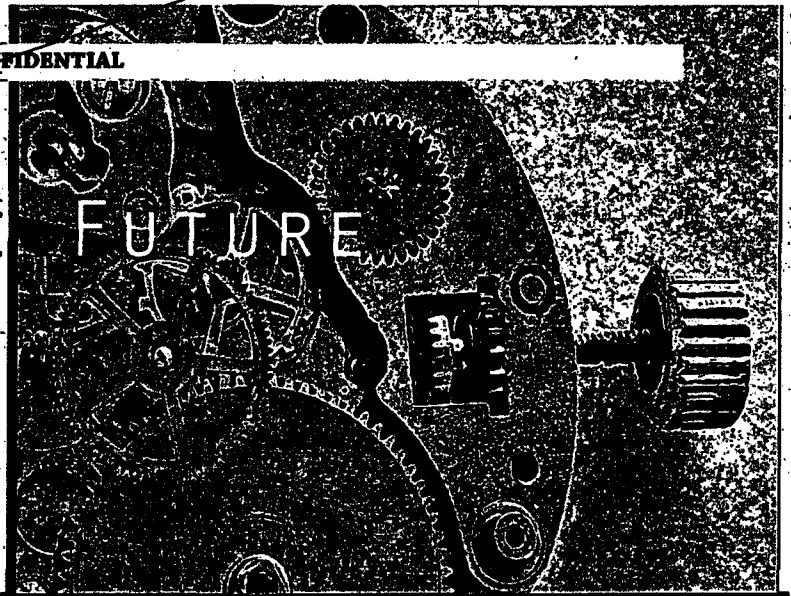
(U) However, there is a contrary argument that it is not in the best interests of industry providers such as Linden Lab (Second Life) and Blizzard Entertainment (World of Warcraft) to permit such crossing, and that the industry will not take this path. Standards are being developed, nonetheless, and some vendors will adopt them; it is also likely that some will not. ☐

(U) The Virtual Wars

(U) PLAUSIBLE FUTURE

(U) iGLASSES SEE INTO THE FUTURE

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(U) One plausible future technological development is iGlasses, wearable technology versions of classic eye glasses. The iGlasses would feature a fully integrated computer, PDA, cell phone, ID tag, HMD (Head Mounted Display), and GPS. Built-in internet access would come standard with all models.

- (U) When integrated with sub-meter GPS systems and HMDs, they would allow Reality+ graphic overlays enhancing what people see through the glasses in real-time as they walk and traverse the real world. Mi-Glasses personalized software would then allow wearers to augment reality with their own personal touches.

(U) This technology would know where it was as its wearer looked around, and the device would understand what it was viewing. These capabilities would be enabled by GPS and accelerometers. Graphics would overlay the real-world setting if the wearer so desired. For example, advertisers would be able to overlay ads onto public billboards that wearers of iGlasses would view. Ad campaigns would thereby become personalized to individual wearers of iGlasses.

(U) Of course, this technology could also be abused. Right-wing extremists, for instance neo-Nazis, could overlay racial or ethnic slurs and slogans on buildings or individuals in the real world. Or jihadist sympathizers could gather on the Capital Mall wearing iGlasses as they conduct a virtual meeting that overlays an avatar of Usama bin Ladin on the real-world steps of the Lincoln Memorial. Their reality, their world, their hate—all reinforced with the blending of the virtual and real worlds, with Reality+ overlays.



~~CONFIDENTIAL~~

Culture SHARP

(U) Who are you?
(U) virtual culture

~~CONFIDENTIAL~~



(U) A virtual culture unique to online virtual and gaming worlds is emerging, inclusive of its own behavioral and cultural dynamics, sense of identity, and virtual roles. Virtual and gaming technologies enable new behavioral and cultural dynamics as seamless connectivity erases the boundaries between virtual and real spaces. Individual identities are splintered and reshaped, new characters are created, and new roles are assumed in virtual spaces. Beyond the individual, the internet and virtual worlds usher in an era where ideas spread more rapidly than ever before and have the potential to influence ever-larger global audiences. This section examines this emerging virtual culture in terms of identity, ideologies and their social networks, and group behavior.

synopsis

(U) Virtual worlds are introducing an era where ideas spread more rapidly than ever before, and have the potential to influence larger and larger global audiences. With the internet as a distribution medium, any person can invest their time and skills into creating interesting content, attracting an audience, and forging virtual relationships. Take, for example, Matt Drudge, who in 1998 broke the Monica Lewinsky scandal on the internet. If the 2D internet communicates memes that cross cultural boundaries, the increasingly compelling and immersive virtual world will be even more effective.

First Mover Advantage: The Diffusion of Memes in Virtual Worlds⁶

For example, Matt Drudge, who in 1998 broke the Monica Lewinsky scandal on the internet. If the 2D internet communicates memes that cross cultural boundaries, the increasingly compelling and immersive virtual world will be even more effective.

(U) Through virtual worlds people are increasingly able to spend significant amounts of time fully immersed in a foreign culture. This virtual presence could lead to the rapid adoption of memes via virtual diffusion. The memes may be subtle, such as fashion trends, mannerisms, slang, or entertainment preferences. But they could also be more significant, such as religious, ideological, sexual, or philosophical memes.

(U) Because virtual worlds communicate ideas and emotions so well, they may be a potent method of spreading ideologies. For example, if virtual world "netizens" adopt the American concepts of individual property rights, the ideas may then spread throughout the real world. This, in turn, could result in an increase in the global acceptance of individual liberty as a universal norm, just as British dominance of the high seas two hundred years ago led to the enshrinement of British concepts of liberty in the international trade system. Taking advantage of opportunities for cultural diffusion via virtual worlds to create pro-Western influences could have important economic and political implications for the United States.

(U) Other countries appear to recognize this potential. China, by banning QQ Coins and forcing Blizzard to change certain aspects of its games to conform to Chinese values, is expressly protecting its nationalist message to its citizens.⁷ This demonstrates that China understands what we in the United States yet do not: that virtual worlds reflect and communicate real world cultural values; that among those values most at risk are property and liberty, and as a result, democratic discourse.

(U) A Word on Identity

(U) Virtual worlds provide a 3D platform for personal expression, entertainment, creative expression, and business activities. All of these activities leave traces that can be retrieved and interpreted to identify a person. When this mosaic is combined it refines and defines a person's anamaya, or virtual identity. This may extrapolate to that person's real-world identity. In the real world, issues of identity involve more than how a person looks. They involve how s/he behaves, what s/he



► believes, with whom s/he interacts, and what s/he cares about. In fact, physical characteristics are very poor indicators of a person's true self.

(U) A person's real world and virtual identities are defined by a number of elements, including both internal and external factors or concepts of "self."⁸ As a person moves his or her identity into virtual space, s/he brings a number of the same sense-of-self issues with them. However, the online world, with its anonymous element and its enabling technologies, also allows users to redefine their identity in a number of ways. Virtual worlds offer anonymity and the false perception of anonymity.

(U) Both have significant implications for identity. From one avatar to the next, and through the multiple expressions of self that the creator generates, deceit, whether or not nefarious, will likely enter into the process. This may be aspirational: I wish I looked better so I will make my avatar attractive; or deceitful: I will create a false avatar to view adult content without revealing who I really am. Even in attempts to deceive, an individual reveals traces of his or her identity in the form of an anamaya.

(U) The construction of identity and culture in a virtual space is the result of structure and environment played

out by virtual individuals, virtual groups, and the larger virtual society. Virtual identity is the product of actions undertaken by virtual groups as they shape and reshape their self-definition and culture; moreover, virtual identity is constructed by in-world social and economic processes. On the other hand, virtual identity is also influenced by real world environments. When people invest a vast amount of energy, material and ideas into virtual worlds they feel real pain and loss when their virtual beings are abused, harassed, and exploited. Symbolic interactions that occur in virtual worlds are no less real than the ones in the real world. ■

(U) Coining the Term Anamaya

(U) "Anima" is the Latin word for the Greek psyche (psyche) or soul (spirit) of the individual. "Maya" in the Hindu religion, is the principal deity who creates, perpetuates and governs duality in both the spiritual and physical space. Bringing these two concepts together to describe a digital soul, a common thread that runs through multiple expressions of self in the virtual world, produces the term "anamaya." The anamaya represents the underlying personality, morals, values and beliefs that users impose on the avatars they create. The anamaya is the being and presence of self that a user projects on his or her virtual activities and in virtual environments.

(U) The Key Component: Social Interaction

(U) Virtual worlds, by combining 3D virtual reality with social interactivity, bring a new element to global and internet communication. As these communication tools evolved, so did the behavior principles governing virtual social interaction. Though studies have shown that virtual social interaction follows patterns similar to real-world social interaction, virtual worlds and online games may also provide opportunities for role-play and fantasy realization. Some users may experiment with illegal or immoral behaviors that they would not otherwise display in the real-world.

(U) Online to Offline Behavior. Preliminary empirical research has indicated that virtual world interactions are subject to many of the same physical "rules" of human real-world communication, including notions of "personal space" and the role of non-verbal communication. While the specific manifestations of these rules may vary across cultures (just as in the real world), these offline-to-online parallels may also translate within cultures.

(U) Virtual behaviors and experiences are crossing into the real-world in multiple ways. Recent research indicates that a range of real-world nonverbal and visual influences indicative of human relations carries over into virtual world interactions.⁹ Critically, not only do these visual mechanisms play out in virtual worlds, but they can translate their virtual world effects into real world scenarios.

(U) The implication of cross-over is that users are transferring their real-world socio-cultural motivations into virtual worlds. Because the expressive abilities of online entities are now so advanced, it is simple to code in behaviors that co-opt real human beings who interact with those worlds. At Stanford University, for example, an avatar mimicked the head nods and tilting of a human being, who then judged the avatar to be "friendlier" than one that did not move in synchrony.

(U) Even more simply, imagine that a group of online grievers in Second Life might desecrate an online Ka'ba created by an Islamic group, thereby inflaming Muslims in the real world, prompting them to take violent action, or encouraging recruitment for real world jihadist groups.¹⁰ The subtleties of these new virtual world technologies will likely aid and abet this sort of malfeasance.

(U) Beneficial Effects. At the intuitive level, it seems clear that computer-mediated games—from single-player to massive multi-player—can have beneficial effects in helping players to cope with work-related stress, overwhelming responsibilities, social contact and support, social anxiety, self-esteem and empowerment issues, and real-life trauma.¹¹

(U) More generally, the field of "serious games" focuses on games that are used for training, advertising, simulation, or education.¹² These include a broad spectrum of games that are intended to overtly influence player behavior, most typically for



(U) Identity and Individual Behavior

(U) Some social scientists believe that players of online games and residents of virtual worlds follow roughly the same set of norms and behaviors that are followed in the real world.¹³ For example, a study of The Sims Online found that players exhibited the same social norms of politeness that are displayed in the real world. An experimental economics study in Second Life replicated the results of real world experiments, demonstrating that residents handled virtual currency in the same way that they treated real currency.¹⁴ A Stanford research team found that residents in Second Life used personal space in the virtual world in the same way that personal space is used in the real world.¹⁵ These are just a few examples of a growing field of research that must be encouraged if we are to understand the emerging norms in these environments.

(U) At the same time, virtual worlds and games provide an opportunity for role-play and acting out fantasies. Some users may experiment with behaviors that they normally would not pursue in real life, perhaps because the behavior in real life is perceived as illegal (for example, killing others) or immoral (for example, pornography). Virtual world residents and online game players may view these environments as relatively safe, anonymous places where they can try out different personas and experience different events.

(U) If you can imagine it, someone somewhere in a virtual world or game is probably doing it.

(b)(1)
(b)(3)



(U) Potential Threats of Compelling Worlds with No Social Norms

Virtual worlds are compelling, exciting places in which to participate, and social norms within them are still emerging. This makes them the perfect place for subtle propaganda and raises the question of what happens when other cultures create their own worlds and spread their worldviews. Potential threats could include a Chinese MMORPG that pushes anti-Western sentiments, a hostile foreign MMORPG that trains alienated Western teenagers to commit acts of terrorism, or a MMORPG that let players harness and control a small army of Columbine-influenced kids to unleash their rage simultaneously in the real world. In exactly the same way, a radical political group could leverage its recruitment of a virtual world group to coordinate a series of simultaneous pranks in the real world to demonstrate their global reach.

This sort of manipulation was verified when a user created the Second Life Liberation Army, as a kind of social experiment. In the course of his experiences, he found that he easily attracted people who might really have been activists, and who stated that they would be willing to take real world action.

▶ some identified benefit—one that is frequently health-related—like quitting smoking, losing weight, or increasing exercise.¹⁶

(U) Increasingly, however, such games focus on social or political objectives, such as establishing rapport or empathy between otherwise alienated or at least non-communicative groups. A good example is Peacemaker, in which the game challenges the player to “[e]xperience the joy of bringing peace to the Middle East or the agony of plunging the region into disaster.”¹⁷

(U) Ideology.

(U) Ideological “marketing” games such as Special Force 2 and Amer-

ica’s Army are unabashed in their influence objectives. Yet how successful they are in achieving those objectives is unclear. Other games may be more circumspect about their manipulative intentions. This may be a particular issue in the massively multiplayer online role-playing game (MMORPG) venues, since they have a considerably greater potential for influencing via traditional social mechanisms.¹⁸ Achievement in MMORPGs is seductive because the goals and journey are well-defined and the rewards are social and persistent. In a MMORPG, a user embodies his or her achievements in a character that is part of a community that recognizes the user’s power and competence. Players’ efforts and achievements in MMORPGs take on a realism that other games do not provide.¹⁹

(U) In general, the insertion of political back stories in games—including pre-computer games—is not new.²⁰ The concept has been given a whole new life, however, with the arrival

(b)(1)
(b)(3)

of PC games and online multiplayer games, given their significantly more immersive and, therefore, more innately influential characteristics. The primary concern from an influence perspective is the prospect of political or ideological objectives hidden in game rule sets or play mechanics, where their effect can be less obvious. Just as cinematic spectacles enrapture audiences, game play captures the minds of users. Thus, "games can communicate doctrine by demonstration."²¹

(U) Some examples of computer games with ideological objectives include:

- Under Ash (Syria, 2001)
- Ethnic Cleansing (US white supremacist, 2002)²²
- America's Army (US Army, 2002)
- Special Force 1 (Hizballah, 2003)
- Quest for Saddam (US, 2003)
- Kuma War (US, 2004)
- Under Siege (Syria, 2005)
- Night of Bush Capturing (AQ/GIMF, 2006)
- Special Force 2: Tale of the Truthful Pledge (Hizballah, 2007)
- Special Operation 85: Hostage Rescue (Iran, 2007)²³

(U) None of the above is a MMORPG or social world; they are all single- or limited multi-player games. As ideologically-driven parties experiment with large virtual worlds as influence vehicles, however, their practical utility for the purpose of obtaining influence will become clearer.

(U) MMORPGs, in general, have the further characteristic of presenting a values-neutral backdrop within which a nefarious group might conduct propaganda and recruitment activities. Given the design and operating costs, MMORPGs will likely not be developed so much as

manipulated—at least by non-state groups. State actors, though possessing the resources to experiment with the development of MMORPGs as influence mechanisms, may likewise simply find it more efficient to use already-existing games. The Chinese experience is perhaps the most instructive in this regard.²⁴

(U) Though the discussion above may imply that game designers have an insurmountable advantage over players in terms of influence mechanisms, this is not necessarily the case. The extent to which any putative ideological (or other manipulative agenda) game designers and operators may have will be counterbalanced by the players themselves.

(U) The idea behind this thinking is, broadly, that this increasingly sophisticated and astute game-playing audience will detect and either ignore or subvert such influence attempts. The ability of some game players to identify, analyze, and characterize seemingly unconnected or random aspects of a game and then infer a design agenda is well-known. This reflects a designer-player tension that has existed since the first generation of computer games—one that is clearly recognized by both contesting parties.²⁵ The industry perception is that the advantage lies with the gamers, who quickly probe, define, and then breach intended design boundaries. Although this category of gamer activity is self-interested (and sometimes has underlying criminal objectives) rather than altruistic, this proficiency ultimately benefits the entire gamer community.

(U) Game and player sophistication are evolving together. Players are less

inclined to be the passive recipients of a set of divine game laws limiting their options and forcing them

(U) Real relationships develop between the real people behind the avatars, even though the individuals may never meet in real life.

along specific pathways of play. Rather, gamers are increasingly re-defining the structure and intent of games

in highly individualistic ways, and game operators who try too hard to limit this type of activity risk losing their playing audiences.

(U) The trend toward "open games" and increasing player control can inform observers' understanding of the real "threat" from games as influence mechanisms. Their ultimate influence may be limited to two fundamental overt areas that have been discussed above: individual empowerment and a reduction of negative stereotyping.

(U) Other more sophisticated and potentially more manipulative mechanisms may be unable to survive elite gamers' scrutiny and ridicule. The process may be roughly akin to what we have experienced in the realm of mass marketing: while the industry has some extremely sophisticated and effective tools at its disposal (most famously, "subliminal advertising"), attempts to employ these techniques are high risk and have a strong tendency to backfire. Therefore, the advertising industry focuses on the use of "accepted" techniques in the most original and entertaining way. It may well be that virtual world influence techniques will evolve similarly, but they have not yet done so.

(U) *Sexuality.* Those who are unfamiliar with virtual worlds and online ▶



▶ games sometimes have difficulty grasping the depth of relationships that can develop in these communities. Real relationships develop between the real people behind the avatars, even though the individuals may never meet in real life. Avatars in Second Life are often observed in chat saying things like "I am not a cartoon. I am a real person."

(U) Friendships can lead to love. In some cases, the individuals may agree to meet in real life, whereas in other cases the individuals agree to keep the relationships "virtual." The unfolding drama in these relationships sometimes leads to jealousies and accusations of cheating by virtual lovers. Such scenarios may, in turn, translate into real world actions with real legal consequences.

(U) In Second Life, one enterprising individual has set up a private investigator (PI) service for hire. If requested, the PI will go so far as to follow and attempt to entrap a virtual lover in order to test his or her fidelity.²⁶ There are also numerous stories of individuals who develop such strong feelings for their virtual lover that they are willing to divorce a real-world spouse in order to start a new relationship with the person that they have met online.

(U) Some key trends in the pornography industry have been noted that have direct applicability to the virtual world, such as the rise in user-generated content, the tendency to seek greater levels of anonymity, and the desire for more realistic but safe experiences.²⁷ Analysts predict that virtual reality will host the next wave of the pornography business. Actors in these underground economies tend

to be early adopters of new technologies, to improve them, and thereby to influence broader acceptances of the technology.²⁸ Improvements in technology will in turn make the experience even more realistic. The pornography industry is actually driving or adapting some of these uses—with significant economic consequences.

(U) According to The Observer, the once 13 billion US Dollar adult entertainment industry is on the decline because of free sites like youporn.com and Pornotube.com, which reportedly receive more internet hits than CNN.com. The availability of free pornography (either pirated or created by amateurs) is now widespread and this affecting the adult entertainment business the same way that Napster affected the music industry. A probable progression of this trend is that consumers will be looking for other expressions of

(U) There are also numerous stories of individuals who develop such strong feelings for their virtual lover that they are willing to divorce a real-world spouse in order to start a new relationship with the person that they have met online.

pornography that they cannot get for free, such as virtual environments and adult social networks that offer more than a passive experience.²⁹

(U) If the individuals behind the avatars are consenting adults, we are then left with the "so what?" question.

(U) As is discussed in the section on Influence, the research on the effect of violence in video games bleeding over into real life violence is inconclusive. Thus far the literature on the effects of par-

ticipating in virtual activities that would be illegal in the real world (for example rape and child pornography) is similarly inconclusive.

(U) The question of harm must be considered. What constitutes harm? If one partner behind the avatars is a minor, and the other is an adult, does society judge this cybersexual activity as unacceptable?

(U) What if the individuals behind the avatars are both consenting adults, but one is role-playing a child avatar ("age play")? German police investigated a case of age play in Second Life. In the United States, such cases are extremely difficult to prosecute.³⁰ Further discussion of US laws regarding child pornography can be found in the section on Law Enforcement. In any case, virtual world communities have begun policing such behavior themselves, regardless of national laws.³¹

(U) In Brussels, an individual alleged that she had been virtually raped in Second Life.³² Does this constitute harm? The case was ultimately dismissed because the judge ruled that the woman had the option of turning off her computer, regardless of the mental anguish she suffered or the damage to the reputation of her virtual character. In the United States, might this type of action be prosecutable under obscenity laws?³³ Laws will need to catch up with the new behaviors that are possible and the new norms that exist in these virtual worlds. ☐

(U) Group Behavior

(U) Technology continues to enable new ways for individuals to connect and relate to each other. Many of the same driving forces that encourage people to group together in the real world also exist in the digital realm. These social groups are akin to tribes. They coalesce around a common interest or activity, or a shared set of knowledge or beliefs because of the opportunities, support, or protection that the tribe provides to the individual.

(U) Some cohesive groups have already been moving between virtual worlds. A group of "refugees" moved en masse from the game Uru into There.com and Second Life, when the servers in Uru closed down. The refugees recreated their

earlier virtual communities and artifacts in their new worlds.³⁴

(U) Grievers. Most tribes come together for the entertainment and enjoyment of playing the game; they strive to gain their reputations and become legends by excelling at the competition offered within the experience. Others, however, are more interested in "griefing," or creating trouble. Such groups strive

to be a disruptive force, one that can cause chaos and frustration in others.



(U) What is interesting to note is that grievers (whether individuals or tribes) tend to work inside the system by following the rules of the worlds they are disrupting. They then abuse and exploit either the design or an unintended flaw in the code to carry out their chaotic actions. In short, although they may be considered "digital rebels," they still accept the electronic, artificial reality of the world in which they operate. They are rule breakers, not system breakers.

(U) Customs and Values. Obviously, a big element of any social network is its shared sense of values and morality. In virtual worlds such as Second Life, this can lead to tribal formation around both traditional interests, like religion and hobbies, and fringe pursuits, like fetishes and radicalism. In a virtual world, groups of disparate interests can live in close virtual proximity to each other.

(U) What makes virtual worlds like Second Life unique is that both can exist in the same space and utilize the ▽



(U) "Anamaya" & Group Identity in Second Life

(U) Residents of Second Life can customize their avatars to be associated with various virtual groups, allowing members of those groups to remain organized, and providing an easily recognizable symbol for identifying like-minded individuals within the world. This facet of Second Life becomes relevant to US national security considerations when one takes into account the existence of nefarious groups in the virtual world. Members of such groups are likely to take advantage of the opportunity to associate themselves with their group, whether in obvious or subtle ways.

(U) The most obvious method residents could use to associate themselves with a particular organization would be to join the formal Second Life group if one exists (or create one if it does not). Residents can be members of up to 25 groups, and can choose to display one group name alongside their avatar's name. Other residents who see the avatar in world would see that the resident is a member of the group. Belonging to a group can also yield other benefits, such as accessing parts of the world open only to certain group members. Tangible benefits such as access can help to reinforce group identity and the "anamaya" of individual members.

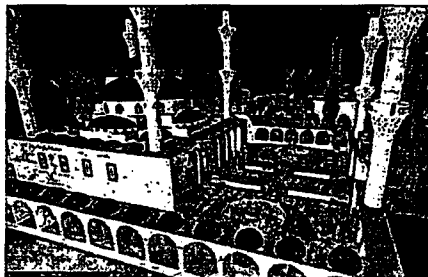
(U) The avatar customization features offered by Second Life, however, offer more subtle methods by which users can associate themselves with a particular group. Some residents may not want to attract attention to themselves by having, for example, the phrase "Hizballah Supporter" floating above their avatars, but could associate themselves with the group by creating and wearing a t-shirt with the Hizballah logo on it. If a t-shirt with the logo is still too brazen, group members could decide to have their avatars all wear t-shirts with a more innocuous yet still unique logo, or the group may decide that wearing a particular piece of jewelry (again, a unique item crafted by a group member and given only to other group members) identifies a resident as a member of that group. Although these understated methods would not provide the technical benefits of an official membership in a group (such as being able to access group-owned areas of the world), they would allow group members to identify one another among thousands of other avatars within the virtual world. Again, these methods could still be used to cement the resident's "anamaya" as part of the group and the virtual world itself.

▷ same tool to create and maintain a community. Sometimes the more extreme tribes in these worlds go to virtual war against each other, creating a new form of conflict based on disruption of the experience and denial of access and service. Such conflicts will often strengthen the bonds of the digital tribes, since they now have a sense of purpose and an identifiable "enemy."

(U) Ethereal Nature of Tribes.

(U) As individuals continue to spend more time in virtual worlds interacting with their digital tribes, what is socially acceptable in those worlds may strain the bounds of traditional real-world norms. Community standards, and the concepts of shared values and understanding that conventional communities provide, may be reinforced, or they may be torn apart, but they will no longer be static.

(U) Religious leaders estimate that more than 1000 avatars may visit religious sites in Second Life on a regular basis.⁴⁰ Individuals may pray at virtual churches, synagogues, or mosques. Some participate in religious rites such as the Seder or the Hajj. Second Life residents have built detailed and beautiful representations of real world or fantasy churches, cathedrals, and religious sites.



(U) Religious Groups. Some religious groups have already utilized the gaming trend to send a positive message about their religion. For instance, Digital Praise, a company specializing in Christian software, is releasing Guitar Praise, which is based on the same premise as the successful Guitar Hero and Rock Band games.³⁶ LB Games has produced Left Behind: Tribulation Forces as an online multiplayer game based on the Left Behind book series.³⁷ Other games promote a particular religious-political point of view, such as Special Force 2, which recreates the 2006 war between Israel and Hizballah forces in Lebanon, as seen from Hizballah's point of view.³⁸ Games may also incorporate religions or pseudo-religions into the storyline in order to make a game more compelling. For example, in Halo 2, certain actions may lead to the destruction of life in the Halo universe, but provide access to the gods.³⁹

(U) Based on this history, it is likely that religious groups will continue to expand into virtual worlds to spread their messages. Religious groups in Second Life cover the spectrum.

(U) Why have religions found a place in virtual worlds and games? As with most other social activities, the spiritually-inclined individual may seek to find other like-minded individuals with whom they can network, converse, and have fun. For some, the virtual world may represent a means to practice their religion in a country that is intolerant of their particular religious practices. These environments also provide the capability to proselytize, give classes, and distribute materials in an anonymous fashion, if need be. The virtual world can also provide an opportunity to see and learn about other religious practices, thereby promoting tolerance.

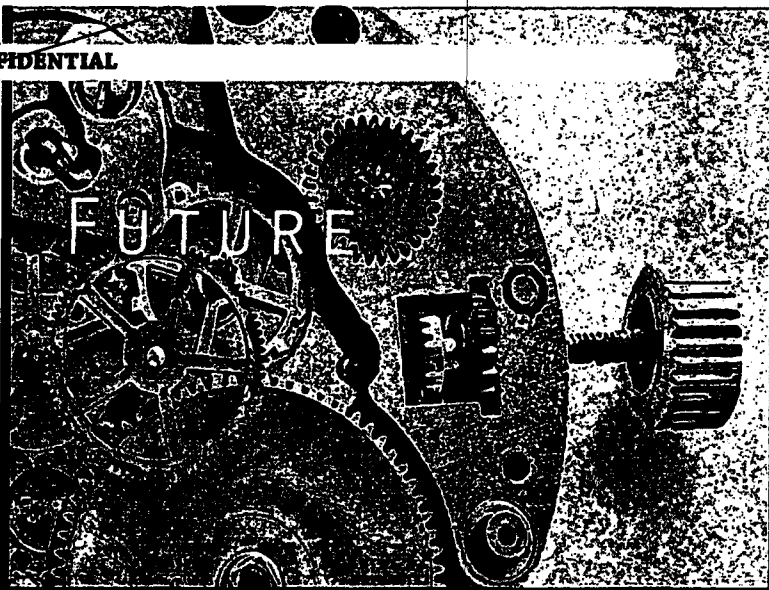
(U) All of this online activity provides a positive opportunity for community development, cohesion, the spread of shared moral values, charity work, and support groups. On the negative side, these environments also provide the opportunity for radicalization, the exploitation of susceptible individuals, and fundraising for extremist religious groups. The use of virtual worlds and games for these ends is likely to follow the same path as it did in the traditional 2D web, albeit in a possibly more accelerated fashion.

(U) Please see Appendix 3 for a detailed description of demographics in different virtual worlds. □

(U) The ultimate, larger implications of digital tribes remain to be seen, but they will likely continue to grow. Connectivity is the linchpin of this expansion; broadband penetration has lead historically to virtual world expansion. According to Gartner, "worldwide, 17 countries will have broadband penetration rates of 60 percent or more by 2012, up from five countries in 2007." Furthermore, "with a projected 77 percent household penetration rate, the United States will be tied with Japan for the fifth-highest broadband-penetration rate in the world, trailing only South Korea (97 percent), the Netherlands (82 percent), Hong Kong (81 percent), and Canada (79 percent)."³⁵

(U) PLAUSIBLE FUTURE

(U) PATTERN RECOGNITION/ SYSTEMS THINKING AND GRIEFING



(U) A digital game is a system of rules that a player must manipulate to accomplish specific goals usually framed in a narrative. Becoming a good player requires an ability to "game the system," which means one must be able to recognize patterns and exploit the system rules in order to reach the objectives of the game.

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- (U) In the future, it is plausible that a critical mass of people would be extremely good at recognizing patterns and understanding complex systems because they are being trained by game systems for this type of thinking. People may even begin seeing reality itself as a system to recognize and explore.
-

(U) The implications of this development would be both negative and positive. A rise in griefing may occur, since "griefers" are individuals that have learned to exploit system rules to disrupt the experiences of other users. Some griefers may then begin exploiting systems in pursuit of nefarious political and personal agendas. On a more positive note, the increased number of people with the skill of recognizing patterns in complex systems may mean that there will be a larger pool of individuals from which to draw intelligence officers and analysts.



CONFIDENTIAL

Economics

(U) Real impact in the real world.

(U) economics

CONFIDENTIAL

CH3

(U) Online virtual and gaming worlds pose challenges to traditional economic notions. Inherently transnational in nature, online virtual and gaming environments raise issues of trust, identity, and ownership in digital spaces and are already stimulating vigorous intellectual property debates. Given the economic potential of virtual and gaming economies, one might expect national regulatory attempts and international regulation by means of treaty or the extension of authority of international monetary bodies is possible.⁴¹ Because distributed virtual architectures allow for rapid

synopsis

re-allocation of resources in virtual worlds, jurisdictions with stable, balanced, and progressive legal and regulatory approaches to these worlds—specifically ones that take the “consent of the governed” into account—will likely acquire a decisive advantage in crafting the culture, form, and content of virtual spaces.

(U) Economies are necessary in virtual worlds to keep users from leaving. Users lose interest if there is runaway inflation or if the real world value of their virtual creations—which took a great deal of time and effort or investment of real Dollars—behaves unpredictably.

Discussion: Why Are There Virtual World Economies?

(U) Internal economies help stabilize virtual worlds and ration power, support specialization, encourage interactions, motivate users, and support economic role-playing.⁴¹ In many instances, the economy is an extension of the publisher’s business model where companies make money by selling and facilitating the manufacture and sale of digital “items” so players can customize their avatars and experience. □

(U) Technological Implications for Economics

(U) *Hifting to Business.* Despite the current popularity of gaming in virtual worlds, its future appears to be in business. Advances in high-speed mobile devices, sensors, and distributed design and production will likely combine with Millennial Generation user experience to revolutionize economic affairs. When the Millennial Generation transitions to the workplace in 10 years, virtual worlds are likely to play a larger role in the business community.

(U) Fourth generation wireless services and devices will likely begin to appear within the next five years. The high bandwidth demanded by hyper-realistic virtual worlds and virtual overlays will need this type of enabling technology in order for businesses to see the large-scale productivity enhancements necessary for widespread adoption.⁴²

(U) Some form of “ubiquitous computing,” where a critical mass of everyday devices and objects (such as buildings and microwave ovens) become capable of regularly and inexpensively transmitting and receiving data via the internet, is also likely within the next five to seven years. This sensor infrastructure is necessary to create realistic virtual worlds, virtual people (e-people), and virtual objects at a level of detail where businesses and the real people who run them are comfortable basing decisions on these virtualizations.⁴³

(U) Mobile devices will likely become more business-friendly with virtual reality glasses appropriate for everyday business use capable of alternating between the real, virtual, or “mixed reality” worlds available within the next seven to 10 years. Simple, user-friendly, open source-based security applications are likely to appear in five to seven years.⁴⁴

(U) Advances in distributed design and distributed production will likely amplify the impact of blurring the virtual and real worlds.⁴⁵ ▷



(U) Today's Virtual Economic Landscape

(U) The virtual world industry has become a significant sector of the real world economy in a remarkably short period of time. In 2007, the online game industry generated 6.6 billion US Dollars in revenue. The largest virtual world, World of Warcraft, generates more than 100 million US Dollars per month alone. Projections by industry analysts suggest World of Warcraft will generate 1.4 billion US Dollars worldwide in 2012.⁴⁷ The total value of the virtual world economies in 2007 was roughly 28 billion US Dollars, on the basis of in-world Gross Domestic Product (GDP), on par with Sri Lanka and Lebanon. AS of the first quarter 2007, the total value of Real Money Trading (RMT) was approximately 1.8 billion US Dollars.

(U) Online game development is a globally growing industry. In addition to company employed game designers, several hundred thousand people are employed as independent content creators who make money by providing content to open, user-generated virtual worlds such as Second Life, there, Lively, and IMVU. Economies are necessary in virtual worlds in order to retain users. Users lose interest in virtual play if there is runaway inflation or if the real world value of their virtual creations behaves unpredictably. The virtual world Entropia Universe has chartered banks operating in-world and issued its own ATM card that automatically converts in-world currency to US Dollars at a set exchange rate for real-world ATMs. The currency of QQ Online is negotiable currency in China.⁴⁸

(U) *Independent Virtual World Content Creators.* Most major games and virtual worlds actively manage their in-world economies with the principal and explicit goal of maintaining their currencies values and price levels. This is because one of the principal play mechanisms of most major virtual worlds is the production and trade of virtual goods.

(U) The institutions that enable trade and currency exchange in-world and via third parties are fairly primitive but are complex enough to include business models from simple subscriptions to virtual item sales, land sales, franchising, gambling, and paid tournament play. These transactions require game developers to build extensive systems for financial authentication, exchange, conversion, and storage. The infrastructure is starting to match the efficiency of the real-world financial infrastructure.

▷ (U) *Collaborative Technology: A Tool for Businesses.* The unstructured information provided by social technologies is particularly useful in business processes that are not rigidly pre-defined, but where people work together in an adaptive way to innovate solutions. Business processes often rely on access to structured data. This may be spread across many applications, databases, and directories. Social technologies work to address such complexities.

(U) Blogs and wikis are collaboration tools and useful mainly for sharing unstructured information associated with ad hoc or ongoing projects and processes, but not for structured informational retrieval. Yet some companies, such as Shell, are converting their official documentation to wikis because this enables the company to make documentation updates available in real time and enables non-editors to contribute to the documentation. In this process, they restructure the paper documents to a set of online wiki pages.

(U) A company that uses a wiki-based solution for collaboration will have more success than a traditional, highly permission-driven intranet tool. Wikis allow anyone to edit any posted information, and require no special privileges or knowledge from contributors. If wiki authors have a comprehensive profile describing their professional interests, listing their previous posts and their contact information, an atmosphere of trust and familiarity arises, and employees will be more likely to collaborate and share their personal knowledge. ▷

(U) Gold Farming in China

(U) Multiplayer online games have increased to a degree that a virtual economy has emerged. China has become a hub of gold farmers exporting online credits to South Korea, United States, and other developed countries due to cheap labor and low operational costs.⁵¹ There are tens of thousands of gaming sweatshops that hire players to play these MMORPGs, such as Lineage and World of Warcraft, to kill monsters and loot treasures for 10 to 12 hours a day to produce virtual assets. Gold farmers tend to concentrate on violent games, where they become wealthy by defeating enemies and harvesting the spoils of victory.⁵² Blizzard Entertainment, which owns World of Warcraft, has closed thousands of suspect accounts, but the gold farmers are becoming increasingly blatant.⁵³ The major reason why gold farmers still exist is the whole economy of supply and demand. Despite all the frustration and anger from game players, there is still a high demand where people are willing to pay in real money for virtual products such as gold coins or virtual weapons. The phenomenon of selling virtual goods for real money is called "real-money trading or RMT" and it first started in the late 1990s on eBay with MMO players looking to sell their virtual armor, weapons, gold and other related items for auction and then arrange the transfer of goods from the seller's account to the buyer's account. As mentioned in the economics section of the paper, gold farmers in South Korea even lobby the government as a trade association.

► (U) *Time Zone Issues with Business and Technology.* Due to the trend of participants on projects collaborating across different time zones, work increasingly must be done asynchronously. Participants often resolve time zone related discrepancies by exchanging e-mails or leaving messages on physical Post-it notes. This problem is even more challenging in collaborative virtual reality (VR) because VR is not particularly well-suited for the display of text.

(U) Tools, collectively referred to as teleimmersion, have been developed to create a virtual environment (VE) that supports asynchronous collaboration. One of the advantages of design or scientific visualization in an immersive environment is the ability to have participants in different geographic locations share space with each other and objects. This allows the participants to engage in a physical dialogue—to point at specific objects in the scene or set the parameters within the simulation—as a way to clarify verbal dialog. It gives the users a common context for their discussions.

(U) In asynchronous collaboration, the ability to hand off work quickly and accurately is of great importance. A user arriving in an ongoing collaboration in the virtual environment needs to know what work has been done during his or her absence and what work still may need to be done. Working collaboratively, researchers at the University of Tokyo and the University of Illinois have developed three VR-enabled tools for this purpose: VR-mail, VR-annotator, and VR-vcr. ■

(U) Currency

(U) Virtual world currencies will likely continue to evolve to possess more and more cash-like properties. Gaming companies have powerful incentives to make virtual world currencies more suitable for micro-transactions and easier to use, acquire and convert to or from real world currencies. These properties will open up virtual-worlds operators' markets, allow for new game-play possibilities, expand their potential revenue models, and reduce their credit risks. Virtual world operators will want to reduce their exposure to fraud by moving to more secure and reputable payment systems. The implications of these changes are that virtual world currencies will move more toward retail distribution by cards or other stored value mechanisms. Another trend will be to improve security with stronger authentication for the transfer of monies, and possibly self-authentication similar to the

security features on a 20 Dollar bill that make it hard to forge.

(U) QQ Coins, one virtual currency, gained such widespread real world use by March 2007 that 14 Chinese government agencies were prompted to issue statements on the use of virtual world currencies in the real world. The People's Bank of China subsequently assumed governance and enforcement power over game operators' issuance, in-game use, and Renminbi (RMB) trade in virtual currencies.

(U) Prepaid game cards are currently a popular mechanism for players to purchase either game time or game currency, and can also be used to acquire digital items. Game cards are broadly distributed across the United States and throughout much of the rest of the world. These ►



▷ cards are mostly simple magnetic strips or printed cards, and as such are highly vulnerable to forgery and fraud.

(U) In the predominant mechanism, these cards simply store a code which links to a ledger entry on the game provider's service. It is likely that in some games these cards will move to more secure mechanisms which employ "smart card" technologies and stored value.

(U) By using prepaid game cards, gamers may be able to use virtual currency to make real-world transactions.⁵⁵ The "Octopus card" is one example of this; it is a mechanism by which Hong Kong residents can buy passage on mass transit. The Octopus card became generally tenderable because it was broadly held, has cash-like properties, and is used to pay for a ubiquitous service; all of these characteristics also apply to World of Warcraft "gold."

(U) As virtual worlds become increasingly accessible via mobile devices, it is inevitable that they will become integrated with mobile-based payment systems. This will be hugely beneficial for game makers, as integration will allow new revenue

models, and also for players, because it will allow instant gratification and new types of rewards. Moreover, mobile-payment and virtual world integration will make it dramatically easier to use either in-world currency or seamless server-side conversion to purchase real world goods and services.

(U) Virtual Currency in the Future. It is likely that virtual world-based currency will become a widely tenderable and freely convertible currency within the next five to 10 years, and will function much like traditional state-issued currency. Market forces are pushing game and virtual world operators to create products which have real world currency properties. Their implementations may serve as a substitute for real world currencies. In five to 10 years, virtual world currencies could rival those of small nation-states in stability, liquidity, and users' faith. Virtual world institutions may mirror real world institutions, which can provide depository services, credit, securities, financial guarantees, credit analysis, hedging mechanisms, and other services similar to those found in a robust real-world monetary system.

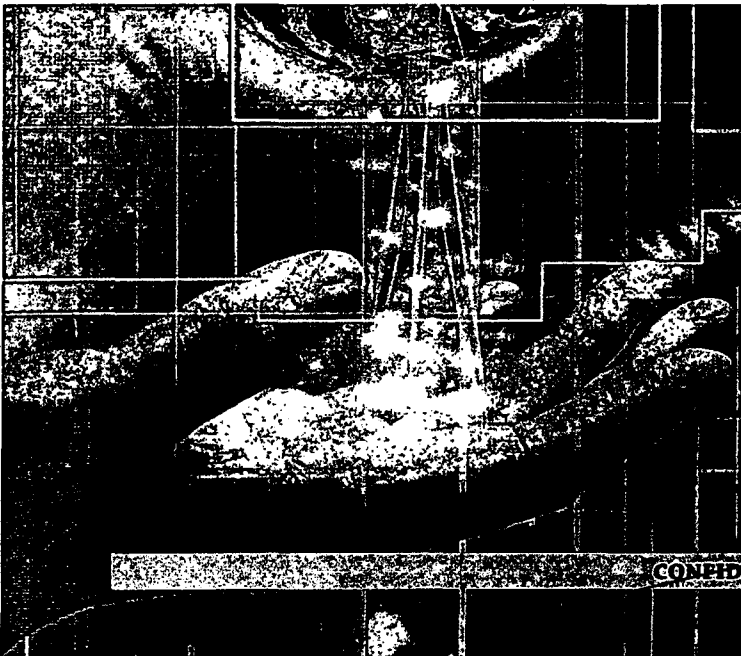
structure may inhibit states' ability to tax, serve as money laundering venues, create inflationary pressure, or be perceived as threats to sovereignty. Unilateral regulation is unlikely to be effective, except to a limited degree in authoritarian states like China with tight currency controls. Even in those states, regulation will be of limited efficacy unless extreme measures are taken. Other nations are likely to see the emergence of widely convertible and tenderable virtual world-based currencies as economic opportunities, and are likely to pass laws and create regulatory frameworks that facilitate the growth and domicile of virtual world enterprises within their borders.

(U) Virtual world currencies will likely continue to evolve to possess ever more cash-like properties. Game companies have powerful incentives to make virtual world currencies more suitable for micro-transactions and easier to use and acquire or convert with real world currencies.

(U) These properties will likely open up virtual world operators' markets, allow for new game-play possibilities, expand their potential revenue models, and reduce their credit risks. Virtual world operators will want to reduce their exposure to fraud by moving to more secure and non-reputable payment systems.

(U) The implications of these motivations are that virtual world currencies will move more towards retail distribution by cards or other stored value mechanisms, strong authentication, and possibly self-authentication in the same sense that a 20 Dollar bill is hard to forge and is self-authenticating. ■

(U) Nations may see the emergence of significant virtual world currencies as economic, political, and criminal threats. Like China, they may enact legislation or regulation to eliminate or control virtual world currencies.⁵⁶ Virtual world currencies and associated infra-



(U) Technologies Available for Business Education

(U) VR Collaboration: The Virtual Director™ is a virtual reality interface that enables gestural motion capture and voice control of navigation, editing, and recording in the CAVE, ImmersaDesk™, and Infinity Wall™. Virtual Director provides remote virtual collaboration capabilities, linking together VR devices and people represented as customized avatars. It was patented on November 28, 2000 (No. 6,154,723).⁵⁷ VirDir 2 provides current choreography and scientific visualization on inexpensive passive stereo display technology.

(U) VisAD: VisAD is a Java component library for interactive and collaborative visualization and analysis of numerical data. It combines a flexible data model and distributed objects (via Java RMI) to support sharing of data, visualizations, and user interfaces between different data sources, different computers, and different scientific disciplines.⁵⁸

(U) Vis5D: The Vis5D system is widely used by scientists to visualize the output of their numerical simulations of the Earth's atmosphere and oceans.⁵⁹

(U) Cave5D: Cave5D is a virtual reality version of Vis5D for the CAVE and ImmersaDesk.

Scientists are using the worldwide web to exchange the output of their models as Vis5D files. Links to Vis5D files are embedded in web pages just as links to GIF files are embedded in web pages, and web browsers invoke Vis5D to view them, just as browsers invoke xv to view GIF files.⁶⁰

(U) In VR-mail, users make a recording by speaking and gesturing. The audio and gestures are captured and saved in a format that allows a synchronized playback at a later time. This recording can then be sent to another user in the virtual environment. When the recipient of the message enters the virtual environment, he or she will find a VR-mail message waiting for him or her. VR-annotator allows users to attach a message directly to an object in the virtual world, as there is little support for text in these environments. VR-vc records dynamic events in the virtual environment. These events are captured in an event stream that can be played back; if other participants are in the virtual environment at the same time, all of them are able to view the playback together as the same event stream is delivered to each of them.

(U) Money, Financial Markets, and Sovereignty: Toward a New "Gold" Standard?

(U) Virtual worlds are implementing a system of value exchange that mirrors those in the real world. Nearly all virtual worlds have currencies and in-world exchanges for goods or services, and some have equity and debt instruments. The currencies of today's major virtual worlds are all convertible into real, hard US Dollars either through intrinsic world-based exchanges or via gray-market third parties.

(U) Real world spillover into virtual worlds continues. Entropia Universe has chartered banks operating in-world and issued its own ATM card that automatically converts in-world currency to US Dollars at a set exchange rate at real-world ATMs. Due to inflation concerns, the People's Republic of China is attempting to stop the trend of QQ Coins being traded for real-world currency.⁶¹ QQ Coins gained such widespread real world use by March 2007 that 14 Chinese government agencies were prompted to issue statements on the use of virtual world currencies in the real world. The People's Bank of China subsequently asserted governance and enforcement power over game operators' issuance, in-game use, and Renminbi (RMB) trade in virtual currencies.

(U) Game operators are now accountable to financial crime laws, but the real world use of QQ Coins and RMT markets has not been observably affected. There also have not been any prosecutions despite there being numerous examples of clear violations of government guidelines. Parties involved in virtual worlds in China have suggested that the lack of financial crimes charges levied against virtual world operators violating government guidelines is because enforcement is extremely difficult and virtual worlds and their activities, such as gold farming, are economically important.⁶²

(U) It is highly likely that online games will continue to grow in popularity, gain functionality, and compete on favorable terms with other forms of entertainment.⁶³ It is unlikely, however, that the gaming aspect, by itself, will fundamentally transform economies or the way in which business is conducted. For example, the popularity of virtual worlds has led the Chinese government to officially sponsor a virtual world as part of the Beijing Cyber Recreation District project featuring its own currency and an officially chartered bank.⁶⁴ □



(U) Regulatory Framework

(U) Countries that have stable and fair legal and regulatory frameworks for virtual worlds are likely to hold a decisive advantage in crafting the culture, form, and content of virtual spaces. By nature, virtual worlds are inherently transnational. It is likely that there will be a cycle of national regulatory attempts which may cause virtual world operators to shop for friendly locales. Early examples of this can already be seen with IGE, one of the largest virtual goods and currency exchanges, which has changed venue several times and is now domiciled in Vanuatu, a country where laws have been enacted to attract this kind of enterprise.⁶⁵

(U) It is likely that market forces will drive virtual world creators and currency institutions to self-regulate and domicile in at least somewhat regulated venues because virtual world currency users will require the liquidity and stability that arise from transparency and the rule of law. For a detailed discussion of market development drivers see Appendix 4. □

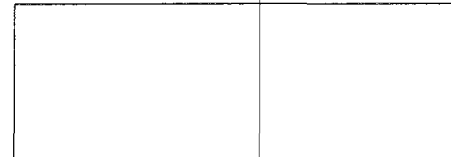


(U) Economic Threats

(U) Money Laundering. Trade in virtual currencies is likely to be a means of small-scale money laundering. There are numerous internet sites that offer to trade large blocks of virtual world currencies “off exchange” for rates considerably worse than those available at official sites. The only advantage to accomplishing conversions in this manner is that they are not tracked or reported by the game operator.⁶⁶ Several game operators and RMT sites, such as IGE, are operated by alleged criminals. Some, like MindArk, have connections with suspicious investors. Existing digital currency systems like eGold are possible money laundering platforms, as they allow instant international transfers over foreign and domestic private networks without reporting requirements or oversight associated with the mainstream funds transfer networks.

via stored value card, implemented as digital cash, and domiciled in secrecy-friendly venues.

(U) Sovereignty. If the ability to issue currency and control conversion of currency is fundamental to sovereignty, virtual world currencies represent a significant threat. It is likely that a major virtual world will domicile in a venue which grants its operator effective control over its currency, much like a sovereign state, because the benefits to doing so could be very compelling to the game operator, and therefore to a small host nation. The successful sale of the control of internet top-level domains by small countries to private companies demonstrates this phenomenon.

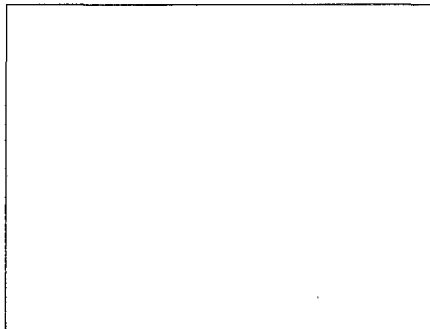


(b)(1)
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(U) Taxation. Taxation of economic activity within virtual worlds is in a state of flux, with only a few countries addressing the issue at all. In April 2008, the Swedish Tax Agency issued regulations governing income earned in virtual worlds, broadly stating that if activity in a game results in financial gain—including even in-world currency—it is reportable and taxable income if the currency is convertible into real world currency. The regulations do not state whether the existence of a third party secondary market is sufficient to allow for convertibility meeting the definition in the regulations. If this is the case, in-world trading in all major virtual worlds would likely be subject to value added tax or income tax.⁶⁷ From the perspective of virtual world or game operators, this situation is untenable and may prompt companies to move to countries with more moderate tax laws. □

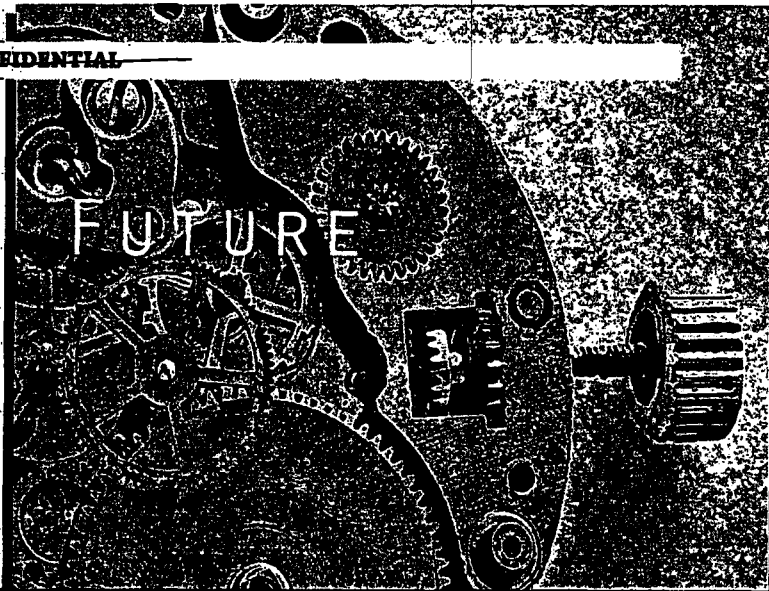
(b)(1)
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(U) As virtual world currencies continue to evolve and become more liquid, they will likely retain all of the properties of today’s digital currencies with additional properties that make them desirable for money laundering, such as being tradable



(U) PLAUSIBLE FUTURE

(U) WHY I BOUGHT MONTENEGRO BACK IN 2010



(U) The plausible future creatively interpreted below demonstrates the potential for the growth of businesses in virtual worlds and the ultimate impact that virtual worlds could have on global economics:

(U) It probably seems obvious now, but back then people thought I was crazy. Maybe some still do, but even they are using the Montenegro Virtual Gold piece (Geeps). In any event, now that a very fast 10 years have gone by I thought it would be useful to reflect a little, as much for my own benefit as for that of any interested readers.

(U) Montenegro's GDP has increased more than 10-fold in 10 years, and we have gone from having one of the lowest standards of living in the western world to one of the highest. We are still a small country, but we punch way above our weight: we still do not produce much in the way of natural resources or tangible items, but we are now the center of the virtual world industry, a 50 billion US Dollars/year business. The Geep has become a reserve currency as well, which puts us in that select club of economic giants with populations three orders of magnitude greater than ours, and makes us a real player on the world stage. The "Montenegro Miracle" is a phenomenon that has been written about a lot, and it has been attributed to a whole host of causes, but we can trace it back to one point in time, and one decision.

(U) As nearly everyone now knows, in 2009 I launched AltWorld with some friends of mine. At the time, it looked like just MMORPG riding the tide of the late 'aughts venture capital-fueled MMORPG boom. Even though there were about 200 other games that came out that year, ours was fun enough to attract a few million players in short order. Aside from being unbelievably fun, AltWorld was different because it had a robust and manageable in-world economy from the

start. Other games had "economies" before ours, but they were basically either just back-fit onto old-school game designs, were thinly veiled cyber-Ponzi schemes, or were fundamentally games of chance.

(U) Of course, we owe a lot to some of the games that came before us, so I would hasten to applaud some of the old "economy" games. Unlike our predecessors, however, we had a mix of game designers, economists, engineers, and business people working together from the outset, and that let us close the economics gaps. We designed our game so that players would want to perform services for and trade with one another, and so that it would be fun and sustainable without too much intervention from us. The reasons we did this are now so obvious that people do not even think about them any more, but at the time it was a pretty new way consider game-play and revenue. The following factors spurred us to approach the in-game economy in this way:

○ (U) **Investment vs. Spending:** When players buy a game they think about it in two ways: spending or investing. Before AltWorld every game (with few exceptions) required users to spend money. With AltWorld, in contrast, players can buy and earn digital items that will almost certainly have some resale value in the future. Moreover, some of those items might increase in value. When people invest they tend to be looser with their wallets than when they spend.

○ (U) **Lower Cost of Entry:** MMORPG models that allowed users to play for free but required them to pay for upgrades were just beginning to take off back in 2009. Having a zero cost of entry is a great way to entice people to sample your product. Beyond that, if they know they can cash out, at least partially, they are much more likely to view their entry as the net. ▶



► ○ **(U) Fairness:** Before we introduced AltWorld, most online games that used an item-sales mechanism tended to have prices that were either created by the game operators or were thinly traded on small markets and thus were highly volatile and subject to manipulation. When we came out with a large integrated world and economy with good market and price discovery mechanisms, players responded with more trade, and a virtuous cycle ensued. Fair, transparent pricing is a good basis for a currency, and vice versa.

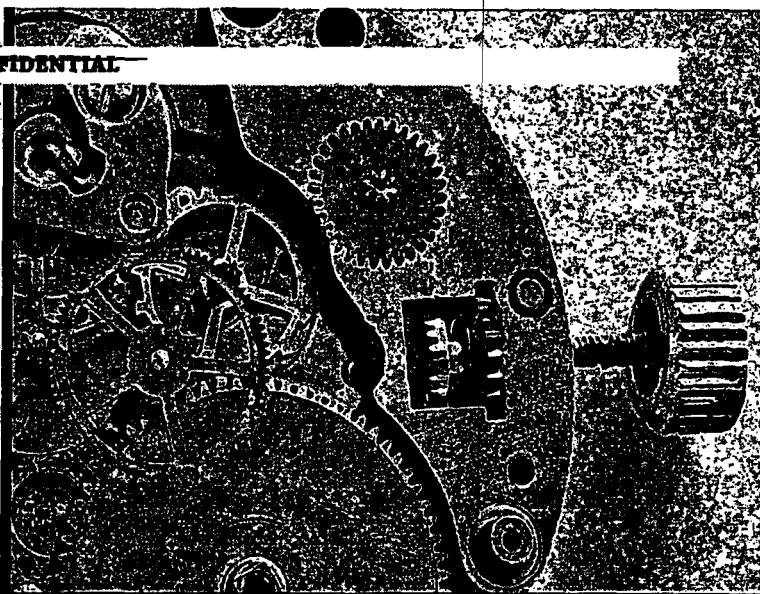
○ **(U) Price Stability:** Everybody expects virtual world economies to be stable now, but when we created AltWorld it was not obvious why that was so important. Basically, when people invest a lot of time or money in something, they do not want that investment to evaporate over time. AltWorld has always had the most stable price levels in online games.

○ **(U) Liquidity and Depth:** Having a large in-world economy makes a currency more trustworthy because it gives use-value to it—if people always want to buy a new set of armor in the game, money will always change hands. The bigger the economy, the better the currency works. Likewise, having a currency that is useful outside of the game as a real currency makes the currency more reliable for in-game use. Liquidity and depth make for a good (and manageable) velocity of money, which makes for a better game.

○ **(U) Interoperability:** When we made AltWorld Gold useable in our second game, Pirates vs. Ninjas, people thought we were crazy. We did it out of pure expedience—we wanted a lot of people to begin playing PvN as soon as possible, and we wanted a liquid currency and liquid item markets. Of course, it turned out that having a deeper meta-economy made it a lot easier to cross over into the real world with our currency for the reasons I described above.

○ **(U) Instant Gratification:** When a game rewards players with something tantamount to real money, right on the spot, they tend to respond better! When it is not tantamount any more but is instead true exchangeable currency, the reward is that much better.

○ **(U) Convenience:** This one seems ridiculously obvious now, but before the Geep Card people had to use cash, clumsy debit/credit cards, or services like PayPal. They also had to use the currency corresponding to their geographic location or that of a web merchant on the other side of the world. With Geeps people could do small (and large) transactions anywhere, with anyone, and could be confident that they would get a fair trade. None of this occurred to



us when we came out with the Geep card. We just wanted our players to be able to pay for stuff on AltWorld in a way that did not require them to jump through hoops or reveal their identity. Of course we were also looking at using a stored-value smart card as a way to reduce our credit and fraud exposures, but the real power of the model was not apparent to us when we decided to act on it.

○ **(U)** So now I guess the game reasons for having a real economy and real-ish currency are pretty clear, but what about business reasons to go from real-ish to real, and why Montenegro?

○ **(U) Privacy:** Some of our players live in repressive states, while others simply do not want “the Man” to know their business. We wanted to have laws to protect their privacy, and transaction systems to ensure that nobody intrudes in their business. It is a fair criticism that our country’s “secrecy laws” facilitate illicit activity, but in Montenegro we believe that individual liberty trumps the right of the state in almost all circumstances. Of course, we draw the line at terrorism and crimes against humanity, but that is a distinct line. The great side effect of this policy has been that Montenegro has become an international trade and banking center, and that those industries now rival virtual worlds as the largest contributor to our GDP.

○ **(U) Tax:** In 2008 Sweden said they were going to start levying value-added tax on in-world transactions in games with convertible currencies, which was pretty much all of them if you count third party exchanges (which you should). This would have been an industry killer. When we were getting ready to launch AltWorld we were not confident that we could have players in Sweden, or anywhere in the EU for that matter, and be safe from this tax scheme. We needed a venue where there were moderate laws and where we could be confident that the

regulators understood and valued our industry. By the way, the United States did not meet those requirements at the time. Back then, the choices were China or Vanuatu, neither of which were good ideas for a lot of other reasons. So, we decided to start talking with countries that might be willing to negotiate.

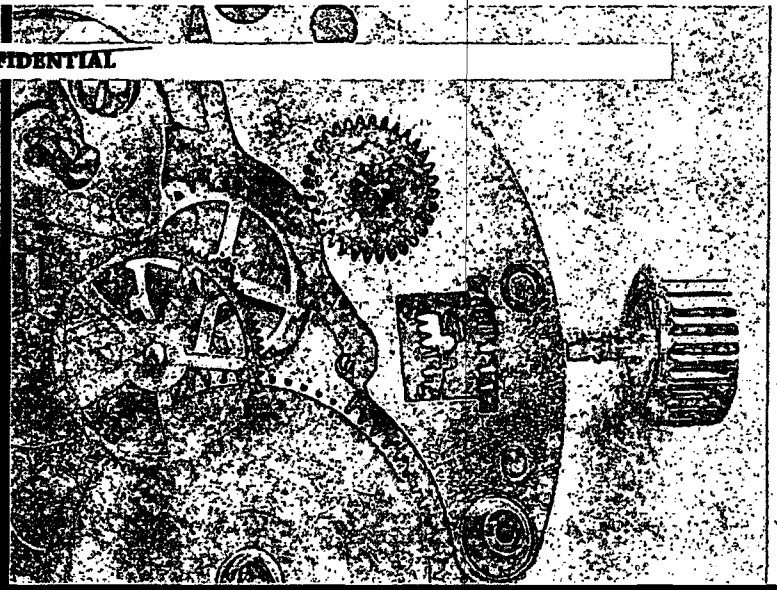
• **(U) Regulation & the Rule of Law:** Contrary to popular belief back then, we did not move to Montenegro and craft the laws that we did to escape regulation. In fact, our intention was to be regulated with the force of law and international treaty so that participants in our worlds could have confidence that our economic institutions would report transparently, that we would enforce contracts among players, and that we would protect their property, free speech, and free assembly rights.

(U) Montenegro was a member of the IMF and the World Bank, which was important to us, as was the country's relationship with Europe. Montenegro was friendly with its continental neighbors, but did not want to switch its currency to the Euro or be subject to the ECB. The country had also applied for membership in the WTO.

(U) A happy side effect of the regulatory scheme we put together was that people started using our worlds as a place to transact business that had nothing to do with the games we offered. Moreover, Montenegro attracted other virtual world and game operators—we essentially became the Delaware of cyber-space overnight.

• **(U) Sovereign Currency = Convertibility:** Having the Geep become a real, state-issued currency made total sense to us. We wanted our players to have the confidence that comes from coin issued by a sovereign state as well as the ability to freely convert their money. We also wanted to have a diversified economy that had anchors outside the game. Of course, it was not lost on us that there would be second-order benefits of having control of a tenderable and freely convertible currency, issued by a country with robust privacy laws.

• **(U) Size and Economy:** Montenegro, back in 2010, had a GDP that was only a few times our company's revenues. Our company's market cap exceeded the country's foreign currency reserves, and the per capita GDP of Montenegro was about what a good gold farmer could make back then. Moreover, Montenegro lacks natural resources and did not have a significant industrial base. What the country did have was great geography, an educated populace, good telecommunications infrastructure and internet



connectivity, a forward-looking government, a healthy tourism industry, and a supporting work culture. All of those attributes are important for servicing virtual worlds.

• **(U) Virtual Citizenship:** Our worlds give users the ability to create, a platform on which to express themselves, and a way to socialize and organize. We felt that it was important that they feel protected in all of these activities, both in terms

- of their privacy and property rights, and from authoritarian
- governments that might wish to infringe on their rights of free
- speech and free assembly. Of course, offering virtual citizenship
- eclipsed what people normally thought of when they thought
- about games, but we determined that the more we could satisfy
- basic human needs, the better a business we would have.

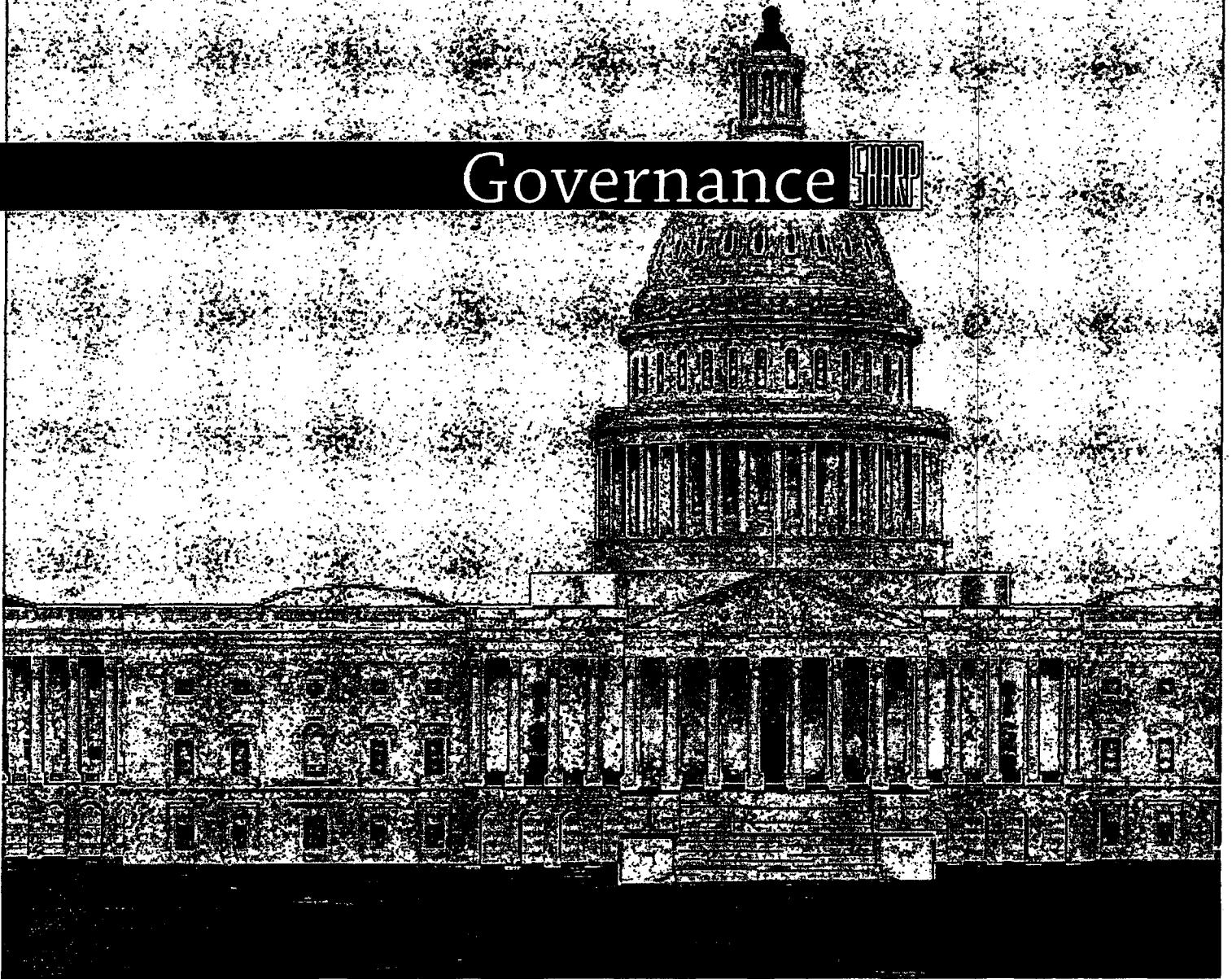
• **(U)** Back in 2010 we did not realize that offering virtual citizenship would make Montenegro a global center for the exchange of ideas, that people would play our games just to be citizens in a country that protected their rights. We also did not think our sort of cyber-hippie statement would make Montenegro a world hub for commerce and trade in services. We just started out with the idea that we should make our games a hospitable environment for our players. Another happy accident!

(U) So here we are today. My founding partners and I are all pretty well off, and have cool Minister of This and That titles. When we come back to the United States we get to park wherever we want (diplomatic plates!). Our country has become a model for economic development. We lead one of this century's most important industries and our little Montenegro is able to set technology standards for the rest of the world. The people of Montenegro have become among the most prosperous in Europe. Our little country on the Adriatic, just 700,000 people, sits side by side with the United States, the EU, and China on the world stage, with the Geep a reserve currency as good as the Dollar, Euro, or RMB. ☐



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Governance



(U) Governing 3D cyberspace.

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(U) The issue of governance within the virtual and gaming worlds elicits the question of whether to govern at all, and if so, then what specifically requires governance. Equally important is the question of how best to govern virtual and gaming worlds.

While some circumstances within the virtual world lend themselves more clearly to governance, no clear-cut answers exist for the challenging questions raised above.

synopsis

(U) This section begins by outlining the requirements and possible paths for virtual world development and continues by examining existing governance structures within virtual and gaming worlds to determine whether there is an appropriate space for government intervention. This is followed by an analysis of public expectations regarding government protections in the virtual world. Citizens may expect protections in virtual environments similar to those found in the real world, especially as their online identities become extensions of their real selves. Lastly, governance is considered against the evolution of virtual worlds. How might governance address challenges posed by the Metaverse, the Multiverse, and the concept of Reality+?

Technological Implications for Governance

(U) The path of technology will likely shape the parameters of government response. In the Metaverse, one company's virtual world will likely dominate with a proprietary network, and governments will have to carefully consider their relationships with that company. In the Multiverse, multiple applications would compete for spheres of influence. In the third virtual form, augmented reality (or Reality+) would build a layer of virtual information attached to real people, places, and spaces.

(U) See Appendix 5 for implications for governance of different virtual world development paths.

(U) The Big Picture. Existing participation in graphically immersive, multi-user environments currently constitutes only a minor subset of the world's online behavior. However, the emergence of a common virtual world interface has the potential to radically expand the internet's impact. Signs that it has reached maturation may include:

- People spending the majority of total time on the internet within virtual environments.
- Total time on the internet increasing due to superior application of virtual environments to more areas of human activity (from entertainment to work).
- Commercial revenues derived from virtual environments beginning to dwarf existing revenues from web-related sources of income.

(U) Thus far, virtual worlds have been relegated to the computer gaming industry. Despite that limitation, games based on these worlds have attracted a mass market measured in the tens of millions of participants and billions of Dollars in revenue. Despite the early success of virtual worlds in the marketplace, it is far from clear that they are a transformational technology that will replace the web as the interface for the internet. It is even unclear whether virtual worlds will rival the impact of web logs and peer-to-peer technologies, which have had a profound impact on the publishing and music/film industries, respectively. However, if virtual worlds did become a transformational technology by developing into the new interface for the internet, the following would need to occur: ▷



▷ *Technological improvements in the experience.* To reach a global audience, virtual worlds will need technological improvements that enable photo realistic detail. Participants could then become truly immersed in the environment by moving from flat screens to head mounted displays (full three dimensional displays, 360 degree panoramas, and first person visuals). Further, there may be a need for new interface controls that are better suited for virtual worlds and environments than mouse and keyboard combinations. Advances in these areas will likely be sudden and unexpected.

● *Standards.* In order to spread rapidly and become truly universal, virtual world software will need standards that enable developers to build and interconnect these environments. Further, there will likely need to be common methods of user interactions or conventions of use (for example, how a link works on the web). Proprietary systems with patented conventions will face stiff resistance and slower rates of innovation, both of which are fatal for global adoption. Virtual worlds and environments that set or adopt standards will grow faster than those that avoid or resist them.

● *A diverse ecosystem.* The development of a Metaverse platform that serves as a common environment for the use of the internet will likely be beyond the scope of any one company to build. Instead, a vibrant and diverse ecosystem of participants (companies and organizations) would need to be enlisted to speed development. Measurements of the health (rates of innovation, number of participants, financial viability of participants, and diversity of focus) of Metaverse platforms is an excellent way to determine potential winners and losers in this competition. ◻

(U) Existing Governance Framework

(U) The governance framework for virtual worlds is somewhat different from that which accompanies most social interaction. In addition to public law and potential regulatory schemes, virtual worlds are also governed by a combination of End User License Agreements (EULA) and community standards. This gives rise to limited an inconsistent protection of identity, privacy, and property in virtual worlds. Governments can gain a competitive advantage by filling these protection gaps.

(U) Good governance requires an evaluation of whether government intervention is necessary at all. Virtual worlds have strong self-regulation; it may simply not be worth a government's effort to intervene. This section analyzes the existing governance structures within virtual worlds, outlines conflicts between those structures, and delineates a space for limited government inter-

vention where existing legal structures fail to protect citizens' identity, private information, and property.

(U) EULA as Social Contracts.

The basic legal document of virtual worlds is the EULA, which acts as a license to use software and may serve as a terms of use agreement to establish community norms. EULAs are the social contracts of virtual worlds. For virtual worlds, private law contracts have largely replaced public law as the source of rights and obligations. EULAs are drafted by corporations, and therefore contain terms that primarily benefit the drafter, and are often imposed without the informed consent of the player. EULA terms can be changed at any time by the game creator. Enforcement of EULA terms may also be inadequate. Even severe transgressions against social codes, such as racial or sexual harassment, meet with relatively mild penalties,

if any, from the game creator. EULAs do not meet all of the potential governance needs of virtual world populations.

(U) Community Standards & the Governance Gap. In virtual worlds where EULAs do not cover the entire needs of a community, bottom-up governance develops when users band together to enforce their standards. Enforcement may include blacklisting transgressors from virtual property or expelling transgressors from basic social groups known as guilds. EULA terms often conflict with bottom-up social norms in protection of virtual personhood, privacy, and property. In EULAs, companies claim that the user-created avatar is actually owned by the company. This is akin to Microsoft claiming an intellectual property interest in all documents created using their word-processing software. Most virtual world creators do not enforce

property rights within virtual worlds. If virtual property is stolen, little in the way of enforcement can be expected. The EULA also permits the company to gather personally identifiable information or log all instant messages users send while in a virtual world regardless of user preferences.

(U) If virtual world citizens check their real-world rights at the door when they enter virtual spaces, there is no role for governance. However, even if they do not check those rights at the door, it is not clear that the triggers for governance are the same in virtual worlds as they are in real worlds. The IC is definitionally concerned with national security,

whether the concern is for events or people. For law enforcement, the trigger is generally a threat to persons or property. In virtual worlds, persons may be threatened through their per-

(U) In the upcoming battle for the hearts and minds of virtual world populations, those worlds that supply the governance needs of their citizens will likely reap a significant advantage in terms of population size and influence.

Similarly, threats to virtual property are real, because such property can have monetary value.

(U) This creates a framework for limited government intervention in virtual worlds. Where EULAs and community norms conflict, there may be a need for government to act to protect citizens' identities, private information, and property. A government that meets these needs for virtual world populations may gain a competitive advantage over other governments that fail to do so. Populations are likely to move away from regimes that do not supply good governance, and into worlds that benefit from good governance. In the upcoming battle for the hearts and minds of virtual world populations, those worlds that supply the governance needs of their citizens will likely reap a significant advantage in terms of population size and influence. Top-down governance must be balanced with bottom-up social self-regulation if governments are to be efficient and effective in virtual worlds. Governments that obtain the consent of the governed by providing stable governance regimes are likely to reap significant advantages in their ability to act within virtual worlds. See Appendix 5 for a discussion the consent of the governed and crowd-sourced Governance. □



(U) Foundation for Governance in Virtual Worlds: The Virtual is Real

(U) Real Citizens, Real Experiences. Technology exists that enables individuals to create virtual worlds and games that challenge the question—is it digital or is it real? If virtual world technology enters the mainstream, the number of US citizens affected by the technology is likely to grow quickly, along with their demands for stability and law enforcement. This technology has the potential to be an agent for transformational change in our society, our economy, and our efforts to safeguard the homeland. The transitioning of these technologies into mainstream society, though, raises privacy, identity, and criminal, jurisdictional, and revenue questions.

(U) Death and Taxes: The Inevitability of Government Involvement in Revenue. A second incentive for a government to assert its authority is the ability to levy taxes in the virtual world. The “hands-off” approach of the US Government to taxing internet commerce for the past decade is unlikely to survive the simultaneous decline of real world tax revenue and expansion of web commerce. Indeed, the Congressional Joint Economic Commission and the Internal Revenue Service have both closely examined the issue of taxing real-Dollar economic gains from virtual worlds.

(U) Once a government begins collecting tax revenues, it may explore its role in defending the stability and continuity of operations in virtual worlds to ensure its uninterrupted revenue stream. Governments are likely to establish policies regulating the use of virtual worlds to enhance government services for citizens. This government

regulation over the corporations maintaining these virtual worlds can take two forms.

- Such governance would hopefully enable the smooth, predictable functioning of corporations within the virtual world, and government organs—the courts and regulating officials—would share an understanding of the complexities of virtual worlds. Corporations are likely to be attracted to these governance environments, creating a clustering effect.

- Alternatively, governance might be overbearing and impose overly restrictive regulations and excessive taxation on corporations operating in virtual worlds. The cost imposed on corporations would likely reach a tipping point and convince corporations to move their operations “off-shore.” These corporations might be able to escape the legal restrictions and tax levies by incorporating and physically locating themselves to a locality under a government that would allow them to operate unregulated or less regulated.

(U) The Enforcement Gap.

Policies, regulations and laws have always lagged behind the development and use of new technologies. The lag is the result of a model of top down governance and policy formulation and bottom up technology development. This relationship creates a gap. The lack of explicit relevance and applicability of the policies and laws and lack of willingness by governing bodies to enforce existing rules puts individuals and

the security of the homeland at risk. A new model will be required to address this gap and the rapid pace of change within the technologies. This model would be applicable to all forms of technology, not just virtual worlds and gaming technologies.

(U) Since virtual worlds in which the immersive nature is extremely compelling lead to a stronger emotional attachment, more people will be willing to file charges against those they feel are violating their persona. In addition, many people rely on their avatar’s reputation and standing in the virtual community for status and economy. This could lead to being able to prove real world economic damages in addition to emotional distress from these cyber crimes. Some US states and other countries have decided that online harassment and virtual crimes are punishable under their current laws and, as with other technologies, the case law will be built around existing laws.⁶⁸ Still, in many cases existing laws will not suffice. The fact that policies and laws lag behind technological innovation is not new. This will require policy makers and lawmaker to formulate new policies and statutes, which will govern the virtual and games worlds.

(U) If virtual world technology enters the mainstream, criminals and US adversaries will find a way to exploit this technology for illegal and errant behavior. Furthermore, governments will need to examine current law and determine which rules apply to virtual world behavior just as to real world behavior; and which rules do not apply in virtual worlds. □

(U) Rational Expectations of Privacy in Virtual Worlds

(U) US citizens in virtual worlds possess a rational expectation of privacy, such that a search of their virtual homes and property may be subject to the warrant requirement of the Fourth Amendment. In the real world, street-corner conversations are public, and bedroom conversations are private. Virtual worlds are unique in that they recreate streets and bedrooms, and humans broadly treat these areas differently. Virtual world technology has been intentionally designed to elicit responses from humans. Virtual objects and land are designed in order to make virtual world citizens act as if they were real. The ability to buy or build virtual homes or spaces, and form attachments to them, is real.

(U) Protecting US Citizens' Personal Information in Virtual Worlds. The issue of privacy also presents an opportunity for government to protect US citizens against threats to and through their personal information. Congress has already begun to move against the threat of massive data collection on US citizens by companies that do not carefully protect that data.⁶⁹ Congress recognizes that the true threat to US citizens' personal information comes from private companies and individuals that record, track, and index the personal information of US citizens.⁷⁰ Spyware—computer programs intended to follow the user across the web or search the user's hard drive—are commonly used. Companies routinely hide powerful programs (ostensibly with the consumers' consent to legal clauses that permit companies to search users' computers).⁷¹ Companies also often

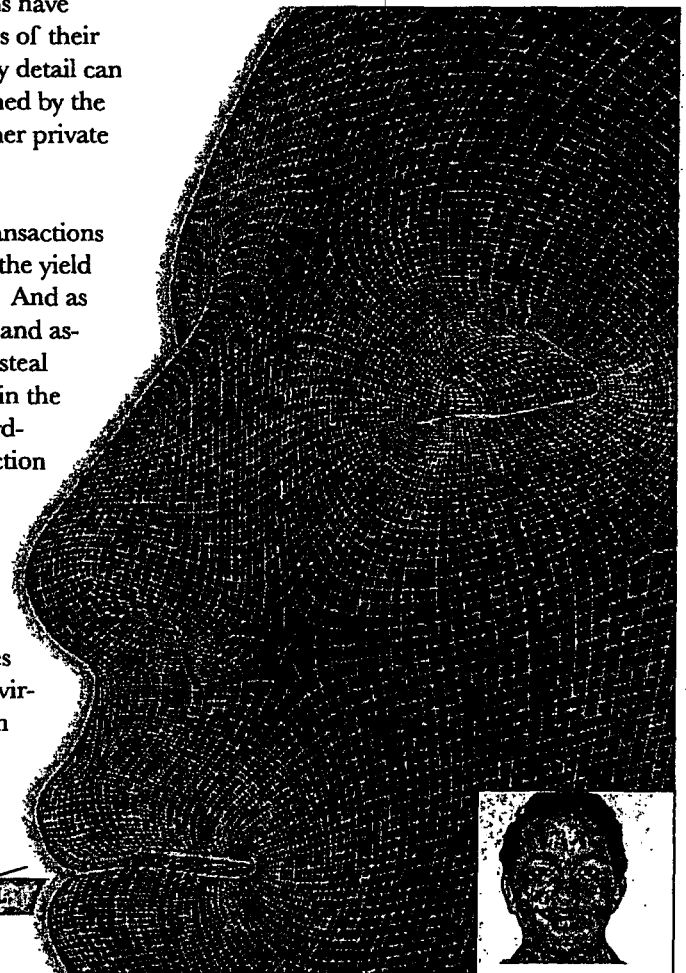
lose control of the personal information and credit card numbers of their customers. The amount of data that companies gather, combined with the common loss or theft of that information, creates a security threat to US citizens. For example, AOL collected information on users' searches. That information was made available to researchers, but was also unintentionally made available to the general public. This leak gave adversaries the ability to find out what AOL users had searched for. Although the search profiles were not identified by name, most were personally identifiable because of users' tendency to search for information about themselves. Within hours of the data leak, real people were linked to the search profiles.⁷²

(U) In virtual worlds, the effect is magnified because citizens have moved significant portions of their private lives online. Every detail can be gathered and data-mined by the game controller, or by other private actors in the world.

(U) As more economic transactions move into virtual worlds, the yield from fraud will likely rise. And as values in virtual property and assets rises, the incentive to steal directly from players within the world will likely rise accordingly. Unrestrained collection and poor maintenance of US citizens' personal information is already a national security threat.⁷³ Hackers may subvert real world defenses by hacking passwords for virtual world currencies, then

stealing the virtual currencies and converting them to real world money. The severity of the issue will likely intensify as US citizens move from using the internet as a tool to storing more of their real assets in virtual worlds. Eventually every movement, and every gesture, may be tracked and processed. A government may take the lead on the issue of privacy by extending enforcement of laws on data leaks to virtual worlds, by enforcing existing laws relating to securing of informed consent prior to the collection of personal information, and by considering new laws creating property rights in personal information so that consumers will have adequate control when they decide to sell their information.

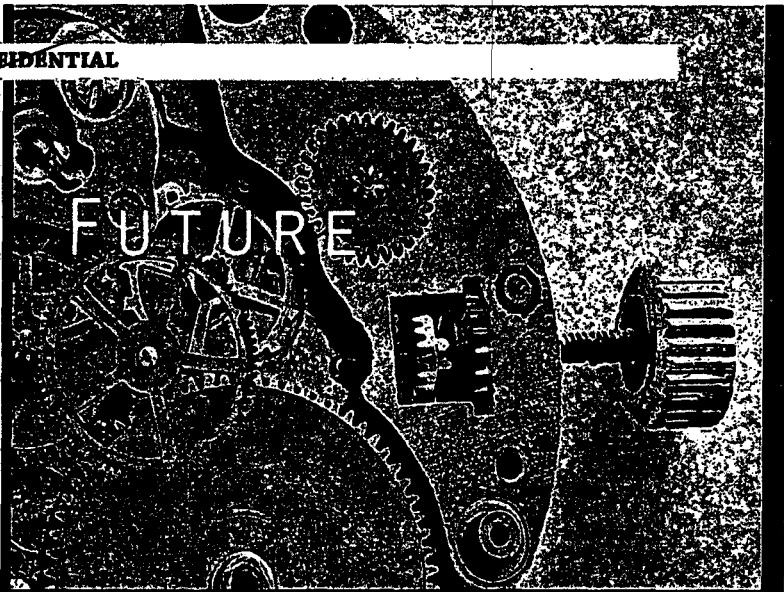
(U) See Appendix 6 on international relations in the virtual world. ☐



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(U) PLAUSIBLE FUTURE

(U) FEDERAL INFORMATION SUPERHIGHWAY PROJECT



(U) One plausible future would include a Federal Information Highway Act to fund and build the best and fastest digital "freeways" in the world. This new Information Highway would spur massive commerce, speed up US military operations, and create many unforeseen benefits. Americans would become the most wired netizens on Earth with the fastest connectivity.

(U) Just like Eisenhower's Federal Aid Highway Act of 1956 (also referred to as the National Interstate and Defense Highways Act of 1956), the US government would use this new initiative to fund US digital infrastructure with its citizens' massive GNP, making America the place to be when "jacking" into virtual worlds. Eisenhower understood the advantage of "freedom and speed of movement" for a society when he decided that America needed a faster road transportation system to connect the country.

(U) By default, this massive investment in a new information superhighway initiative would allow the United States to lead in virtual world standards and protocols, keep America in the forefront of e-commerce, advance military technology, and free communications and information exchange for a brighter future. Never has the phrase been truer, "If you build it, they will come!"

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(U) FAKE ADVERTISEMENT

(U) 五分之四的铁炉堡矮人认为
打金是犯罪。

(U) (4 OUT OF 5 IRONFORGE DWARVES BELIEVE
GOLD FARMING IS A CRIME)

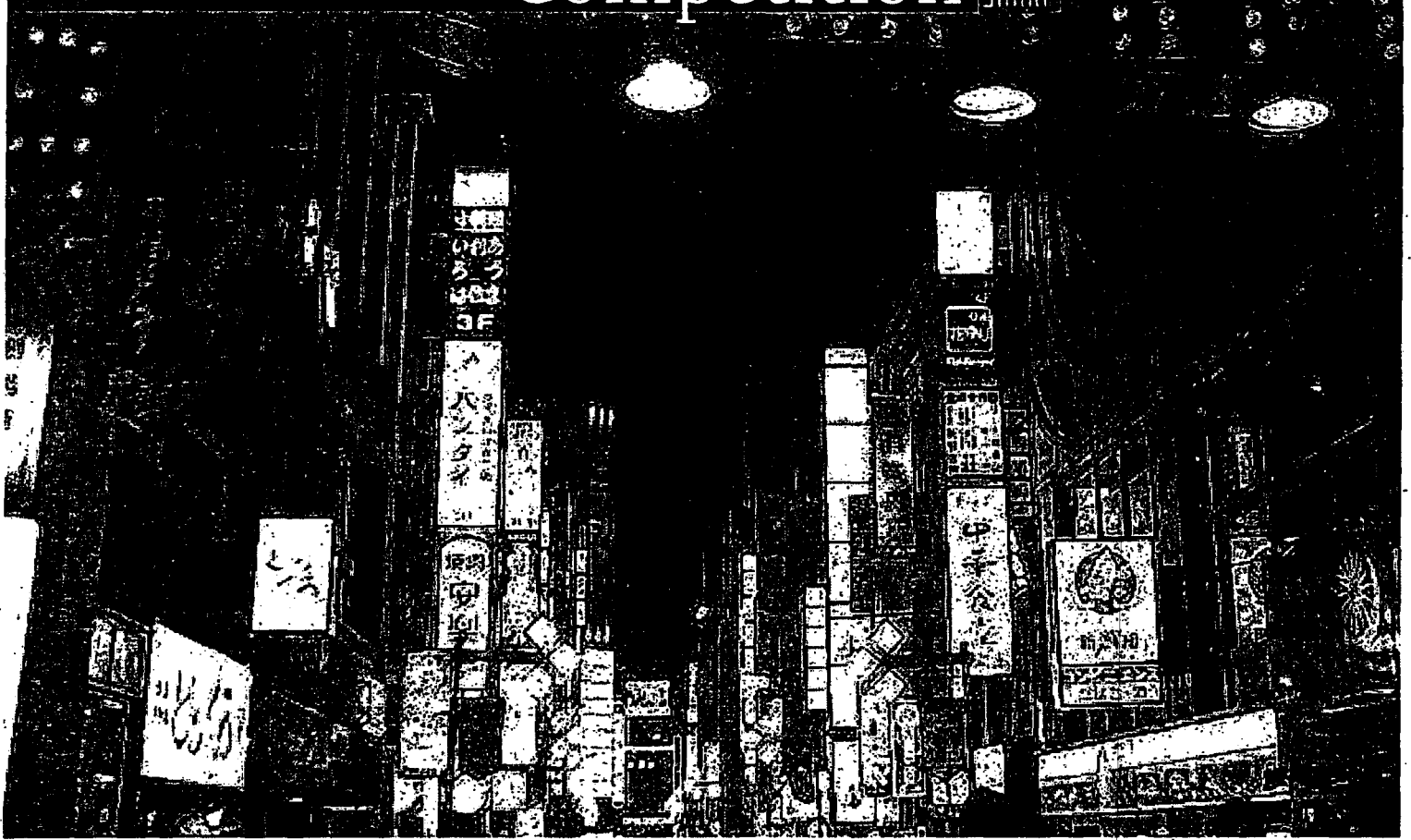
(U) 耕作之前再想一想
(U) (THINK BEFORE YOU FARM.)

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歌舞伎町一番街

Competition SHARP



(U) Stiff foreign competition:
(U) China and South Korea

HPS

(U) Though virtual worlds originated in the United States, China and South Korea have capitalized on the emergent virtual world technology. They are current industry leaders—with South Korea marginally ahead of China—and have reaped cultural benefits by launching their virtual world strategies over a decade ago. They are interesting cases to compare because they took two different approaches, yet in each case elements of industrial policy are coupled with national purpose to stimulate the industry. South Korea has taken the lead in establishing a reliable cyber infrastructure while minimizing development and user restrictions. China, in contrast, has lagged in adopting the infrastructure primarily due to the size of its population, and has also established firm regulations for industry. China has the potential to surpass South Korea, given China's potential user growth and firm approach to governance.

See Table 1 for a comparison of China's and South Korea's virtual world policies. ▢

(U) China

(U) *Internet Penetration and Demographics.* China's large population and low but rapidly increasing broadband penetration provide a fertile ground for growth. In June 2008, the total number of Chinese internet users had reached 253 million, 19 percent of its total population (see Chart 1). China achieved much of this growth rate of 56.2 percent with the addition of 52.62 million rural Chinese to the population of internet users. In comparison, the United States has 220 million internet users, which is 70 percent of its total population. Further, China has built a capable communications infrastructure to support this growth. Approximately 214 million Chinese, or 85 percent of users, access the internet via broadband. This compares to only 168 million broadband users at the end of 2007.⁷⁴ The number of users accessing from notebook computers and mobile devices is increasing, at 31 percent and 29 percent respectively. Home access to the internet has increased from 67 percent at the end of 2007 to 74 percent.⁷⁵

(U) Currently, Chinese females account for 46.4 percent of the total Chinese netizen population and males account for 57.2 percent.⁷⁷ The gender difference in the number of male and female netizens aged below 18 is the smallest, while the greatest gender disparity occurs beyond age 50 (see Chart 2).

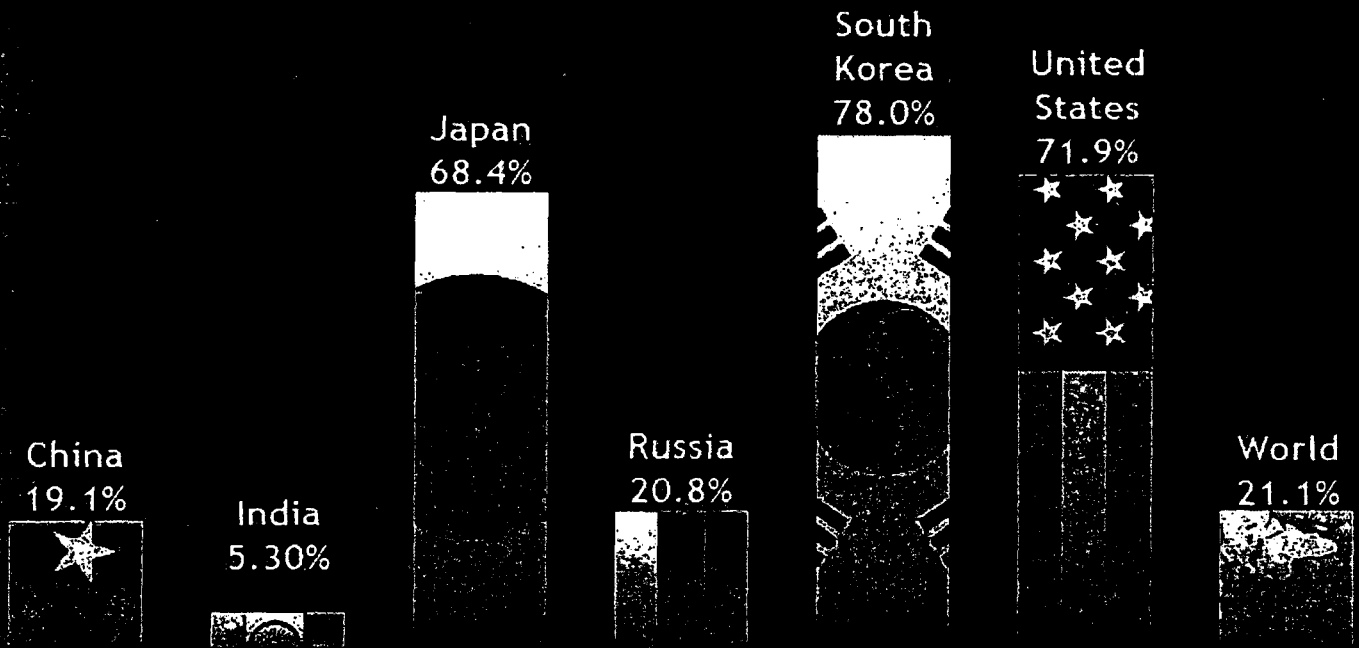
(U) In general, young age, low education level, and low income are the three prominent features of online gamers in China. Sixty-nine percent are age 30 or younger and those with a high school education or less represent the largest demographic, at 39 percent.⁷⁸ While the education level of 71 percent of online game players is below the elementary school level, only 38.6 percent are educated at or above a postgraduate level.⁷⁹ Chinese gamers are also poorer than other internet users. Only 6.8 percent of non-student netizens make over 500 Renminbi (RMB), or approximately 733 US Dollars, per month.⁸⁰ ▸



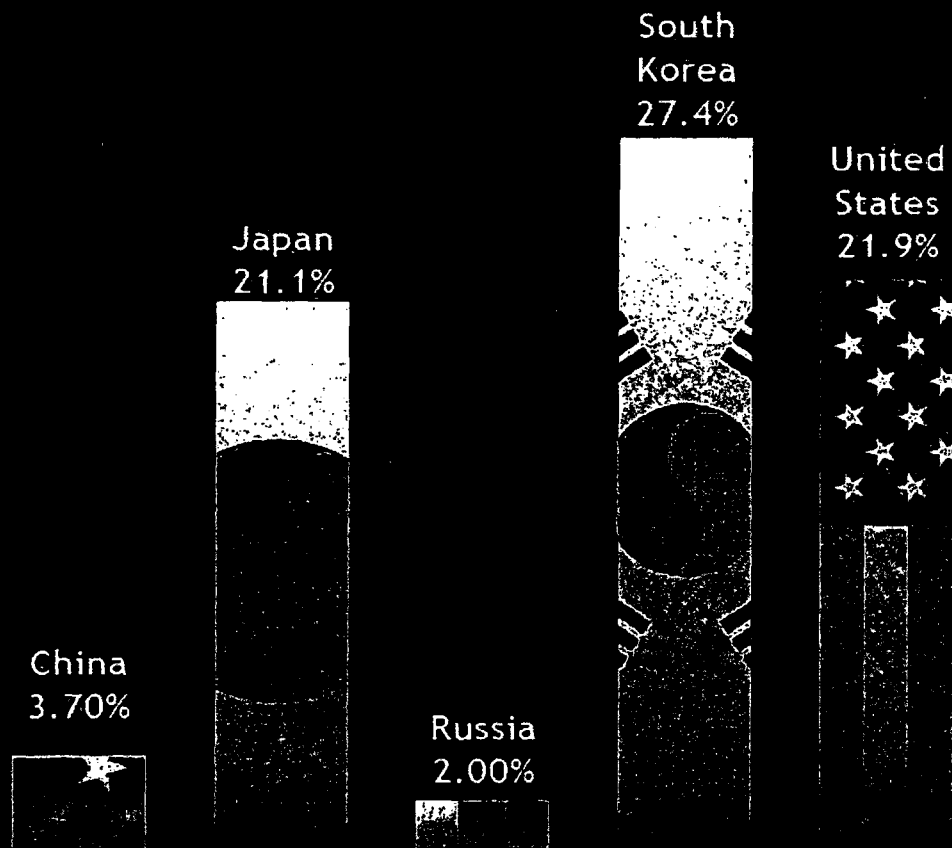
		(U) China	(U) South Korea
Role of the State	Infrastructure	(U) National and local-level subsidization and promotion of infrastructure and development; 85 percent of users access the internet by broadband; investment in telecommunications infrastructure; commitment of research funding for virtual reality, next-generation internet, trusted computing platforms, and trusted networks for complex systems	(U) Broadband infrastructure pervasive and government-owned; does all in its power to foster and facilitate advancement and growth, primarily by investing in a future-ready infrastructure
	Regulations	(U) Dense regulatory regime imposes strict content controls and offers advantages to domestic media; licensing often requires firms to be owned or controlled by government agencies; pre- and post-publication censorship; firewall to block Chinese users from designated foreign Web pages, filters that block specific key word and combinations thereof, databases that track individual users; restrictions to limit the negative impact of gaming	(U) Game Industry Promotion Law of 2006—provides a system of general rating standards for games based on categories for users, enforced by industry-independent committee; Provide an institutional and legal framework to guide the industry (in terms of economic competitiveness and social impact)
	Firms and Corporations	(U) Entrepreneurship with increasing technical sophistication; Production: 60 percent of content in Chinese market produced locally; Leading Firms: Shanda, NetEase, and Giant; increasing technical sophistication, ability to produce culturally appropriate games, success in devising business models that work in Chinese conditions, and ability to attract international investment	(U) Rise of industry was a result of RoK government's sponsorship of broadband infrastructure at all levels throughout the country; Leading firms: NCSoft, Nexon, Wizet, WebMada, Gravity, and SK Communications
Industry	Culture	(U) HIPHI: Second Life-type Virtual World maintains Chinese political standards; culture of compliance, citizens understand that there is little use in defying the authorities; some game developers and users test the boundaries of political acceptability; minimal anonymity from the government; hyper-nationalism is dominant, accompanied by patriotic sentiments	(U) As gaming moves to the mainstream, some parents are encouraging their children to play online games in order to promote social interaction; although broadband is widely accessible, many prefer to "game" in internet cafes
	Economics	(U) Gaming firms have created at least 10 virtual currencies, including QQ and Baidu coins; users are beginning to value and trust these currencies more than RMB (Chinese national currency)	(U) Trade of online items is authorized, but illegal to cash out virtual items for real-world currency; has led to the development of illegal online gambling and virtual black markets; also have problems with allegedly Chinese hackers plundering online trading sites
Demographics	(U) Young age (69 percent are below 30), low income (only 6.8 percent make more than US\$733 per month), and low education level (71 percent are elementary school)	(U) 95 percent of people aged six to 29 go online, more predominant in the urban areas	
Relationship with Global Market	(U) Blend of competition and collaboration; Chinese regulatory policy used to impose strict limits on market access	(U) World leader in adopting new technologies	

(U) Table 1: Current Virtual World Policies in China and South Korea

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(U) Chart 1: Percentage of Internet Penetration



(U) Chart 2: Percentage of Broadband Subscribers

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▷ **(U) State of the Industry and Governance.** The Chinese online game industry is large and growing rapidly.⁸¹ By 2008, 60 percent of all content in Chinese online game markets was produced locally, seizing the market from foreign developers.⁸² Current trends suggest that Chinese firms' success in domestic markets may be a prelude to success in international markets.

(U) Government support, technological sophistication, localized content, and effective business strategies form the foundation for growth of China's online gaming industry. Chinese authorities have an ambiguous relationship with the gaming industry. On the one hand, various levels of the Chinese state view the subsidization and promotion of the gaming industry as part of promoting cultural industries and high-tech economic development. In contrast, there is also a great deal of discussion on the negative fallout of gaming, particularly on minors,

these restrictions as impediments to the Chinese gaming industry, some aspects of the regulatory regime promote and protect the domestic industry. Chinese authorities are confident in their ability to impose political restrictions on domestic firms, but also work to exclude foreign firms. Since domestic firms are better able to compete in a politically restricted environment, political restrictions serve as a kind of economic protection.

(U) Chinese government support for the domestic gaming industry includes massive investment in infrastructure. Since the 1990s, the Chinese government has made heavy investments in telecommunications infrastructure. Ironically, although many official sources deplore online games and are particularly critical of the internet cafes where they are played, the gaming industry and internet cafes could not have prospered without the enormous investment in broad-

band network infrastructure. The environment research includes virtual reality, next-generation internet, trusted computing platforms, and trusted networks for complex systems.⁸⁴

(U) The Beijing Municipal Government has also committed funds and partnered with private industry to promote the development of the Cyber Recreation District (CRD). The CRD will work to create common standards and protocols for participating companies, and includes both an industrial park for relevant firms, an electronic marketplace that intends to give consumers all around the globe direct access to Chinese manufacturers, and a cutting edge virtual world. Besides providing funding, Beijing also plans to provide tax relief for companies operating through the CRD. The city has already provided an 80 square kilometer space in the Shijingshan District for the industrial park.⁸⁵ The goal of the CRD is to handle seven million concurrent users and 1 billion US Dollars in commerce annually, which makes it the largest and most ambitious virtual world project currently underway anywhere in the world.

whom Chinese sees as vulnerable to gaming addiction. Authorities are also concerned about vulgarity and controversial political content. Chinese authorities have created a range of restrictions on games to cope with these perceived problems. While outside observers tend to view

China

(U) Chinese government agencies have committed funds through three technology-related initiatives to support the development of technologies relevant to online games and virtual worlds.⁸⁶ Under these initiatives, funding for cutting 3D virtual en-

vironments is being actively

(U) Industry Leaders. Americans may think of Chinese participation in virtual economies in terms of gold farmers working in sweatshops, but China also has firms with considerable technical expertise in game design and production. China's large

leading game firms are Shanda, NetEase, and Giant.

(U) Shanda, China's largest online game operator, is a Shanghai-based firm that started in 2000 by reselling the Korean game Legend of Mir II. In 2004, Shanda raised 150 million US Dollars by listing on NASDAQ. Within a year its market value had exploded to more than one billion US Dollars.⁸⁵ These funds enabled Shanda to purchase 30 percent of a Korean firm, Actoz Soft, and Shanda's Chairman became Chairman of Actoz as well. A string of acquisitions and an agreement with Walt Disney followed the Actoz deal.⁸⁶ By 2008, Shanda had a di-

versified portfolio of 14 MMORPGs, a collection of casual games, chess and board games, games for mobile devices, and an online literature portal.⁸⁸ Shanda continues to grow quickly, having posted a 22 percent increase in fourth-quarter earnings in 2007.⁸⁹

(U) NetEase was established in 1997 as the operator for one of China's most popular Internet portals. Since 2000, it has leveraged its portal to become a leading online game company. This transition is particularly significant because online games have replaced mobile value-added services (such as information and entertainment services to mobile phone users) to occupy the largest share of profits in Chinese online businesses. The transition also generated nearly 75 percent more profits than online advertising in the third quarter of 2007.⁹⁰

(U) China's third largest online game firm, Giant, owns and operates Zhengtū, which will likely become China's largest game by 2008.⁹¹ In 2005,

Zhengtu was the first game in China to

subscription-based business models. Zhengtu lowers the barriers to entry by allowing users to play for free, and has implemented a system of pre-paid cards, widely distributed and sold for cash, which players use to upgrade avatars with better weapons or armor. Giant's success is due to the 170 impressive levels Zhengtu offers—"It may be free to play, but every step of the way to 170 will cost you."⁹² This business model is now dominant in China, and is putting pressure on the remaining subscription-based games.

(U) The relationship of China's online games industry to the global market has involved a complex mixture of competition and collaboration. For example, Chinese firm Shanda's initial success was based on a licensed version of a Korean game, Legend of Mir II. While Mir II's China sales have provided huge revenues for Korean developer WeMade, relations between WeMade and Shanda have been troubled. Shanda was dependent on WeMade to solve problems with its servers and complained that WeMade was slow in

raising. Shanda also chose to

(U) Cyber Recreation District Implications

(U) Broader implications of the CRD can be discerned from the virtual world created by the Swedish company MindArk, who won the bid to develop the CRD's virtual world. MindArk already operates Entropia Universe, a virtual world with more users than Second Life. Entropia Universe plans to offer eye-catching and technically sophisticated graphics based on the advanced CryEngine2 graphics engine. In particular, Entropia's graphics are far more realistic than those offered by their American rival, Second Life. Entropia also offers managers a very high degree of control over users' activities, as exemplified by their claim to have successfully banned gambling and pornography. Finally, Entropia's claim to have highly secured communications between their servers and users means that they have considerable ability to reduce anonymity and track the activities of individual users. MindArk's leaders have claimed that they, Beijing authorities have not required them to implement censorship systems, but the authors of this report strongly believe that any virtual world operated on Chinese servers will conform to Chinese political restrictions and that Entropia provides a solid foundation for implementing such restrictions.⁹³ Further, while MindArk claims a high degree of security and control over users, there are serious questions about the financiers who have purchased the Entropia Universe's banks. See the Law Enforcement section of this report.

adopt a "pay for upgrades" business model instead of the "pay to play" model more popular in the United States. This model was particularly effective because rampant piracy makes it difficult for any Chinese software firm to succeed by selling disks, and many Chinese lack credit cards which are required for

use revenues to install new servers rather than make royalty payments to WeMade, leading WeMade to suspend Shanda's license. In 2008, Shanda launched a new game, The World of Legend, but was subsequently sued by WeMade for intellectual property violations.⁹⁴ WeMade's



▷ law gain traction in the courts, and Shanda acquired a controlling interest in Actoz, the Korean firm that served as the intermediary between WeMade and Shanda. Actoz also owned 40 percent of WeMade. Shanda then emerged as the dominant partner.

(U) Blizzard, the American firm that developed World of Warcraft, has had similar problems with their Chinese partners, The9 Limited. In 2006, Chinese users threatened a boycott in response to widespread hour wait-times to log onto World of

Warcraft and sudden server outages. The9 was slow to install updates, but was also dependent on Blizzard to solve technical problems.⁹⁴ Blizzard also hinted that it might turn to another Chinese partner for subsequent updates to World of Warcraft, which had an impact on The9's stock. The9 remains Blizzard's partner, however, and in 2007 World of Warcraft was China's third most popular online game.⁹⁶

(U) **Regulations and Trade Barriers.** Chinese authorities operate a dense and restrictive regulatory

regime that both imposes extensive content controls over media and offers important advantages to domestic media. The post-Mao commercialization of Chinese media and the introduction of new media such as the internet have changed the nature of China's media system but have not weakened the state's control over the media. Instead, the Chinese government is extending existing regulations to ensure that the Chinese state and Chinese companies will dominate China's online game markets and virtual worlds. While the Chinese government's restrictions on American firms' access to Chinese media markets is a clear concern for the United States, the more serious issue in the long term is that success in China's domestic markets may well give Chinese firms and Chinese models—including government controls over media content—advantages in many third country markets. The Chinese government's controls over media markets work at many different levels including:

- Licensing requirements that often limit market access and require firms in many strategic sectors to be formally owned or controlled by government agencies. The government's ability to suspend licenses provides a powerful incentive for all firms to comply.

- Topical restrictions that limit the content media organizations such as magazines and newspapers can distribute. For example, internet portals are prohibited from reporting news and may only reprint news previously printed by authorized media.

- Extensive pre- and post-publication censorship that prevents distribution of many important facts and points of view. Laws, regulations,

(U) China's Regulatory System Versus Rupert Murdoch

(U) Chinese regulatory policy can be used to impose strict limits on market access. While the Chinese government may collaborate with some cooperative firms like MindArk, recent history strongly suggests that restriction serves as a trade barrier that effectively blocks many foreign firms from Chinese media markets. While the Chinese government and Chinese industries occasionally collaborate with foreign firms,

Chinese regulatory policy can also be used to impose strict limits on market access. The case of Rupert Murdoch provides an example of a foreign entrepreneur who expended enormous resources but still failed to succeed in Chinese media markets.

(U) Murdoch first purchased shares in STAR-TV in 1993 to extend his media network

into Asia. After unfortunate remarks which seemed to indicate that he believed STAR-TV's satellites could trump China's authoritarian controls, Chinese authorities banned the dishes required to receive his signals, setting him up for several years of abject pandering and staggering losses. In 1996, he attempted to start over again by acquiring a Chinese partner and founding a new Hong Kong-based satellite television service, Phoenix-TV, which is based in Hong Kong but aimed at PRC markets. Phoenix-TV's formats and production values brought global standards to Chinese markets and stimulated important progress among Chinese broadcasters. Murdoch was never able to gain legal access to more than a tiny fraction of Chinese cable systems, however, which undercut his ability to collect subscription revenues. Finally, in 2006, he sold most of his share of Phoenix-TV, which left his partner, Liu Changle, in control.

(U) During the course of that single example, the Chinese authorities have retained political and economic control over their domestic television markets, benefited from Murdoch's enormous investment, and gained the transfer of considerable technology and subject-matter expertise. Rupert Murdoch's failure in the Chinese market, despite his talent and resources in the telecommunications industry, speaks to the power of the Chinese state to protect its political interests. Evidence gathered by SHARP participants suggests that foreign online game firms will have experiences similar to Rupert Murdoch.

and directives prohibit discussion of some topics and direct how to spin other topics. Various agencies including groups of retired cadres and actively recruited citizen volunteers screen media for controversial content and report "offenders" to authorities.

• Campaigns to develop and distribute "regime-friendly" media contents that ensure that media has a pro-government "spin." The government has effectively fostered a climate of vigorous nationalism in which concern for human rights, among other issues, is understood as treachery.

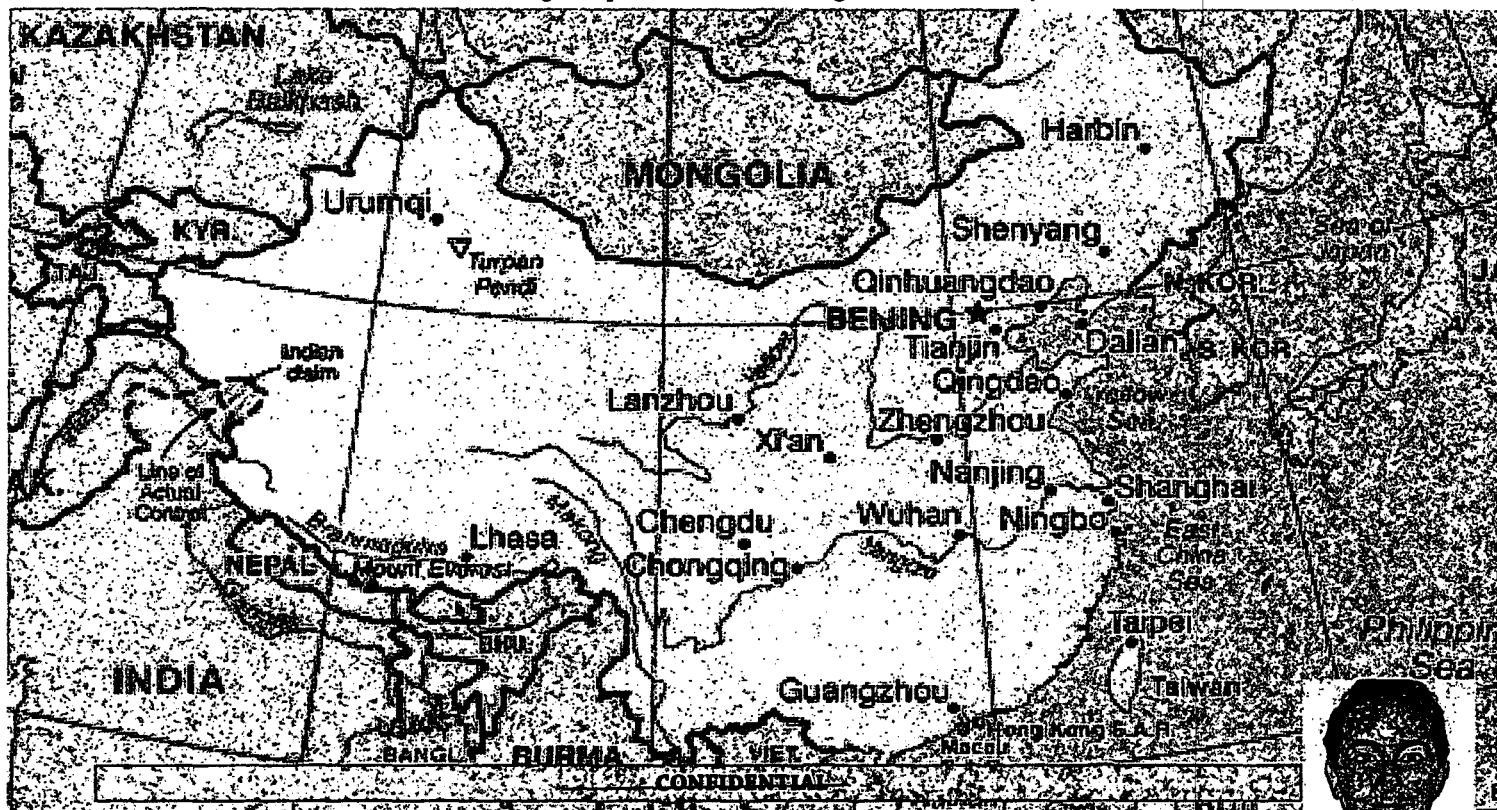
(U) New technologies like the internet offer users new freedoms, but also offer the authorities new means of control. Chinese authorities maintain a firewall that prevents users in China from accessing designated foreign web pages, filters that block the transmission of any content that contains specified combinations of key words, and extensive databases that track individual users.

(U) In 2002, Beijing promulgated "Regulations on the Administration of Business Sites of Access Services," which imposed restrictions on game content. The regulations banned content deemed obscene, harmful to state security or territorial integrity, inciting ethnic or religious divisions, or disturbing social order. More broadly, these regulations banned "other content prohibited by laws or administrative regulations." Pursuant to these strictures, for example, World of Warcraft's launch of "The Burning Crusade" in China has gone through several modifications, including excising nearly 10,000 Chinese words and replacing offending slang and profanities with blank spaces.

(U) Further complicating this regulatory environment is the fact that management of online gaming involves several government agencies whose responsibilities overlap. The priorities of these bureaucracies vary—from sheltering domestic game producers from foreign com-

petition to advancing the regime's moral and political standards.

(U) **Chinese Social Culture and Identity.** Despite the support the Chinese government provides for the virtual world and online game industry, it and many of its citizens believe that online gaming creates the special problem of internet addiction among young people. A survey from the China Youth Association for Network Development found 13 percent of young people with access to the internet are online for more than 38 hours a week.⁹⁸ Another survey found nearly 14 percent of teens in China are vulnerable to becoming addicted to the internet. According to the Chinese Academy of Social Sciences (CASS), the Chinese Government in 2006 blamed internet addiction for the 80 percent of students' academic failure rate.⁹⁹ The Chinese government has blamed gaming and addiction for murder cases over virtual property earned in online games, a series of suicides, and youths' failures in their stud- ▶



ies.¹⁰⁰ To combat these problems, the Chinese Government launched a nationwide campaign to stamp out what the Communist Youth League called a “grave social problem that threatens the nation.”¹⁰¹



over the last two decades of China’s civic, social, religious, and cultural life. The “zone of indifference” also allows space for a now lucrative entertainment industry and the rise of popular culture. Both the freedom

(U) ...hyper-nationalism has emerged as a dominant mode of thought on the Chinese internet

(U) The Chinese Government has joined South Korea, Thailand, and Vietnam in taking measures to try to limit the time teens spend online. For China, a five-hour limitation has been implemented on all online games. With the explosive growth in cyber addiction, the Shanghai Sunshine Community Youth Affairs Centre was the first shelter created for internet addicts. A particular onus has fallen on internet cafes, as these are often young people’s point of access to online games, and campaigns to restrict or close internet cafes are now a regular feature of Chinese politics.

(U) In the area of influencing the culture of online games and virtual worlds, the communist regime has followed its pattern of deliberately retreating from large sectors of social life that it had penetrated routinely and pervasively in the Maoist era. It did so based on the premise that, to a significant degree, an active public sphere of social and civic life contributes to the economic progress of the country. At the same time, Beijing insisted—under the “four basic principles”—that such liberalized social and cultural activities not challenge the rule of the Chinese Communist Party (CCP). This policy change authorized the spectacular resurgence



of entrepreneurship and the ability to select a lifestyle from the many choices offered by Chinese popular culture offer a seductive illusion of political freedom.

(U) At the same time, the regime has retained the authority to intervene when activities in this public sphere cross the bounds of political sensitivity. The government has generally favored promoting its version of events in a firm declaratory approach together with indirect tactics in enforcing these boundaries—such as promoting self-censorship through internalization of acceptable norms, fostering the appearance of omnipresent monitoring, and making examples of violators to deter others (“killing the chicken to scare the monkeys”). Chinese internet users enjoy less anonymity than they believe, and the government takes advantage of its citizens’ perception of anonymity to monitor those who criticize state policy and promote liberal or democratic values.

(U) Parts of the Chinese industry further enable the government’s controls. For example, HiPiHi, a virtual world akin to Second Life, maintains Chinese political standards. The firm’s CEO Xu Hui states that HiPiHi would design “in-world policies and regulations according to the Chinese culture” and that the company

"can make sure that pornography, gambling, violence, or politically sensitive material will be strictly forbidden."¹⁰² These restrictions do not limit the game's international prospects, however. The virtual world targets a Chinese audience first, but as Xu Hui explains, HiPiHi was designed to be "an open platform with global expansion potential from day one." Currently the general user interface is available in Chinese, with limited English translation, and registration is available in both languages, with a 15 percent penetration of

Resistance War against Japan, plays up the CCP's purportedly heroic role defending China against Japanese aggression in World War II. Stirring nationalistic sentiments is useful to the regime only up to a point. In the real world, violent anti-Japanese demonstrations have embarrassed the Chinese government. In the virtual world, Chinese gamers have ganged up to "kill" Korean players in Chinese online games and the Chinese government has banned some expressions of anti-Japanese nationalism.

topics and assist in guiding popular opinion.¹⁰⁵ To accomplish this, the PLA uses network content acquisition technologies, similar to those used by commercial companies for marketing purposes to collect and analyze the domestic political environment in China in order to categorize and detect themes popular in populations in order to support or counter those themes.

(U) The PLA has been directed to improve integrated operations training based on advanced internet

(U) Cat and Mouse: Playing Edge Ball

(U) Participants in the public sphere engage in a cat-and-mouse game of testing because the boundaries of such forbidden zones of political sensitivity are not always apparent and in fact are changeable depending on the prevailing political atmosphere. The mice frequently seek to push the limits of what is politically acceptable without provoking the cat to react. This is what some Chinese call "playing edge ball"—that is, attempting in ping-pong to return the ball to the opponent's side of the table so that it hits the very edge of the table, barely within the bounds but also making it impossible for the opponent to return it. New technologies like the internet and virtual worlds also offer the mice the ability to seek out technical means of circumventing controls. Not all Chinese citizens, however, are deeply dissatisfied and eagerly seeking ways to subvert the state. Instead, some combination of the seductions of popular culture, the hope of becoming rich, the persuasiveness of the official line, and fear of the consequences of incurring official wrath cause the vast majority of Chinese to work assiduously to avoid missing the table. Meanwhile, the cat has devoted considerable resources to staying ahead of the mice, and at present and for the foreseeable future appears to retain control.

international users.¹⁰³ IBM has announced a relationship with HiPiHi to optimize the technology platform and promote the virtual world business model.¹⁰⁴

(U) Chinese government policies also affect the tone of internet users and online gamers. In part due to the regime's fostering of nationalism to replace Marxist ideology, hyper-nationalism has emerged as a dominant mode of thought on the Chinese internet. In recent years, the state has been more likely to find itself under pressure from hyper-nationalists critical of its dealings with other states than from democrats and human rights activists. Online games have already been used to inspire patriotic sentiments among their participants. One such game, the Communist Youth League-sponsored

(U) Some Chinese may find ways to use virtual worlds and online games to subvert the state, but the Chinese government has demonstrated a strong record of using new media technologies to bolster its effectiveness, legitimacy, and ability to control new spaces. Virtual protests that are organized in the virtual world but take place in the real world will likely be at most episodic and intermittent, and will likely pose no serious challenge to the state.

(U) **Military.** The Chinese People's Liberation Army (PLA) employs 3D virtual environments for both simulation training and for public opinion analysis relevant for political indoctrination of PLA troops. The PLA General Political Department (GPD) is directed to track "hot" discussion

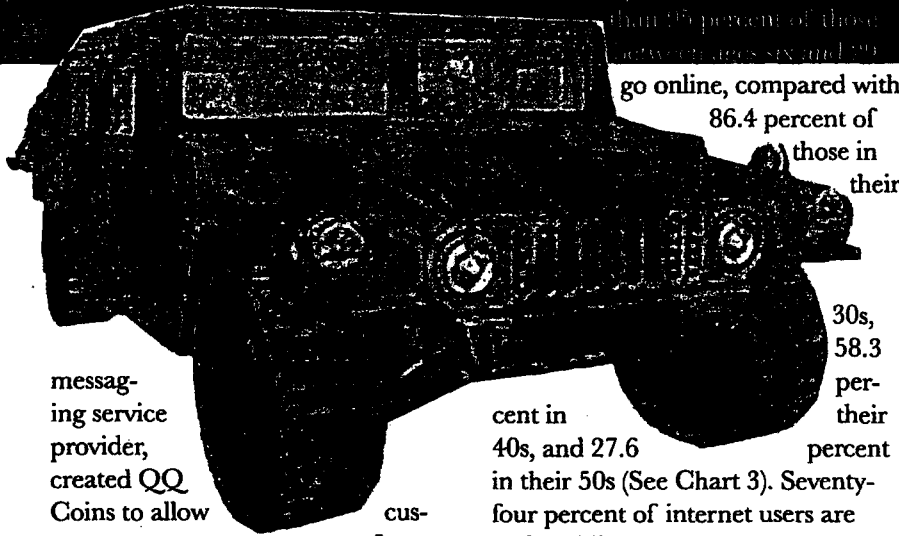
platforms including virtual simulations.¹⁰⁶ The PLA currently uses virtual environments to train traditional "Red" and "Blue" exercises.¹⁰⁷

(U) **Virtual Currencies.** Chinese firms have also shown creative initiative in the conception of at least ten virtual currencies, including QQ and Baidu coins. Altogether, his amounts to billions in RMB. In February 2007, (U) Chinese internet companies issued a joint statement urging the government to regulate the game-credit and virtual property trade.¹⁰⁸ The size of virtual economies is demonstrated by the Chinese ▶



government's efforts to regulate virtual world currencies. China is concerned that real world inflation may result from the influx of virtual world currencies.

(U) The real-world impact of virtual currency is also illustrated by the rise of "QQ Coins." In 2002, Tencent, China's largest instant-



messaging service provider, created QQ Coins to allow customers to pay for online services. Since then, QQ Coins have become very popular for a range of uses. In 2006, more than 22.4 million people used Tencent's QQ messaging service and also regard QQ Coins as a more convenient than RMB for online payments. QQ Coins appear more safe and practical because the Chinese do not commonly use credit cards.¹¹⁰ Some internet operators now accept formal pay-

ments in QQ Coins. Other online sites, not associated with Tencent, also recognize QQ Coins as an acceptable form of payment.¹¹¹ According to Xinhua News, people are earning thousands of RMB a month by trading QQ Coins, which can be won by playing online QQ games. The Chinese Government has vowed to keep a close look on the QQ circulation, which might influence the already internationally sensitive value of the RMB.¹¹²

(U) South Korea

(U) Internet Penetration and Demographics. The South Korean population has embraced the internet and virtual worlds, as demonstrated by their demographic statistics. Among South Koreans, more than 75 percent of those between ages six and 29

go online, compared with 86.4 percent of those in their 30s, 58.3 percent in their 40s, and 27.6 percent in their 50s (See Chart 3). Seventy-four percent of internet users are male, while 62 percent are female. Approximately 70 percent of urban dwellers use the internet, compared to 46.2 percent in rural areas.¹¹²

(U) Approximately thirty-seven million netizens go online every day and 57 percent regularly visit gaming sites.¹¹³ Six out of 10 South Koreans aged nine to 39 consider themselves "frequent online game players."¹¹⁴

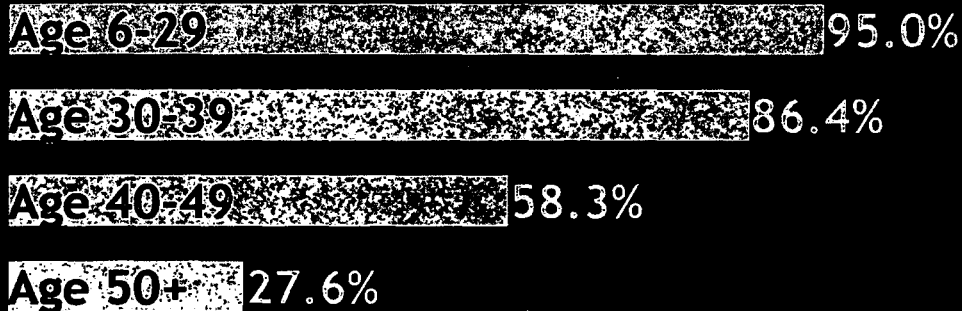
(U) State of the Industry and Governance. At the beginning of the twenty-first century, South Korean companies dominated in leading domestic and international markets. This was due to the application of government industry self-regulation policies across the entire sector of the South Korean economy. The rise of the South Korean game industry was a direct consequence of the decision of the South Korean government to sponsor broadband

infrastructure at all levels across the country beginning in the early 1990s. The resulting pervasive and robust government-owned broadband connections throughout South Korea enabled private software companies to accelerate development and distribution of MMORPGs by the late 1990s. By late 2006, 60 percent of South Korean households had broadband connections. Fifteen million South Koreans had registered to play on-line games, largely via subscription. Five cable television channels were devoted to on-line gaming, and a new small business sector of ubiquitous internet cafes known as "PC bangs" had emerged.

(U) In many ways, South Korea is the world leader in adopting new technologies. Though internet penetration is nearing saturation, the South Korean government is committed to improving the quality of service. South Korean demand is driving the IT industry toward engineering ways to bring the consumer higher speeds and easier accessibility. As these improvements become available to the public, the IT industry will continue to create mediums through which the public can fully enjoy the technology. Even now, thousands of South Koreans can

watch high quality digital television on their phones while riding the subway of Seoul. In January of 2007, the International Herald Tribune reported that South Korea's national technology expenditure for 2007 is 12.5 billion U.S. Dollars.¹¹⁵ This increase is directly related to a massive demand for South Korean technology.

(U) The South Korean lead is also a result of efforts by the government



(U) Chart 3: Internet Penetration by Age Group¹¹⁶

to provide an institutional and legal framework to guide the industry in order to facilitate national economic competitiveness and to regulate the social impact of the industry. In 1999, existing legislation governing the music and video industries was revised to incorporate online games. In the same year, the government also created the Korea Game Promotion Center (later renamed the Korea Game Development and Promotion Institute) to extend government and financial support, to promote game exports, and to enable new gaming company start-ups. They later established the Game Culture Promotion Council to facilitate the gaming industry's goals and to foster a "healthy" online game culture in society, and developed a five year plan covering 2003-07 with the goal of keeping South Korea one of world's top three game producers through 2010. Finally, in April 2006, the Ministry of Culture and Tourism

founded a Culture Industry Bureau to promote and monitor game industry and culture in collaboration with the South Korean Ministries of Commerce, Industry and Energy, and Information and Communication.

(U) MMORPG and Virtual World Industry Leaders. As a consequence of these policies, South Korea's game industry has seen the emergence of several major and a host of smaller companies, many of which have an extensive international presence. Among these are:

- NCSOFT. Founded in 1997, NCSOFT pioneered MMORPGs in South Korea and produced the country's first major success, Lineage and its follow-ons.
- Nexon. Offering its first game 1996, Nexon pioneered the free-to-play model that has extended

throughout the East Asian market. One of its games, QuizQuiz and its subsequent variants has been popular internationally, especially in Japan, where NCSOFT's subsidiary Nexon Japan has partnered with Nintendo.

- Wizet. Merged with Nexon in 2003, Wizet produced the regionally popular entertainment game MapleStory. As of 2006, the game had over 14 million international subscribers. MapleStory uses the free-to-play model, but items can be found or bartered for in the game, or purchased with a credit card or a PayPal account. Micro transactions from South Korea alone amounted to 200 million US Dollars in revenue in 2006. Wizet has since licensed MapleStory to Nintendo for MapleStory DS. Nexon is currently in negotiations with Sony and Microsoft for further development of the MapleStory MMORPG for consoles.

(U) South Korean Gaming, in Numbers¹¹⁷

15,000,000 South Koreans Registered for online gaming

3,000,000 Price in won, of a magic sword on Lineage

600,000 Fans belonging to professional gamer Yo Hwan's Website

28,000 Internet Cafes in South Korea

417 Length in hours, of a marathon gaming session of one South Korean, who died as a result



► ● WeMade Entertainment. Founded in 2000, WeMade Entertainment produced the internationally popular games Legend of Mir II and III.

● Gravity.

In 2002, this company launched Ragnarok Online, which has taken off in several international markets.

● SK Communications. SK produced the massively popular social networking platform Cyworld.

South Korea's pervasive broadband infrastructure has also enabled an increasing array of virtual world applications. These include uses by the South Korean government and military, as well as adaptations in broader society:

● In April 2005, the South Korean Army opened its Korean Combat Training Center, which, modeled after the US National Training Center, uses virtual technology to simulate combat. In "simulating actual combat situations," the Center has improved soldier performance in several areas, including reduction of injuries from friendly fire, proficiency with equipment, and dealing with the stresses of real combat.¹¹⁸

● In March 2007, the Won sect of Korean Buddhism set up a temple in Second Life and announced plans for a virtual ceremony to mark the Buddha's birthday. By such means, the group hoped to evangelize among both Koreans and foreigners, describing its presence in Second Life as "a good opportunity to reach out to people beyond the barrier of our own generation."¹¹⁹

● In August 2007, Shinsegae Department Store opened a "virtual reality i-Fashion shop" that offered shoppers the choice of trying on clothing without actually coming to

the shop. Customers input their body measurements onto a smart card that enabled them to model clothes on personalized avatars

and then make decisions about whether to buy them.¹²⁰

● In September 2007, the Office of the South Korean President began offering a "virtual reality tour" of the Blue House, the president's official residence and office compound, via the internet.¹²¹

● In March 2008, Hana Bank began offering a Second Life-like virtual world to teach basic economics to teenagers. By participating in economics classes on the bank's web site, teenagers earn cyber-cash in "virtual passbooks," which at the end of the course is donated to a non-profit charity for needy children.¹²²

(U) Regulation. Pressure to regulate on-line games in South Korea largely proceeds from economic concerns. The government faces two conundrums: how to regulate the gains made in the virtual economy through the trading of on-line game items, and whether to allow the exchange of virtual currency for its real-world counterpart. The dilemma for the South Korean government in responding to both issues has been to regulate the

industry without blunting its vitality and prospects for growth.

South Korea's Game Industry Promotion Law, passed by the National Assembly in 2006, provides a regulatory foundation for the gaming and virtual world industry. The law provides a system of general rating standards for games and required the formation of a committee independent of the industry to apply the standards.

This legislation has not resolved all of the controversy, however. An editorial in the

Seoul daily JoongAng Ilbo complained, for example, that the game ratings standards are more tolerant of degrees of violence than are movie standards.

(U) The Ministry of Culture and Tourism began another set of deliberations on how to regulate the trading of online game items for both virtual and real-world currencies—activities that by 2006 had, according to some estimates, produced a market value approaching 1 billion US Dollars. Ultimately, the Ministry authorized the trade of online items, but prohibited their exchange for real-world currency.¹²³ New issues, however, have required repeated rulings. Among these have

been the problem of hackers—allegedly Chinese—plundering on-line trading sites, and the spectacular growth of illegal online gambling and “virtual black markets.”¹²⁴

(U) South Korean Culture and Identity.

The South Korean IT industry reflects South Korean cultural identity and history. Korea spent 30 years as a colony of the Japanese empire during which time the Japanese colonizers repressed Korean culture and history.

The Korean War then devastated South Korea's entire infrastructure and isolated it from the majority of its industrial resources.

(U) South Korea's roots, hardened by challenges, have combined to establish a vibrant culture wherein much is expected and all are in a hurry to stand out amongst their peers. Competition dominates the culture. This is what drives parents to push their children to study hard to gain admittance to the best schools and to gain advantages. This is also what drives students to study hard to honor the wishes of their parents. It is not enough to be successful; there is an enormous drive to be the best.

(U) In the case of information technology, the Korean government has assumed the role of the proud parent, doing all in its power to foster and facilitate advancement and growth. It has invested in a future-ready infrastructure in order for Korea to have the advantage and ultimately maintain its distinction of leading in the adoption of new technologies.

(U) Before the advent of a gaming culture in South Korea, an average student would have aspirations to become a successful businessman or manager. Now high school boys aspire to become “professional gamers.” In South Korea a successful pro-gamer can make upwards of \$100,000 by competing in regular league contests and gaining sponsor agreements.

(U) The gaming scene has changed the standard of what is socially acceptable. When PC games first entered South Korea, parents did not approve of them because they perceived the activity to be a distraction that pulled students away from their studies. For that reason, gaming was very much an underground activity. With gaming moving mainstream, however, some parents are encouraging their children to play games to promote social interaction.

The games are so widely played that a child who does not play runs the risk of being an outcast if he or

she does not participate. One study found that some mothers are actually playing their children's online characters while their children are in class in order to give their children the greatest possible advantage in the gaming world.

(U) Even universities are beginning to see opportunity in the emergence of the gaming culture. Korea University is now offering a “global games education” course in partnership with a Korean game producer. The class offers students internships within the gaming industry as well as a study abroad opportunity in the United States for a Master's degree from Carnegie-Mellon University.

(U) Use of virtual worlds is another activity that is becoming more mainstream in South Korea. In 2007 Linden Lab signed a deal with South Korean company, T-entertainment, to provide its services in Korea, tailored for South Korean users. As of fall of 2007, only 20,000 Second Life users were openly identified as Koreans. However, experts expect South Korea's presence in virtual worlds including Second Life to increase sharply, especially as the services and interfaces improve to meet the high standards that the majority of South Korean users expect.¹²⁵

(U) Presently virtual worlds serve as a global stage to advertize South Korea's identity to the world. For instance, a true to life replica of Seoul's Kangnam district is being created in Second Life by Acid Crebiz, a South Korean company. Second Life also played a part in the democratic elections that took place last year, when candidate Lee Myung-bak organized a virtual campaign. Another

...and maintain its distinction of leading in the adoption of new technologies.



▷ report tells of a Cyworld campaign dedicated to maintaining sovereignty over the Dokdo (Liancourt Rocks) following a claim made by the Japanese government. On the first day of the site's existence, over 5,000 users visited and signed a virtual petition. In the two days that followed, over 250,000 users signed the petition. This sparked the duplication of the islands in Second Life. Shortly thereafter the South Korean flag that flew over the islands was mysteriously replaced with a Japanese flag, spurring Second Life to install a security monitoring system to regulate future changes to the islands.¹²⁶

(U) PC Bangs.

Even with a 90 percent saturation of broadband accessibility, many South Koreans prefer to do their gaming in local internet cafes called "PC bangs." Currently over 27,000 separate locations offer memberships or pay-by-the-hour service. PC bangs consist of dozens of computers pre-loaded with the most popular games, all connected to high-speed internet for lag free gaming. This provides customers with an environment where they can go meet friends both online and off, any time of

day, any day of the week. With the rise of professional gamers in South Korea, PC bangs also provide aspir-

genre, capturing 33 percent, followed by Real Time Strategy (RTS) and First Person Shooter (FPS) genres.¹²⁷



(U) South Korea as Our Future.

The mainstreaming of the Korean gaming culture may ultimately affect the United States. Blizzard Entertainment reports that in the decade since the release of Starcraft, South Koreans have purchased 4.5 million of the more than 9.5 million copies of the game in circulation. The game has become a sport, with major corporations sponsoring professional teams. South Korea holds international Starcraft competitions annually, with three cable channels dedicated to professional Starcraft matches and commentary, including tips from the pros. A

ing gamers a place to practice and an endless supply of competitors to challenge.

(U) PC bangs have emerged as places to learn about new popular games. Web sites keep track of what games, as well as which genre of games, PC bang patrons play the most. Generally, Role Playing Games (RPG) have dominated as the most popular

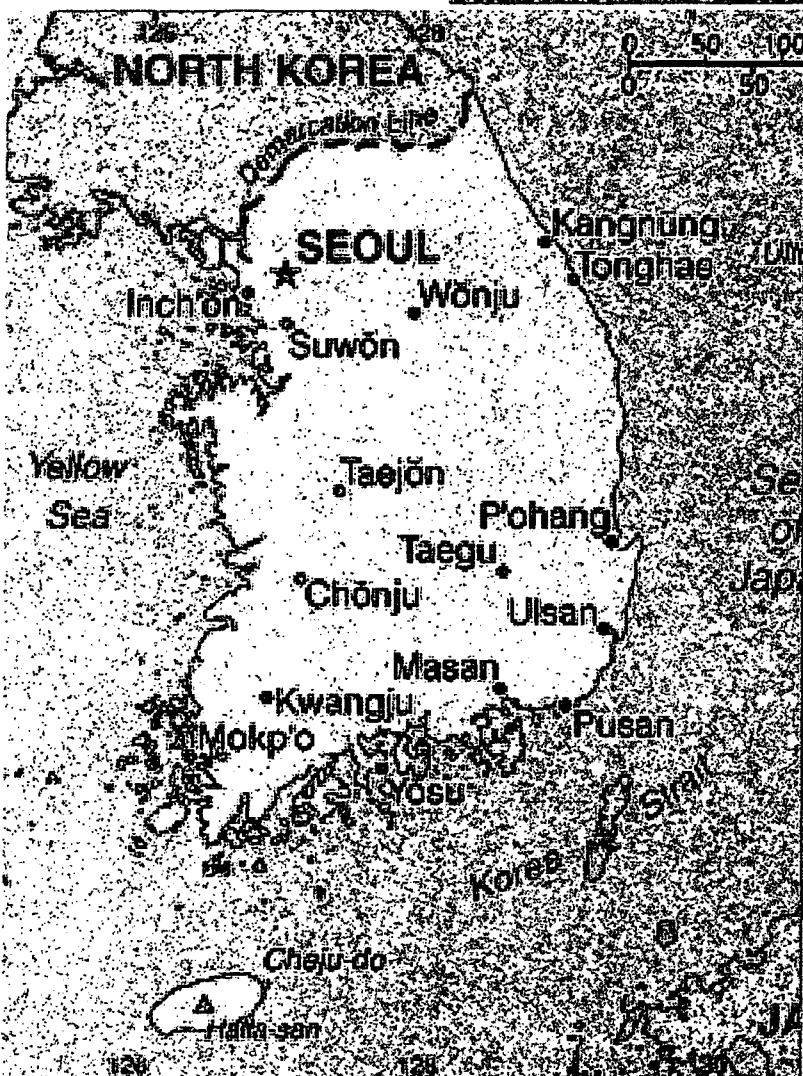
handful of these professional players report annual incomes exceeding the equivalent of \$150,000. With so much South Korean interest in the game, Blizzard Entertainment premiered its first demonstration of Starcraft II in Seoul in May 2007 to a crowd of 10,000 fans. Blizzard will likely tailor the game to suit its potential majority customer base of South Koreans. South Korea's game

culture would therefore likely affect consumers of the game in the United States.

(U) South Korea's homegrown gaming industry has also proven to be a force to be reckoned with in the realm of MMORPGs. Though World of Warcraft has outsold all other MMORPGs in history, NCSOFT's Lineage series has achieved a strong second, outselling even Sony's Everquest series, with a peak of over three million global subscribers.¹²⁸

(U) Were American households to gain access to broadband internet with speeds hundreds of times faster than present DSL connections at a fraction of the cost, and were levels of such access to approach those of South Korea, America's future may well resemble South Korea's present in significant respects. Though some of the effects are lost in translation, there may be profit in studying South Korea's example. For a brief discussion of other Asian states' virtual world development, see Appendix 7. □

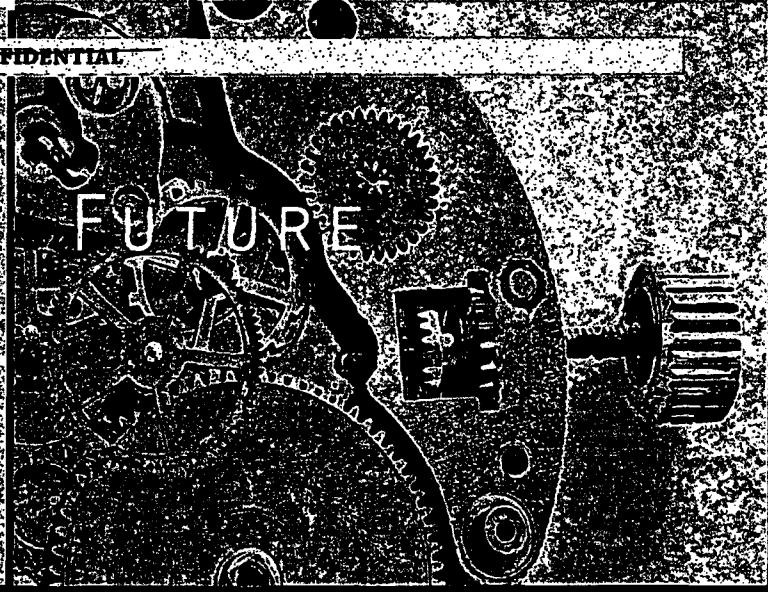
(U) WiBro versus WiMax



(U) South Korean experts are unsure whether the emergence of WiBro (Korea's version of wireless broadband) technology will pose a challenge to or an opportunity for its IT sector. If successful in South Korea, WiBro has the potential to spread globally. The United States is currently experimenting with WiMax, a technology similar to WiBro. The United States may therefore learn from watching the success or failure of South Korea's experience with WiBro. In assessing the challenges and opportunities ahead, a clear evaluation and understanding of the implications of South Korea's present may prove invaluable.

(U) PLAUSIBLE FUTURE

(U) IN WHICH WARS ARE FOUGHT IN THE VIRTUAL WORLD BUT HAVE REAL WORLD CONSEQUENCES



(U) Consider the following potential journal entry from one plausible future:

(U) For the last month, the city has been eerily quiet starting at around 4:00 in the afternoon. It is 7 AM in Beijing, and that means a new day to fight. Not a real fight of course, we're talking about Call of the Empire 4 on the most popular entertainment system in the world: The9 Interactive's ZEN console that launched in 2025. Now every night millions of Americans plug in to watch Call of the Empire 4 unfold in Immersive Definition (ID) from their living rooms.

(U) The cinematics of the game, the deep story lines and connections with the characters, and the special effects are so engaging. They should be. China is paying America's greatest film makers and game developers a billion US Dollars per month to develop this experience. Every day is exciting because logging into the game is like viewing a new summer blockbuster like they used to produce in America.

(U) Of course maybe the most compelling aspect of Call of the Empire 4 is the fact that the outcome of each day of virtual battle has real world consequences. Every day that the Chinese players win online, a line on a real world map in Call of the Empire 4 moves closer to the shores of Taiwan. America could not afford to fight this war in the

real world, but the outcry of Taiwanese-Americans and the EU compelled us to act. So for Call of the Empire 4 we wagered Los Angeles with the Chinese in order to try to free Taiwan.

(U) The Taiwanese and a rag-tag group of American volunteers, often dropped out of the game by laggy US broadband connections, are holding off the onslaught for as long as possible. But in Call of the Empire 4 you only get one life, once you are killed you are out of the game. Night after night American families watch their sons and daughters fall to the ground in shock in their living rooms as their Call of the Empire 4 soldiers are blown apart and they are relegated to just observing the rest of the war.

(U) Honestly, do not see how we can win because the Chinese have the better technology. Every ZEN that Americans buy runs at a slower speed than the original Chinese version. I am pretty sure that this battle is just a matter of pride anyway, as the Chinese own most of L.A. now. They own the studios, all the best directors, and their films and online experiences dominate the world. America can not compete in entertainment anymore.

(U) I have to go, my squad needs me to goggle in. We are joining up with some Jersey Boys to try and carve out a beach head on the south of the Island.

CONFIDENTIAL

(U) FAKE ADVERTISEMENT

(U) ARE YOU
OR IS SOMEONE YOU LOVE

Adopted?



CONFIDENTIAL





Intelligence **SHARP**

**(U) Intelligence,
counterintelligence,
and law enforcement.**

CH 6

(U) It is likely that the growth of virtual and gaming environments will have far-reaching cultural, social, economic, and perhaps even political implications. Some effects will be the result of intentionally nefarious actors; others may inadvertently result from technological developments having unanticipated effects on human social interaction and personal identification.

(U) Virtual and gaming environments may have certain positive effects, but one cannot ignore the possibility that they may also pose novel and unpredictable security threats. One can already observe real-world actors transferring their existing loyalties, beliefs, agendas, prejudices and hatreds into virtual and gaming worlds.

(U) Political and religious extremists, including terrorists, have long used the internet to recruit, raise funds, propagandize, collect intelligence, and train. Several extremist groups already maintain a visible presence in virtual worlds, and they will likely continue and expand upon the type of activities they engaged in on the traditional web in the virtual world platform.

SHARP
synopsis

(U) The growing number of global users, in conjunction with ongoing technological changes, will likely increase the difficulty that the Intelligence Community (IC) will encounter in its efforts to monitor the virtual realm. Accordingly, outreach programs that enlist users as educated observers and reporters will be required to survey current and emerging systems more effectively. ■

(U) Scope of the Virtual World Intelligence, Counterintelligence, and Law Enforcement Security Problem

(U) When considering the human scope of the potential security threats posed and the opportunities presented by virtual world platforms, one must first distinguish between threats posed by intentionally nefarious actors and inadvertent threats generated by technological developments in the virtual world. Among these nefarious actors are nation states and their intelligence services, non-state actors of various types, and individual criminals.

(U) Nation-states can be categorized as hostile, neutral, or friendly. Hostile states are openly hostile toward, or consistently pursue policies that directly challenge, the United States and its allies. Neutral states are not generally openly hostile toward the United States, but nonetheless often pursue policies that negatively impact the United States and its allies. Friendly states generally pursue policies that favor the United States, though they too may occasionally diverge and pursue oppositional policies. Non-state actors fall into several categories, including the following: ▶

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- ▷ • Organized criminal groups
 - Extremist political and religious groups
 - Networks of hackers or grievers
 - Non-governmental organizations (NGOs)

(U) Each of these various nation-state and non-state actors may attempt to exploit virtual worlds depending on their motivations, intentions, and objectives. The section below will focus on extremist political and religious groups.

(U) In addition, new technologies may have unanticipated effects on patterns of human social interaction and personal identification. Indeed, it is likely that virtual world technology will eventually have far-reaching cultural, social, economic, and perhaps even political implications that have nothing to do with the nefarious intentions of enemy actors. For example, the formation of virtual communities in which people identify more closely with their fictional avatars and in-world communities than with their offline selves or neighbors may well have the effect of weakening overall social solidarity within existing nation-states, undermining their sovereignty. Virtual world technology may have certain positive effects as well, but one cannot ignore the possibility that it may also pose

(U) people identify more closely with their fictional avatars ... than with their offline selves

novel and unpredictable security threats. Of course, it is even more likely that real-world

actors will simply transfer their existing hatreds, prejudices, agendas, beliefs, and loyalties into the virtual world, which is already occurring. □

(U) The Exploitation of Virtual Worlds by Political and Religious Extremists and Terrorists

(U) Extremist groups are organizations that embrace a radical political or religious ideology that both advocates a fundamental transformation of existing political, social, or economic status quo, and demands that their proclaimed constituencies take action to initiate this transformation. An ideology is a coherent, structured, and systematic worldview that purports to identify exactly what is “wrong” with the existing world and to indicate precisely what must be done in order to right those perceived wrongs. Radical ideologies are normally characterized by moral absolutism, doctrinal rigidity and Puritanism, a Manichean division of the world into “good” and “evil,” and an insistence that those designated as “evil” be fought ruthlessly, decisively defeated, or even completely eliminated.

(U) From the perspective of extremists, human actors are viewed through a dualistic black-and-white ideological and moral prism, one that ignores the multitude of shades of grey that actually characterize human life and behavior. Extremists perceive humans to exist on one of two sides of this divide, either with the forces of “righteousness” and “progress” on one side, or with the forces of “darkness” and “reaction” on the other. Extremists tend to be hyper-moralistic “true believers” who are moral “to a fault.” They generally cannot tolerate human flaws and moral ambiguity of any kind. The intelligence and law enforcement communities should not ignore the proclaimed ideological agendas of extremists or assume that they are nothing more than superficial, “high-minded” rationales designed



to conceal selfish underlying motives or baser human instincts. Extremists take their ideologies very seriously; they are such groups' *raison d'être*.

(U) Virtual Worlds: Havens for Illicit Activity. Much of the information in the public domain about the alleged terrorist exploitation of virtual worlds has been speculative rather than based upon substantive evidence.¹²⁹ Although there is reliable information available concerning extremist and terrorist exploitation of the internet, for example Web 1.0, the same cannot be said of virtual world or Web 2.0. The United States and other governments, however, are increasingly concerned about the possibility that extremists and terrorists will exploit

virtual worlds to support their political and religious agendas.¹³² Given the well-documented precedent of widespread extremist use of the internet, such concerns are warranted.

(U) There is the potential for real-world extremist and terrorist groups to exploit virtual worlds for propaganda, training, covert action, or other subversive purposes, just as they now systematically exploit the internet.¹³³ At the present time there is little evidence indicating that violence-prone extremist groups have begun to exploit the virtual world in order to facilitate their political or social objectives in the real world.¹³⁴ Several exceptions may be used to demonstrate the potential for extremists—including terrorists—to exploit virtual worlds. Notably, terrorists have begun to adapt shooter games for propagandistic and training purposes. For example, Hezbollah modified the tactical multi-player shooter game, America's Army, in the games al-Qiyat al-Khasa (Special Force) and al-Qiyat al-Khasa 2 (Special Force 2). These games simulate battles in southern Lebanon in order to help train Hezbollah fighters in tactical, small unit combat scenarios.

(U) In another example, the Front National (FN), the French right-wing political party headed by Jean-Marie Le Pen, established in December 2006 a virtual headquarters in Second Life on a shopping island called Porcupine. The FN issued a press release boasting that it was "the first political party in France and in Europe to open an official and permanent representation in Second Life."¹³⁵ Initially, resistance to the FN's presence in Second Life took the form of garden variety political protest. Leftist groups such as Anti-FN Second Life (antifn-sl) and Second Life Left Unity assembled, bore placards, wore t-shirts, and set up billboards on the lands of sympathetic neighbors to demand that the FN remove itself from Second Life. Soon after, both sides began shooting at each other and carrying out other types of attacks. By early January the headquarters and FN members had disappeared entirely from Porcupine. However, real-world FN spokesmen claimed that the group would tighten security and return to Second Life.

(U) As of this report, there is little evidence that militant Islamist and jihadist groups have begun extensively exploiting the opportunities presented by virtual worlds. So far, most of the commentaries in the media on this subject have been speculative and largely devoid of hard evidence.¹³⁴ However, Singaporean terrorism researcher Rohan Gunaratna claimed that during the summer of 2007 he monitored the activities of 12 jihadists, most of whom were based in America and Europe, who had "assumed identities" in Second

Life. Some of these individuals had selected innocuous monikers for their avatars, whereas others used intentionally provocative names.¹³⁵

(U) Indeed, as the illustrative examples above suggest, it is only a matter of time before numerous other radical political and religious groups set up shop within Second Life and other virtual world environments. As a result, real-world political conflicts will undoubtedly continue to spill over into the virtual world, perhaps at times with unanticipated and potentially harmful consequences. It remains to be seen whether these activities end up having serious national security implications. For more examples of how extremist groups have established a presence in virtual worlds, see Appendix 8.

(U) Emerging Environments and Nefarious Intentions. It has already been noted that as yet most extremist groups do not appear to have made extensive forays into the virtual world. However, given that the more sophisticated groups of this type, including al-Qa'ida, have exploited the internet in very refined ways, they will likely soon seek to exploit newer virtual world technologies for recruiting, raising and transferring funds, training new recruits, conducting reconnaissance and surveillance, and planning attacks by using virtual representations of prospective targets. As virtual world technologies continue to improve and diffuse to other parts of the world, it is very likely that the threat posed by extremist groups in the virtual world will substantially increase.

(U) The question is how such groups may use and exploit these platforms, and what the impact of these developing technologies will be. There are two ▶



► basic views on this matter. Those who focus on the technical aspects of virtual worlds generally believe that the rapid development of this technology will be “game-changing.” It could have revolutionary effects on the formation of human identity, patterns of social interaction, and ultimately, on culture and society. In short, their view is that the effects of virtual worlds are likely to be analogous to the social, political, cultural, and economic impact of the printing press. In contrast, those who focus on the human dimensions of virtual worlds tend to be more pragmatic. They believe that human beings will remain more or less as they are, but will simply seek to exploit these new technologies to do the things that they are already inclined to do.¹³⁶ In the end it is likely that the reality will fall somewhere between these two contrasting perspectives. To predict how extremists and terrorists may exploit evolving virtual world environments, it is best to consider how they have long made use of the internet. Although many

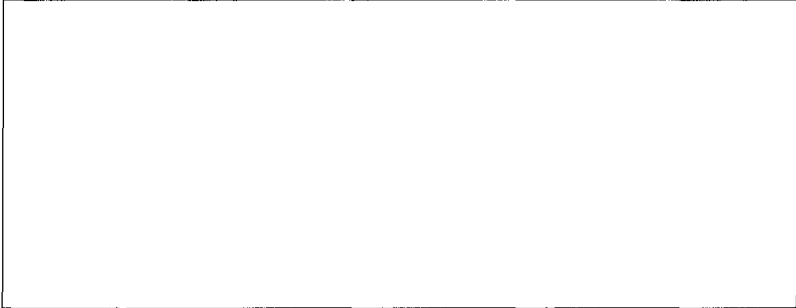
specialists had predicted that terrorists and other nefarious actors would regularly carry out highly disruptive and perhaps destructive acts of cyber-terrorism, cyber-sabotage, or cyber-warfare against the network infrastructure and tangible physical targets, they have instead used the internet much like other political organizations and businesses.¹³⁷ Terrorists have used the internet primarily for communicating to three primary audiences—their supporters, the international community, and their enemies—in order to “present their case, disseminate propaganda, and recruit followers and supporters” in a “direct and uncensored” way.¹³⁸ In addition, they have employed the internet for several overlapping instrumental purposes, including:

- Information gathering and data mining
- Networking
- Recruitment, spotting, and mobilization

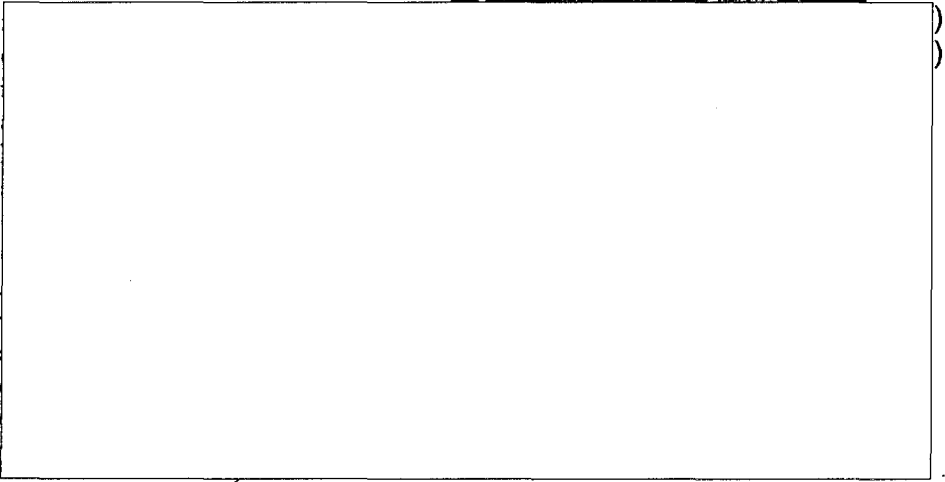
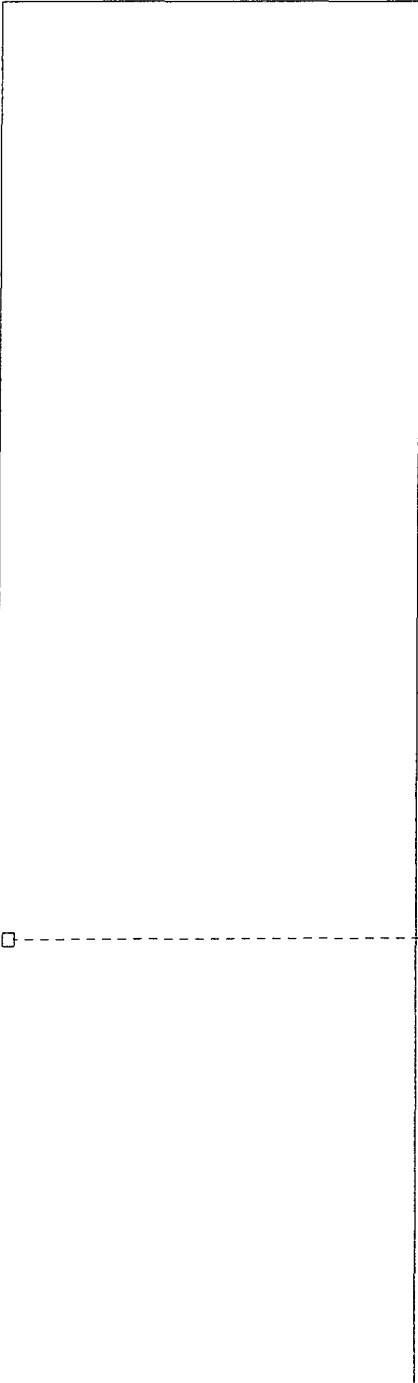
- Posting detailed instructions and online manuals
- Planning and coordinating specific attacks
- Fund-raising
- Criticizing rival terrorist groups and breakaway factions¹³⁹

(U) Ironically extremist groups with an anti-modernist ideology, including global jihadist networks, have often been the most adept at exploiting new technologies created by their thoroughly modernist Western enemies.¹⁴⁰ So far, cyber-terrorism and cyber-warfare have been overrated threats, at least with respect to terrorist groups.¹⁴¹

(U) The authors of a Canadian intelligence center report concluded that they could find no “definitive” evidence that MMORPGs or “persistent virtual worlds” had been used to facilitate real world terrorism or to communicate, propagandize, train,

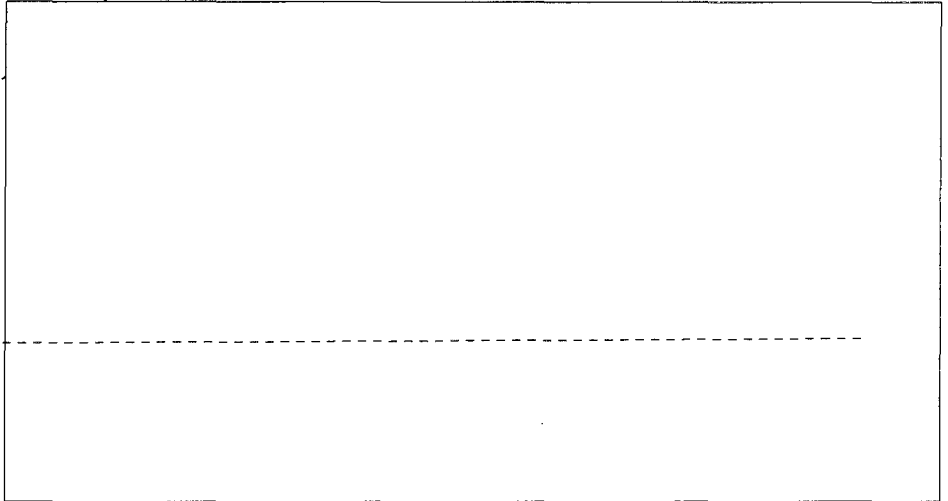


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(U) Intelligence and the Virtual World

(U) Information Access.



(U) Publicly posted information available through virtual worlds that provide for user-generated content is inclusive of information about individuals, shared interests, community-based organizations, academic institutions, corporate interests, and government. Virtual worlds that do not provide for user generated content continue to facilitate social interaction and communication access. While this distinction between the two types of virtual worlds is important, both versions provide the IC with access to user-provided information that might not be otherwise available. ▶



► (U) Within these user-controlled areas, individuals create multi-dimensional renderings of homes and businesses. These virtual constructs frequently display items of personal significance, providing insight into individual interests and passions. In many instances, these user-created objects provide hyperlink access to traditional web sites and blog sites, providing detailed information about a topic that the creator found to be of interest.

(U) As an example, within a Second Life Jewish-based community called Nessus, users have created billboards depicting child victims of armed conflicts. Visitors may access victim and situational information through interaction with the user-created billboard. Homes that users may tour in this neighborhood, as in other neighborhoods, contain objects that the “homeowner” considered of sufficient interest to place in their personal space. Ultimately, these personally “owned,” yet publicly accessible, artifacts provide background and contextual information about the individual in control of that particular portion of the virtual world.

(U) Adversarial Anonymity: Future Challenges. It is important to note the increasing likelihood that adversaries may build or control these constructs. In the Dark Web study titled “Cyber Extremism in Web 2.0. An Exploratory Study of International Jihadist Groups,” the authors “found examples of buildings owned by groups with an apparent extreme [sic] background. Those buildings (virtual headquarters) seem to indicate the groups’ wish for a long-term presence in the virtual world.”¹⁴⁴

(U) The possibility for users to establish control within these virtual world

constructs can likely be attributed in part to the interactions that transpire between individual avatars. Hiding behind screen names and avatars, virtual world users demonstrate a willingness to engage and discuss in manners that are rarely found in non-intimate social situations. These interpersonal communications can take place in a number of venues and recreated social settings, such as virtual nightclubs, or in general areas of congregation.

(U) Topics of discussion can be personal, controversial, and detailed. The perception of anonymity can decrease users’ inhibitions and increase the likelihood that they

(U) Hiding behind screen names and avatars, virtual world users demonstrate a willingness to engage and discuss in manners that are rarely found in non-intimate social situations.

divulge personal information. In the cyber extremism Dark Web report, the authors state that “the virtual environment can help break down inhibitions and make interaction more realistic and lively.”¹⁴⁵ While somewhat similar information can be found posted on traditional web and blog sites, the virtual world provides an immediate platform to question, explore, and expand upon the ideas presented through real time conversation, by voice or text chat.

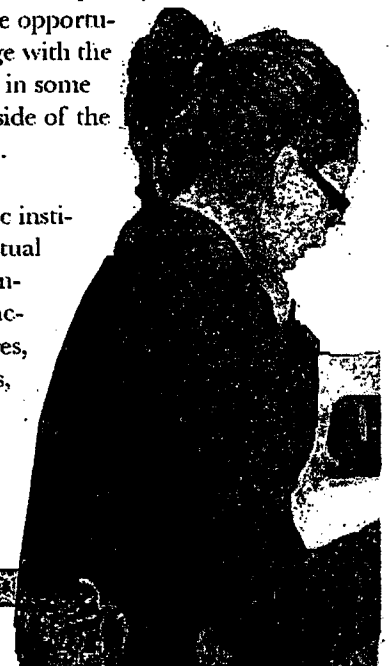
(U) The creation of topical areas of concern demonstrates shared interests in the virtual world among like-minded individuals. Users have developed sites and member groups as a way to share common experiences and interests. These areas are typically available to the public at large and offer relevant information services to the visitor. In this vein, Second Life areas devoted to such diverse areas as auto racing, religion, and literature are easily located on the virtual world platform. Within

these areas, detailed information about the topic or links to related web sites is commonplace and can provide a visitor a jump-off-point for locating additional resources or persons related to the topic area. Several of these sites and member groups include community organizations, academic institutions, corporate environments, and government agencies.

(U) Community-based and non-governmental organizations are using the virtual world to provide information about their purposes, their membership, and their efforts. Sites such as “Camp Darfur” on Second Life provide insight into organiza-

tional efforts, often times serving as a platform for fundraising. These sites provide text, graphics, and videos that the creators feel are supportive of their positions, while allowing external links to similarly themed traditional web sites. These sites also serve as links to groups, agencies, or individuals that the site creators feel are compatible with their aims. Similarly, these sites frequently offer the visitor the opportunity to engage with the organization in some capacity outside of the virtual world.

(U) Academic institutions in virtual world environments offer access to lectures, presentations, faculty information, virtual student social activity centers,



libraries and school administrative information. At present there are a number of recognized colleges and universities that have established a presence in the virtual world, but the number of institutions currently online appears to be relatively small. In many instances only portions of the universities are represented in the virtual platform. In the case of San Jose State University, only the School of Library and Information Sciences is represented at this time. This appears to be a growing, yet not fully developed, avenue for information dissemination and public information outreach by students and staff involved in higher education.

(U) Corporate interests inundate the virtual world, providing information about products, strategic alliances, upcoming events, corporate structure, and corporate governance. The corporate world has provided an interactive forum to afford global customers information and training relative to a company's core competencies and product lines. Many times, companies, both foreign and domestic, host both public and private areas in order to allow access to information, while providing spaces for peer-to-peer collaboration and business development outside of what is perceived to be the public domain. Using the Second Life site of Sony BMG as an example, portions of the public space are used to market newer artists and product launches while pro-

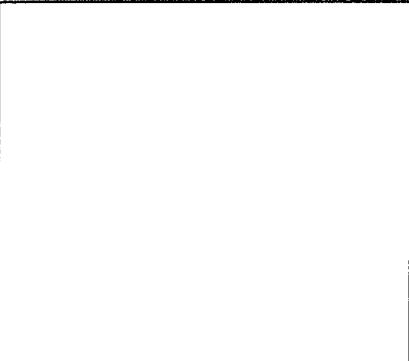
viding connections to traditional web sites for e-commerce purposes.

Official governmental postings, both US and foreign, currently appear limited in scope and number. Those government agencies that do maintain a virtual presence offer information of educational interest. Frequently this information includes updates on destination information and legal requirements for travelers. The Estonian Embassy on Second Life, for example, provided information about the easing of visa restrictions for travelers moving between Estonia and Turkey.¹⁴⁶ Other educational information afforded in the virtual environment includes scientific data, as evidenced by the Second Life interactive site sponsored by the US Department of Commerce's National Oceanographic and Atmospheric Administration.

(U) Where virtual worlds differ from standard web sites, however, is the ability to access people online and the interaction that ensues in the virtual space. In each of the Second Life examples cited previously, the virtual worlds created by users provide real-time access to persons directly related to the subject matter. This immediate access allows conversations that expand upon content, providing context and insight.

Personal interaction allows question and answer sessions, through text or voice chat. This significantly increases the ability to gather information beyond that of the traditional web, where information is pushed out to the recipient and there is a limited opportunity to question the material. Through

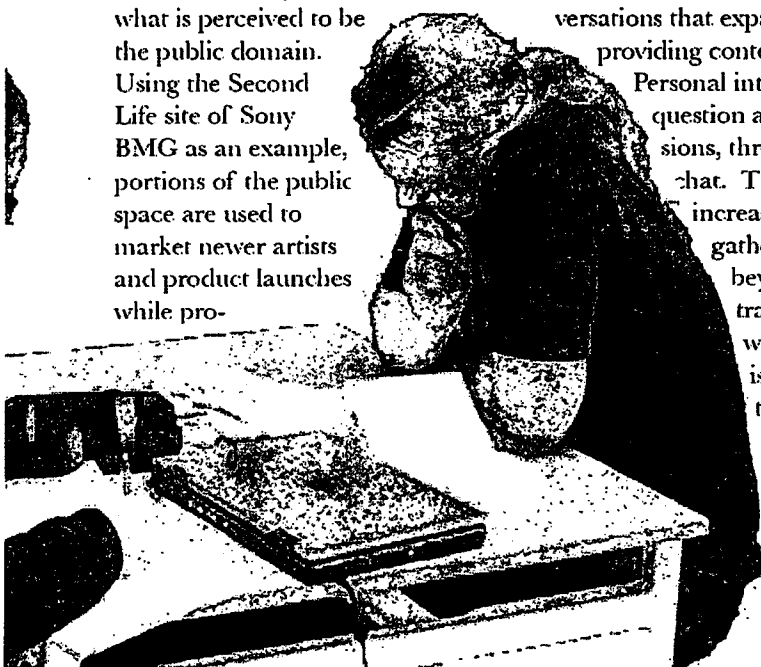
(U) Identity Changes and Social Engineering in Virtual Worlds



(U) Building rapport with the targeted individual is a key step for a successful social engineering operation within a virtual world. Using one avatar, a nefarious actor could seek out a target, who may have advertised his affiliation with an organization of interest, and attempt to learn more about the target. The nefarious actor's first avatar would not need to display any suspicious behavior, communications could be kept entirely innocent at this point. After gaining enough usable information, the actor could use a different avatar designed with the interests and desires of the target in mind (for example, if the target was attracted to redheads, the actor's new avatar could have red hair), develop a relationship, and then begin to extract information from the target. The fact that the actor looks like and has the interests of someone to whom the target can relate will likely make it easier for the actor to gain more valuable information quickly.

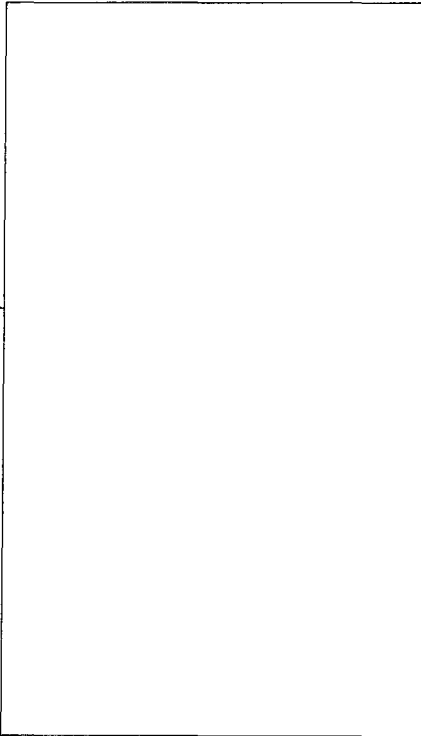
(U) In many cases, users only need a valid e-mail account to sign up for a free virtual world account. A nefarious actor, or a network of actors, could easily create multiple accounts with different types of avatars and use them for a variety of social engineering purposes. The challenge for the intelligence, counterintelligence, and law enforcement communities is to identify these outward identity changes, and track them back to the actor's digital being and ideally back to the original actor. By doing so, members of these communities could be able to inform their members about the social engineering threats in virtual worlds and, ideally, lessen the impacts of those threats.

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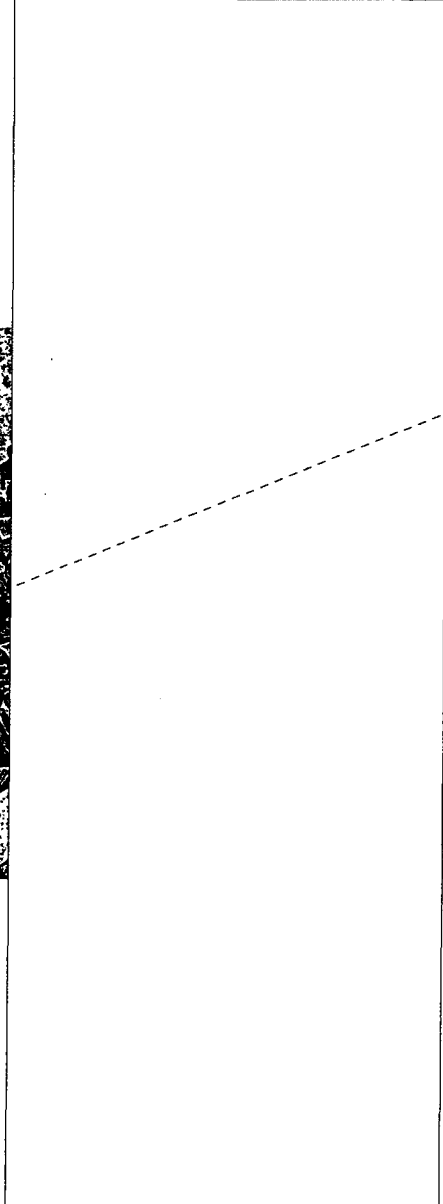


▶ these discourses, information can be developed far beyond the interactive processes virtual spaces previously offered.

(U) Present Day Intelligence Considerations.



(U) Upon examination, it appears that virtual spaces afford adversaries the opportunity to disseminate propaganda and to inculcate others to their ways of thinking. Users are able to contact others and to engage in private conversation, presenting text and video in support of their ideals. Within this venue an exchange of ideas can transpire and indoctrination can occur.



(U) Future Intelligence Considerations. The evolution of the internet and technical changes to virtual world platforms will be of

concern. The information available in myriad ways in the virtual world may be beyond the ability of the IC to address alone. The assistance of persons online should be a consideration. As highlighted by the authors of the Dark Web cyber extremism report, "as the virtual world platforms continue to evolve and mature, there is also much

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unknown about how much automated collection and analysis can be performed in these environments."¹⁴⁷

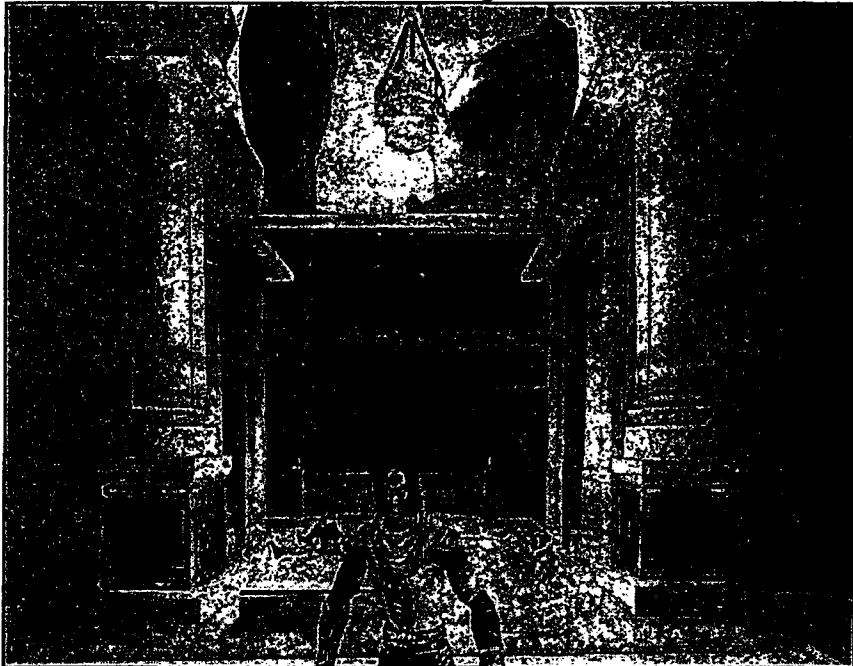
(U) Virtual worlds offer the opportunity to observe technical expertise in game play and creative uses of virtual "in-world" tools. These observations may come in real time during gaming or in retrospect through analysis of artifacts left behind on virtual world platforms. Frequently the artifacts will identify the creator through associated metadata. Users adept at strategy, team coordination, object creation, and use of these platforms may present themselves as technical resources or future employment candidates.

(U) For a discussion of potential use of virtual geospatial modeling, see Appendix 9. □

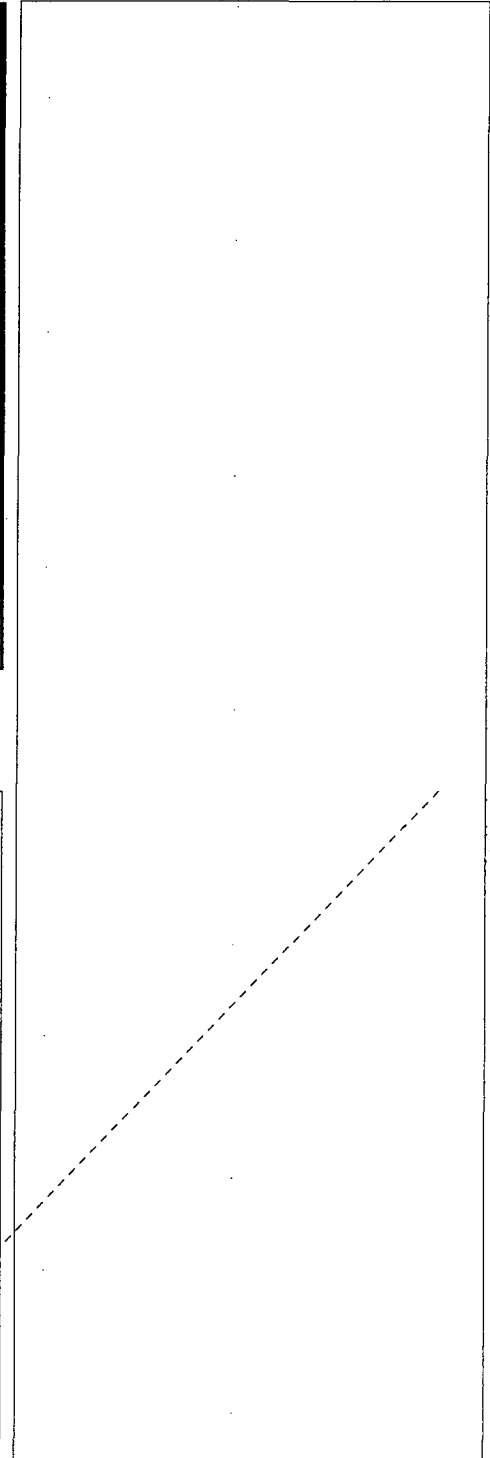
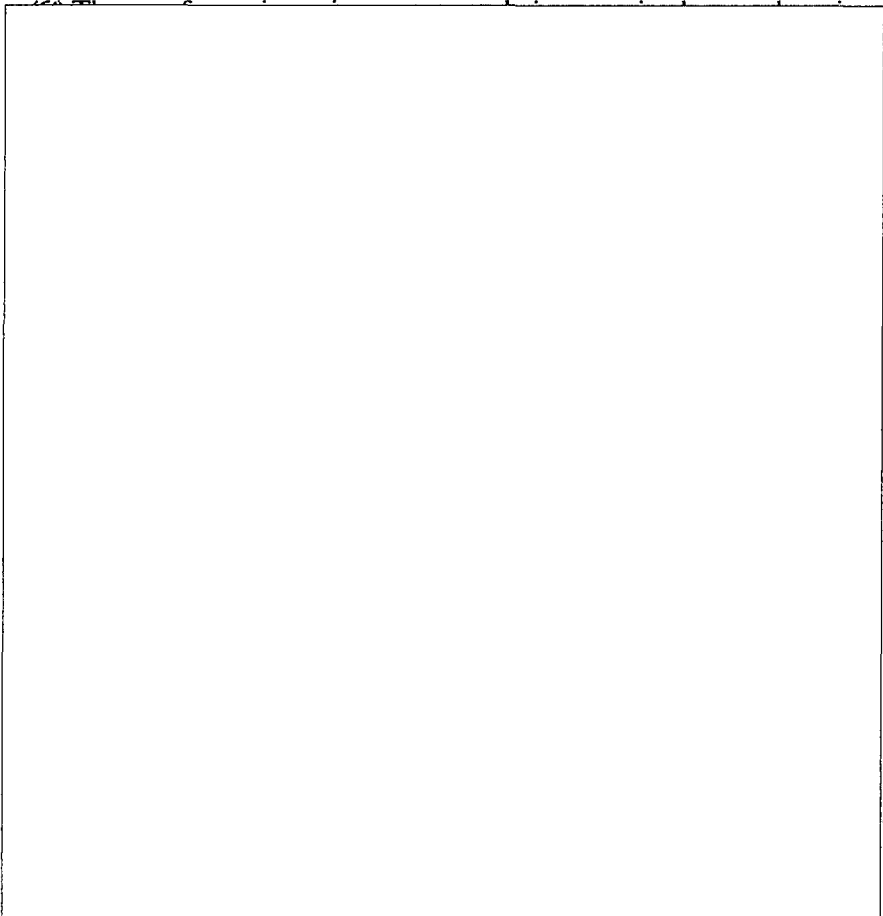
(U) Assuming Another Identity: Avatars for Education

(U) While reading books and attending lectures by regional experts are a good way to learn more about other cultures, an immersive experience in a virtual world representation of a foreign nation could provide a rich learning experience unmatched by any of the more traditional means of education. Assuming the identity of a traveler to a foreign land could prove to be an important virtual world learning experience. Assuming the identity of a foreign national within a virtual world, however, may provide a more immersive experience to the user, in turn providing important information and insights that could lead to more complete analysis of foreign nations and cultures.

(U) Members of the intelligence, military, and law enforcement communities must often serve as functional experts in a particular region of the world, quickly, as mission needs dictate. After the 11 September 2001 terrorist attacks, many analysts needed to quickly switch their foci to the Middle East from various other topical areas. Virtual worlds depicting these places, perhaps filled with people actually from these places, can provide a quality learning environment for the user via a traveler avatar.



**(U) The Technical Environment:
A Challenge and an Opportunity**



(U) Individuals or groups of individuals could use voice communication clients embedded within virtual world or online gaming environments to make it difficult to monitor and track their communications. For

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example, as of September 2007 over 330,000 Second Life accounts were using an integrated voice service to communicate with each other for an average of 70,000 conversations per day. The built-in voice service could add an additional layer of anonymity because the service is run on separate servers from the virtual world environment itself. Second Life phone booths have the capability of communicating with the Public Switched Telephone Network (PSTN), allowing an individual to communicate from within the virtual world to the real world and vice versa.

(U) As the proliferation of virtual world and online gaming environments continues, the technical challenge as well as the opportunities for the IC and law enforcement will continue to grow. In order to address these challenges and take advantage of these opportunities in a way that will allow the IC and law enforcement to adapt to any future variant of the current virtual world and online gaming environments structure, varied and agile solutions will need to be considered. ■

(U) Law Enforcement

(U) Extension of Real World

Crime. There is unequivocal empirical evidence that criminal activity occurs in virtual worlds; this activity is increasing both in volume and intensity. The relevant concern is the point at which virtual criminality becomes a concern for the national security interests of the United States. For the purpose of this section, criminal law enforcement issues are defined as those actions prosecutable under Title 18 (criminal) and Title 26 (tax) of United States Code, along with that which is commonly considered criminal under state statutes.

(U) Virtual worlds are inherently social communities. All communities, whether physical or virtual, contain denizens with a range of potentials for criminal behavior. Criminal acts in virtual worlds are either crimes against persons or crimes against property. Since the best predictor of future behavior is often past activity, it is relevant to consider prior criminal activity.

(U) The very nature of virtual interpersonal contact limits the range of violent crimes that can be perpetrated in a virtual community. Violent crimes occur most often when a dispute arises in the virtual

world and subsequently spills over into the real world or when real-world violence facilitates a desired outcome in the virtual community. In August 2008, a North Carolina woman attempted to kidnap her "ex-virtual" boyfriend.¹⁵¹ The couple met in Second Life and began a virtual relationship, which ended shortly after they met in the real world. The

woman is facing charges of attempted kidnapping, burglary, and aggravated menacing.

(U) Additionally, there is a trend in which users offer real-world activity, such as mowing the grass, in exchange for virtual world benefits. There is no reason to believe that unlawful exchanges do not also occur. As individuals increase their virtual world activities, both quantitatively and qualitatively, such lawful and unlawful barter exchange agreements can be expected to increase in number.

(U) One postulate is that these platforms allow these groups to justify their criminal behaviors in a community of like-minded individuals while simultaneously trading in the material that satisfies their criminal desires. There are several recently emergent virtual worlds that are structured on the paradigm of visual chat. Two examples of this are myvu.com and lively.com. In both virtual worlds, users can create a visual avatar and a custom environment. Users can then invite one or more desired guests into the environment where they can exchange files and chat about the material being traded in real time. The inherently social nature of these visual chat rooms makes them more susceptible to exploitation by fringe criminal groups, such as child pornography traders and hackers wishing to trade in compromised information files. Law enforcement experience has shown that these groups tend to gravitate to platforms using a peer-to-peer design, due to an often inaccurate perception that their communication and file trading activity is more secure from law enforcement scrutiny when it does not pass through a ▶



▶ third party server. For this reason, specific attention should be given in the future to those virtual chat platforms that are structured to provide peer-to-peer communication.

(U) Virtual worlds are not without illicit drug activity and use, another source of criminal activity with national security implications. Seclimine, for example, is a virtual drug

(U) these platforms allow groups to justify their criminal behaviors in a community of like-minded individuals

available for sale in Second Life. The web site advertising this and other virtual drugs states that, "Seclimine is a virtual pharmaceutical [sic] that is designed to be felt by the user. It is only found on Second Life and developed by Owner Maltese. Seclimine comes in a variety of strengths and soon also in different forms."¹⁵² Two virtual environments, redlight-center.com and virtual-vancouver.com, encourage users to engage in activities that include the virtual use of illicit drugs.

(U) Advertisements for these virtual worlds feature the fact that the virtual use of these real-world illicit drugs is "completely legal" on these platforms.¹⁵³ It is important to note that both sites provide links to a parent site, www.utherverse.com, which allows users to exchange personal identifying information. The three sites are interrelated such that individuals can engage in activities via their avatars that ultimately lead to the users choosing to "connect" in the real-world. When asked in a media interview if he thought this would lead to real life drug use, Utherverse CEO, Brian Shuster, said, "My response would be, that if someone has [not] tried marijuana in the real-world, and their first experi-

ence is with peer pressure in Red Light Center to try it, this actually gives them an experience that they can call on later as to whether they want to try it in the real-world, or not, rather than just being carried away by peer pressure...."¹⁵⁴

(U) Con-artistry in virtual worlds demonstrates another implication for law enforcement. Challenges of

anonymity involve both the often inaccurate perception of anonymity by actual and intended victims and the real potential for anonymity for those perpetrating the acts. The ability of perpetrators to victimize an individual that is located in a different jurisdiction or different country in many instances poses an insurmountable challenge to law enforcement. The technology and immersive nature of virtual worlds allow criminals to engage in traditional fraud schemes in innovative ways. As an example, it is now possible to "socially engineer" victims with whom they would have needed to meet in the real-world. One can describe social engineering as a non-technical kind of intrusion that relies heavily on human interaction and often involves tricking other people to break normal security procedures. There are numerous examples of victims providing personal identifying and financial information in virtual worlds through social engineering techniques that mirror real-world confidence (con) fraud schemes. The evidentiary trail left by these virtual cons, while it may exist, is markedly different from that which is commonly encountered in these types of crimes, making it difficult for law enforcement to monitor.

(U) Future Challenges for Law Enforcement in Virtual Worlds.

Policies, regulations and laws have always lagged behind the development and use of new technologies, the result of a top-down model of governance and policy formulation and bottom-up technology development. The lack of explicit relevance and applicability of the policies and laws and lack of willingness by governing bodies to enforce existing rules puts individuals and the security of the homeland at risk. A new model is necessary to address this gap and the rapid pace of change within the technologies. This model would be applicable to all forms of technology, not just virtual worlds and gaming technologies.

(U) The population of users remains geographically diverse within virtual worlds although heavily used by US citizens. This creates an additional

(U) Virtual Prostitution in the Real World

(U) In April, 2007, a female World of Warcraft user placed an advertisement on Craigslist.com in New York. This advertisement was an offer of prostitution in exchange for 5000 Gold, the currency of exchange in World of Warcraft.¹⁵⁵ 5000 gold is the rough equivalent to 200 US Dollars.

(U) It is noteworthy that the same individual later self-reported in a World of Warcraft forum that she was able to purchase her "flying mount" after consummating the criminal activity that she had advertised. She further reported that she had located a customer within one hour.¹⁵⁶

concern to law enforcement because issues of jurisdictional boundaries and logistical constraints on extradition can arise. Another concern is the general lack of training for the domestic law enforcement community regarding virtual property crimes. An individual reported the theft of Final Fantasy XI MMORPG virtual property with an equivalent value of about 4,000 US Dollars to the Blaine Police Department in Minnesota. Both law enforcement officers and prosecutors told the victim that virtual items “are devoid of monetary value,” and thus no crimes had actually been committed.¹⁵⁵ This is not an example of misfeasance, but rather of a lack of understanding on the part of local criminal justice authorities. While this example had a materially insignificant monetary value for the national economy, it is scalable when one considers the number of potential US victims that are projected to participate in future virtual worlds.

(U) This is also a national concern if US-based online service providers are directly victimized. In January 2008, Tokyo police arrested a Japanese teenager for stealing virtual property from Nexon, a Korean virtual world service provider.¹⁵⁶ Initial estimates of the direct theft equated to \$340,000 USD, with the total value of this crime being much higher. In this instance, the 16 year-old suspect allegedly used his avatar in Nexon’s Mabinogi virtual world to obtain the private login name and password of an employee of Nexon’s Tokyo branch through social engineering. He subsequently used this information to illegally access the company’s servers and transfer the in-world currency of exchange to his account.

(U) There is significant potential for organized criminal activity in virtual worlds, particularly those with real-world economic equivalents and conversions. An additional concern for law enforcement is that the regulatory environments for companies designing and implementing virtual worlds and virtual economies are murky at best. As an example, like many other virtual worlds, Linden Lab—the company with control over Second Life—maintains significant amounts of customer money in trust. These are not monies paid to the company, but rather those that customers maintain in the company’s in-world currency of exchange so that they can engage in virtual commerce. Linden Lab voluntary disclosures show that on August 1, 2008, customers paid over 5,226,000,000 Linden Dollars in trust. That equates to almost 20 million US Dollars.¹⁵⁷

(U) Most other companies that have created virtual currencies with real-world exchange rates do not make similar disclosures. It is a reasonable projection that several billion US Dollars are similarly held by the companies controlling virtual worlds. Many of these companies are located outside the scope and authority of US law enforcement. Those companies, such as Linden Lab and Blizzard, which are US companies, are structured such that their requirements to comply with regulatory measures, such as the Bank Secrecy and Anti-Money Laundering Acts, are ambiguous.

(U) Companies have chosen to establish essentially unregulated virtual banks, loan companies, and other financial institutions within virtual worlds. These are third party enterprises that are neither contractors nor employees of the companies that own virtual worlds. When ▶



▶ looking across worlds, one can find such companies accepting money in interest-bearing accounts and offering loans at various rates of return in myriad virtual and real currencies.



Some companies, such as Blizzard, which owns World of Warcraft, take the position that the currencies exchange

of platforms have no real-world value or legitimate exchange. Unfortunately, since individuals find it valuable to own these currencies, such as World of Warcraft Gold, there is a thriving black market in the trade and conversion of these currencies. This climate produces an unprecedented challenge when law enforcement must investigate the allegations of unlawful financial activities either within a virtual world or involving virtual currency.

(U) Ginko Financial operated a virtual bank in Second Life until August 2007. Avatars could deposit and withdraw Linden Dollars in interest-bearing accounts at several virtual ATM locations. About 18,000 accounts are reported to have been established at Ginko Financial, which offered rates of return in excess of

30 percent for depositors.¹⁵⁸ Ginko Financial collapsed in early August and caused depositors to suffer an unknown amount of loss.¹⁵⁹ Numerous online forums and bulletin boards reported this loss as anecdotally significant. As a direct result, Linden Lab stopped allowing unregulated banks to accept money in interest bearing accounts. This move may have a negligible effect, because the global nature of virtual world activity means that these unregulated financial institutions now can charter in their pick of countries.

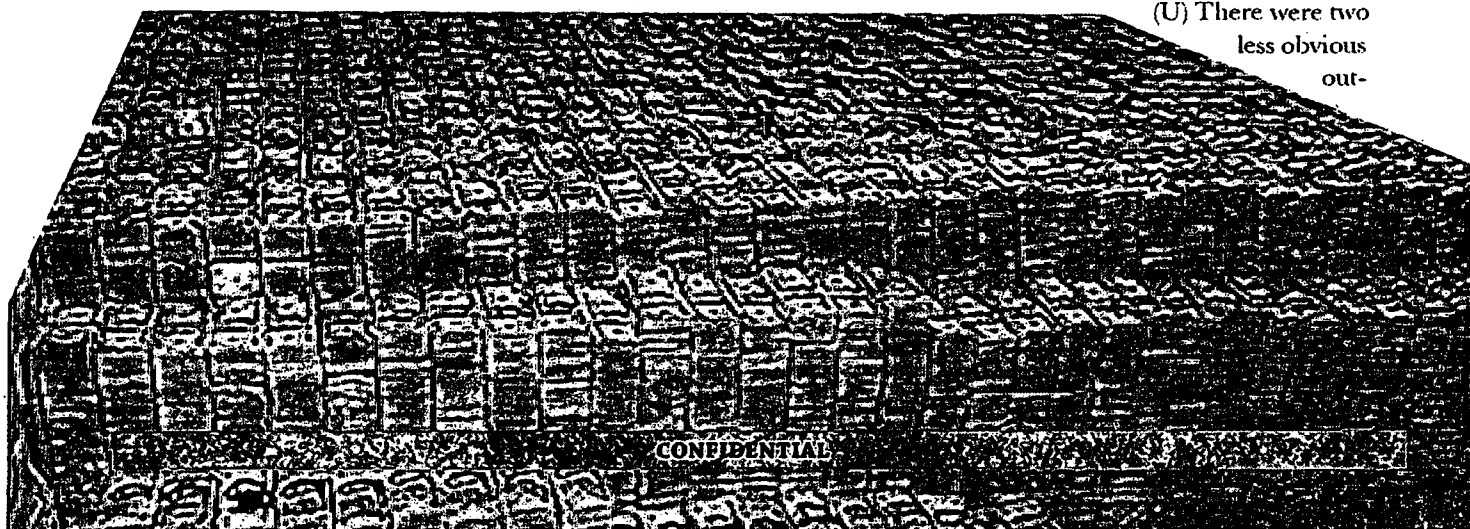
(U) For law enforcement, money laundering is probably the largest anticipated concern, due to the known conditions in virtual worlds which make it possible. Some companies, such as Linden Lab, have enacted voluntary internal measures to ensure that laundering significant sums becomes an impractical option in comparison with traditional online money laundering techniques. One easily located Web 1.0 entity, traceable to a residential structure in Miami, Florida with servers in Moscow, offers the exchange of large sums of various virtual and game currencies for varying rates. This entity offers to convert between US Dollars and Linden Dollar for 89 percent of the value it takes to exchange the Linden, which is the legitimate Second

Life currency exchange. It seems that an individual would only use this conversion system to thwart internal controls established by Linden Lab or to obfuscate both the true nature of the transaction and the source of the funds.

(U) Those engaged in money laundering seek ways to easily convert the proceeds of unlawful activity back into a usable form after their true nature has been concealed. MindArk, for example, offers a Project Entropia cash card that can be used at real-world ATMs worldwide (see Figure 2). The advertisement states that “[b]y simply transferring your PED to the Cash Card using the Transfer Center in the Entropia Universe, you can use the Cash Card to pay for goods and services in retail outlets, or to withdraw real cash from millions of ATM machines around the world.”¹⁶⁰

(U) A final concern for law enforcement is the law of unintended consequence. Gambling in virtual casinos has traditionally been a significant economic activity in Second Life. In July 2007 Linden Lab banned virtual casinos and gambling activities.¹⁶¹ The effect was an immediate and material drop in user-to-user financial transactions from which Linden Lab has not yet fully recovered (Chart 4).¹⁶²

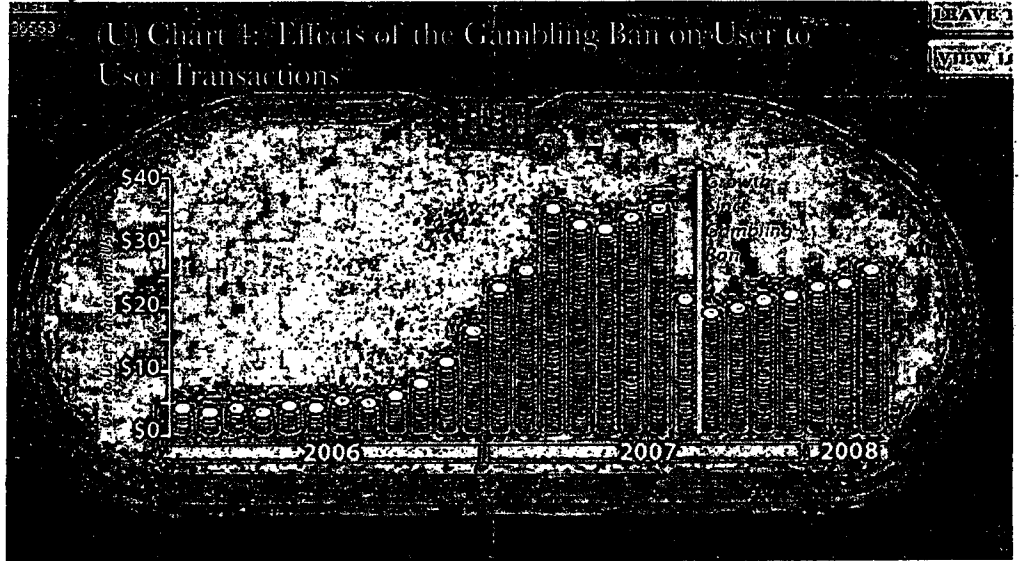
(U) There were two less obvious out-



comes from this action. The first was that users of Second Life found ways to covertly continue gambling activities. For example, numerous bars and other establishments have begun holding "dance contests" that avatars pay to enter. Avatars dance with each other and winners are selected randomly, with monetary prizes awarded. The second outcome was that those that chose to engage in virtual gambling activities found other virtual world platforms whose servers and business operations were located outside the reaches of United States criminal enforcement. Since July 2007 several new virtual worlds have appeared specifically to fill the void created when Linden Lab decided to ban this activity. The commonality among these new businesses is that they do not have a brick-and-mortar location within US jurisdiction and that none of their servers are located on US soil. The challenge arises when the US law enforcement community attempts to enforce criminal law it displaces its activities to virtual platforms that

are more difficult for the US IC to monitor. This creates a scenario in which the United States law enforcement and intelligence communities are at odds, with opposing priorities.

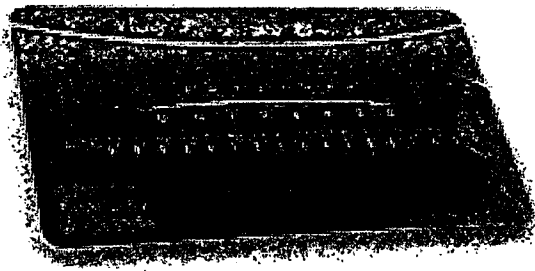
(U) In addition to economic implications for law enforcement, the global expansion on virtual worlds imposes



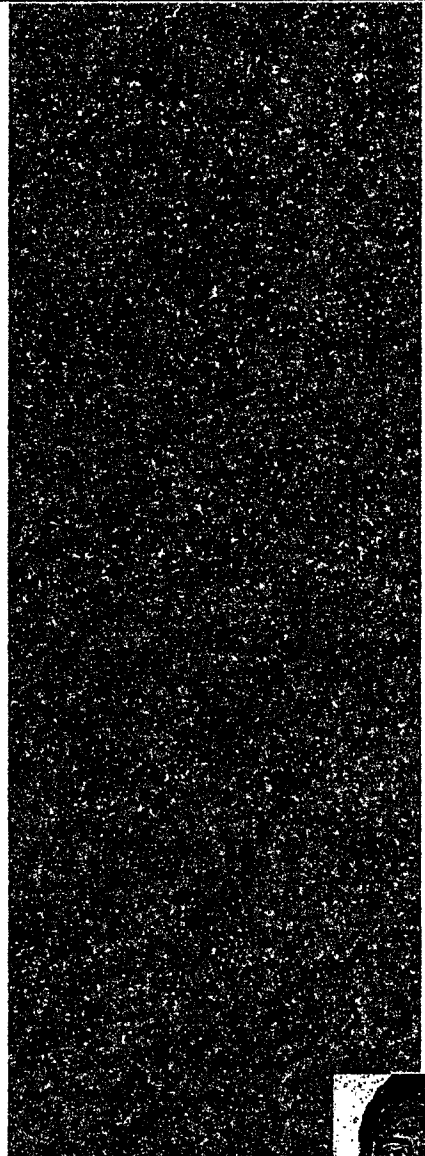
several challenges on US law enforcement. The global nature of virtual worlds means that state and local US law enforcement, which are designed and equipped to deal with crimes located in geographically limited jurisdictions, must now navigate a multi-national geopolitical and regulatory environment in order to effectively investigate complaints from the real-world citizens they serve. Federal and state criminal codes leave police and prosecutors with few tools to deal with the emerging

global nature of virtual crime. As more US citizens choose to engage in commerce within virtual worlds, it is likely that traditional law

enforcement agencies will increasingly find themselves ill-equipped to deal with the inevitable allegations of theft, fraud, and other criminal financial activity. ■



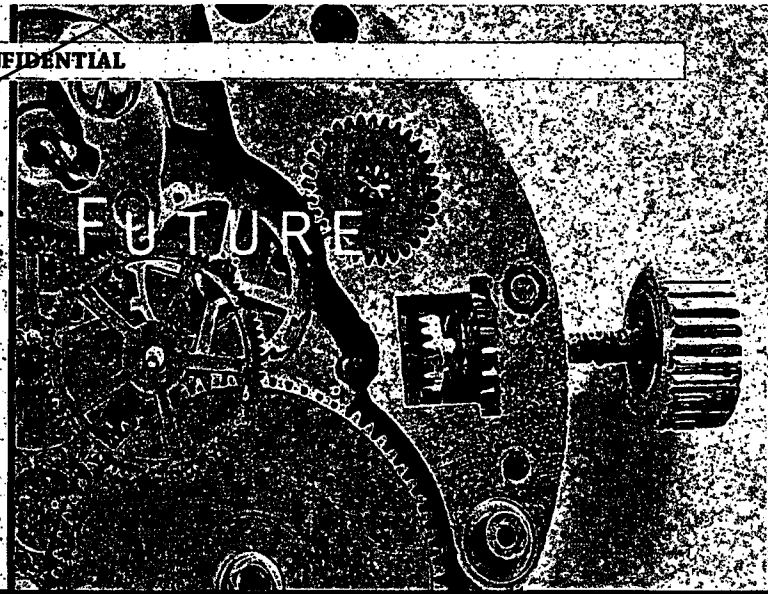
Entropia Universe's Real-World ATM Card



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(U) PLAUSIBLE FUTURE

(U) VIRTUAL IMMORTALITY



(U) With advances in human acquisition technology, it has already become possible to capture the body, face, and detailed features of any human being and keep them digitally alive in cyber space forever. In one plausible future, this technology would allow even greater fidelity of human body "capture." Digital reproduction would reach a point where artificial avatars would be indistinguishable from actual photos and movies. If developers couple this technology with motion capture animation and voice recording, the avatars will walk, talk, and look exactly like the humans they represent.

(U) Already Hollywood has used this technology extensively for special effects shots that are too complicated for actors to perform themselves. One example is Tobey Maguire's stunts in *Spider-Man 2*. In the plausible future, anyone would be able to capture themselves at a certain age, and their likeness would live on forever at that age, being reanimated in many new situations and contexts within virtual worlds.

(U) Why would this be of concern? Imagine that jihadist supporters create a detailed avatar of Usama bin Ladin and use his many voice recordings to animate the avatar for up-close virtual reality experiences that could be used to preach, convert, recruit, and propagate dogma to the media. The Bin Ladin avatar could preach and issue new fatwas for hundreds of years to come, as the fidelity of his likeness would be entirely believable and animated in new ways to keep him current and fresh. In effect, anyone could become a 3D virtual immortal and live on in cyber space forever.

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(U) FAKE ADVERTISEMENT

(U) LETSPEAK

(U) FOR A NOOB

(U) LEEET .

(U) 0 rly?

(U) w00t!

(U) plz

(U) PLZZZZZZZZ

(U) thx br0

(U) u b33n pwn3d

(U) u roxord mah
boxors

(U) ROFLCOPTERS!!!

(U) Better than you.

(U) Oh, really?

(U) Hooray!

(U) Please.

(U) Please, I implore you!

(U) Thank you, sir.

(U) You were easily beaten.

(U) You have easily beaten
me.

(U) That was humorous

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(U) Appendix I: History of Virtual Worlds



(U) Virtual communications have existed since the 1970s; only recently, however, have the

(U) twin technolo-

gies of social networks and three-dimensional graphics permitted virtual worlds to take off. The games of the 1970s and 80s were largely text-based chat-room style games, with complexity and player populations that grew over time. From these purely text-based environments grew the first virtual worlds: Multi-User Dungeons (MUDs) developed by Richard Barde in 1978.¹⁶³

(U) At the same time, computer graphics grew by leaps and bounds, largely in the world of console games. Fairchild released the first video game console in 1976, but it was not until Atari released Pong that video game consoles began to gain recognition.¹⁶⁴ The third generation of console games, begun in 1983 by Nintendo with the release of the Nintendo Entertainment System (NES), was quickly joined by Sega and Atari. Over the years both the graphics and the acceptance of the concept of a dedicated game machine improved. Consoles allowed a small number of players to play together in a multiplayer game. Recently released consoles, including Xbox 360 and Playstation 3, have expanded the ability of players to interact via networking, providing a new platform for the development of massively multiplayer games. Another recently released console, the Wii, brought innovation in the user interface, and through that innovation has expanded the possibilities for human-computer interaction.

(U) Virtual worlds thus remained text-based and very small until the release of the virtual world EverQuest, which overlaid the now-familiar graphical interface on a traditional text-based world. EverQuest was a tremendous success that spun off many other similar game worlds and set a new industry direction. EverQuest permitted players to do more than chat with one another; rather, players were represented by three-dimensional graphical people within the world—“avatars.”¹⁶⁵ (Prior games used digital representations of the self, but none so successfully.) The success of EverQuest paved the way for Blizzard Entertainment's World of Warcraft, the virtual world that took the technology mainstream. As of January 2008, Blizzard's world boasted over 10 million paying subscribers worldwide.¹⁶⁶

(U) Spurred by Blizzard's success, virtual worlds continued to evolve. Some worlds are “pay-to-play”: players must pay a monthly license fee to play. Others rely on a micro-transactions model, in which players make real-dollar purchases to gain in-world items or currency. Because of rampant software piracy, Asian virtual worlds use the micro-transaction model; users can download the game for free, but cannot gain items or power without paying. These models have begun to penetrate new markets worldwide. Blizzard's World of Warcraft has succeeded enormously in China. Conversely, in 2008, the European-developed Project Entropia expanded the micro-transactions model by introducing a virtual currency that could be exchanged for real world currencies.¹⁶⁷ Project Entropia created

a large virtual universe centered on the ability for a user-customized avatar to make real money through game play.

(U) The gradual merge of social networks and immersive 3D graphics has caused an explosion of possibilities. Over 200 virtual worlds are currently in development. For example, Warhammer Online is a massively multiplayer online version of the popular table-top war game.¹⁶⁸ This game has a number of state-of-the-art and innovative features, creating unique selling points for the franchise. The game revolves around the continual worldwide conflict that players know the Warhammer Fantasy setting for, and the game will be geared toward ongoing, constant war between realms. This contrasts with the common quest-based games that currently lead the market, like World of Warcraft.

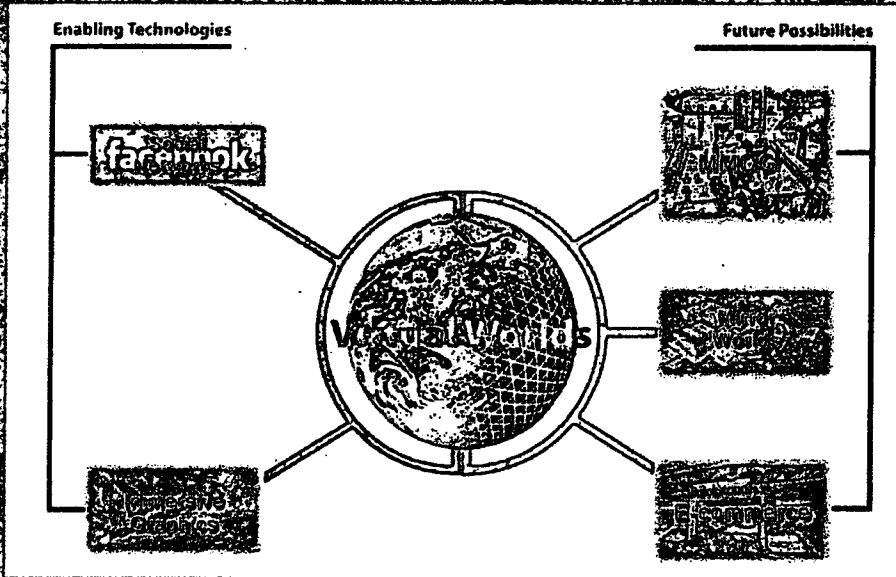
(U) Fantasy games merely represent the thin edge of the wedge. Games and virtual worlds can be used for recruitment/propaganda,¹⁶⁹ training/education, robust and diverse communications,¹⁷⁰ networking,¹⁷¹ team building,¹⁷² and supercomputing.¹⁷³ Mirror worlds—worlds that build a virtual world that matches real-world geography—are already common. Google Maps has developed from Google Earth. And while virtual worlds are busy building virtual versions of the real world, inventive programmers are busy building virtual layers accessible from cell phones and wireless devices.

(U) Moreover, virtual worlds and traditional social networks are slowly beginning to merge. As the in-

Internet evolved from Web 1.0 to Web 2.0, many gaming and social interaction sites gained popularity. For many, Yahoo's virtual world satisfied the need for all internet usage, much as America Online (AOL) and CompuServe did

in the early days. Computerized versions of board games, email services, file sharing services, search engines, social groups (both private and public), and image sharing capabilities filled the human need to connect with other humans. They have not been without competition, as there has been an explosion of social networking sites in recent years.

(U) Social networking sites represent a primitive type of virtual world. However, often times, on social networking sites you play by yourself while in virtual worlds, you play someone else. Many of them offer opportunities for synchronous communication among members and they all offer a way to leave messages, both public and private. Most of the sites encourage forming links to friends, so on many of these sites an instant (sometimes graphical) view can be obtained of an individual's social network. Popular sites include MySpace, Facebook, and LiveJournal. It should come as no surprise that developers are working on virtual, 3-D interfaces for social networking sites. The next generation of a MySpace page may be a MySpace room.



(U) The merging of three-dimensional, navigable worlds with social networks gives rise to a large number of new applications. Some of these are designed for children (e.g. Webkinz, Club Penguin), some are designed for a purpose and revolutionize how we access news and other information (e.g. Google, slashdot), others revolutionize how we shop (e.g. Asda and Good-Housekeeping) and how we are educated (e.g. Neoh and Seicity).

(U) Linden Lab brought user-defined content, common in social networking and file sharing sites, to new levels in 2003 with the release of Second Life. Avatars are called Residents; they can explore, meet other Residents, socialize, participate in individual and group activities, and create and trade items and services with one another. There is a virtual economy linked to real world currency, and the sale of virtual items has generated enough income for some Residents that they can generate their real-world living from the virtual. Second Life has enjoyed a mixed response, as the user interface is unique and does not implement some of the gaming conventions for movement and communication.

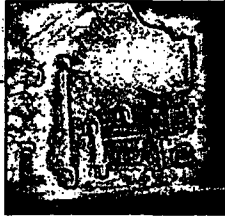
Users recognize Second Life not as a game, but the first incarnation of the virtual world.

(U) Some of the companies currently developing (or that have already developed) other virtual world platforms are involved in the data interoperability movement, which would allow personal and account information to follow the user from one virtual world to another. Today, each virtual world exists uniquely and distinctly. Users have an account with each, and each world (or game) has a unique avatar. There is a growing trend for groups of friends, some of whom have never met, to meet and socialize in more than one virtual world. Virtual spaces began as communities interacting for a purpose, developed new ways to communicate and interact, and are now becoming new portals to influence large populations. People commonly know many people they have never met in person, however, as more people begin to hide behind the identities of their avatars, it becomes more difficult for people to know for sure if the person behind the avatar is who they believe it to be.

Critics also complain that there is nothing to do in the world, unlike Project Entropia, where developers built the world for users to play games within it. Second Life designers envisioned no purpose other than to support those things that users wish to do. Therefore, virtual world users



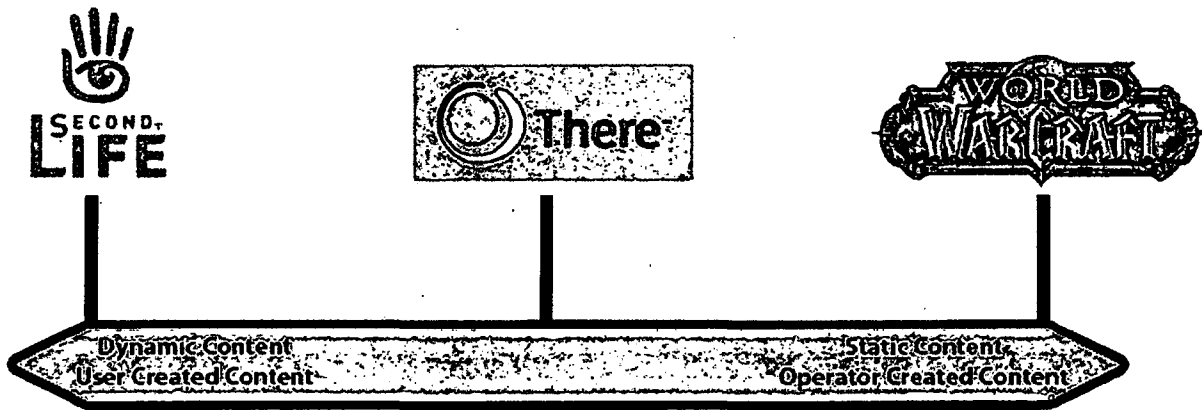
(U) Appendix 2: Types of Virtual Worlds



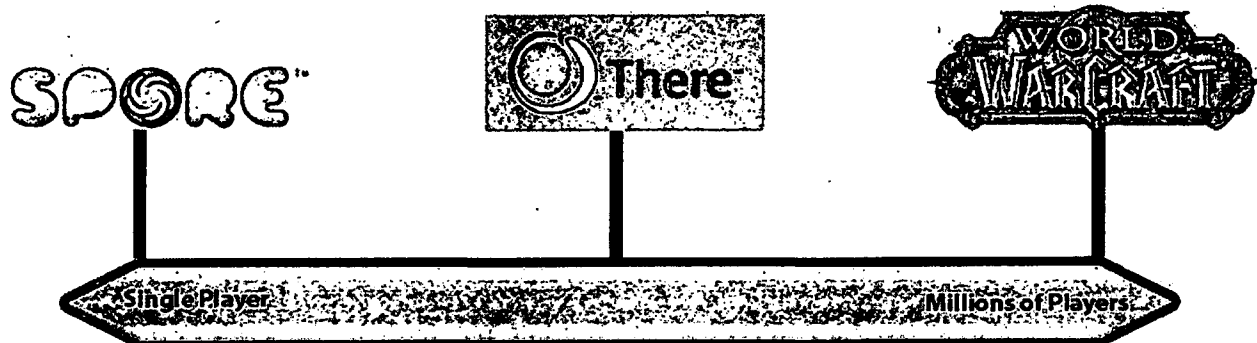
(U) One can categorize virtual worlds and games by placing them on different continuums to show the differences amongst the applications:

(U) **User-created content.** The scale of how much virtual worlds allow users to modify them varies from game to game. Certain games, such as Second Life, permit users to create content for in-game use. In the middle of the spectrum, games like There.com do not allow user created content to be placed in-world without approval; to create content, a There.com user has to go through a rather lengthy process involving the operators of that virtual world. At the far end of this continuum, World of Warcraft represents a game that does not allow any user created content: the operator company, Blizzard Entertainment, creates all content.

(U) Therefore, virtual worlds range from Second Life, in which users create almost all content, to There.com, a mix of user and company created content, all the way to entirely company content, as in the case of World of Warcraft. The ability to create content appeals to the hobbyist builders of the world, while operator created content gives a user less choice, but also eliminates the confusion and (often) paralysis associated with too many choices. While the creation and modification of content by users at their own pace causes the constant updating of applications like Second life, the game landscape of World of Warcraft, however, never changes.



(U) **Number of players.** Another statistic that one can gradate amongst virtual worlds is the number of players who participate. Games can range from only requiring a single player, to millions of players online concurrently.



(U) Age of players. Virtual worlds target players of every possible age, from children to adults, or a mixture. The mechanisms for enforcing “Children Only” and “Adult Only” rules in games or game areas have met with reasonable success, with violations usually resulting in ejection from the game. Interestingly, often the players identify the “odd man out” in these environments and report them to the game operators. For example, an adult can easily get an account on the Teen section of Second Life prohibited to adults (except employees), and the teens themselves detect and report the unusual behavior of an adult trying to masquerade as a teen.¹⁷⁴



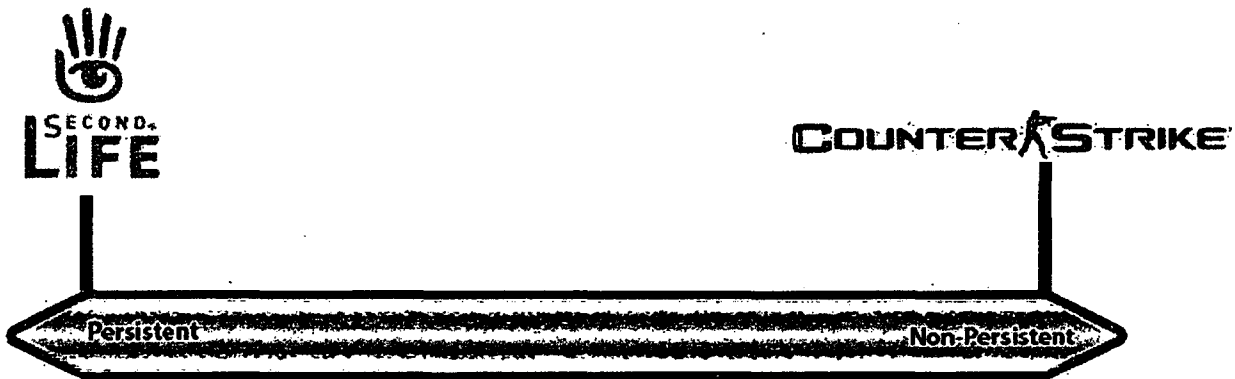
(U) Price. While some virtual worlds don't cost anything, others require subscriptions, or even purchases in addition to a subscription. Almost all of the subscription games have “free to try” limited subscriptions or free accounts that are somehow restricted. World of Warcraft has a ten day free trial; Second Life has unlimited duration accounts that have slightly limited capabilities.



(U) Worlds versus Games. Some experts describe virtual world systems as platforms for creativity, while some categorize them strictly as “games”. This label usually results from of the nature of the challenges presented to the user. The unstructured world, like Second Life, presents no challenges, or quests, for the user to perform. The platform nature of the world, user created content, and user generated “quests” support all interest. For example, a user can create a dark, gothic environment that others use in order to play either vampires or humans, conduct vampire versus human hunting games, and fight battles. (This is an example of game created within a non-game). Inventors design quest based games like World of Warcraft with questing challenges for the player to experience.



(U) Persistence. Some worlds and games are “persistent,” which means that even in the absence of users, the environment exists. Second Life and World of Warcraft servers are always online, even if there no players connected to them; thus the 3D environment worlds always exist. A console game, such as CounterStrike, is non-persistent since the game or world exists only when the user turns the console on and plays the game.

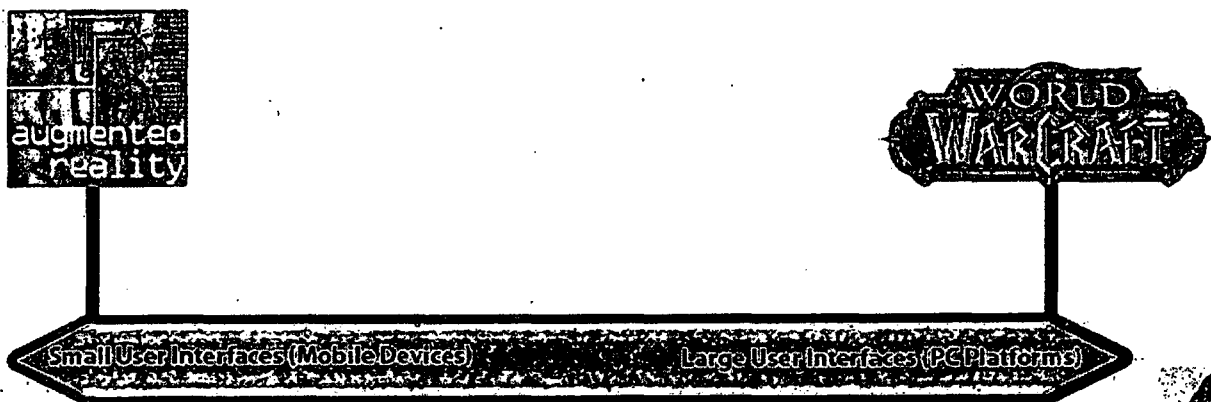


(U) Dimensions. One can consider a game two dimensional (2D) if it appears flat; board games such as Scrabble or Monopoly fall into this category. Flash games, such as Yahoo's Scrabble, also fit into this category, even multiplayer ones. Some games give the illusion of three dimensions (3D), even though they are in fact only two dimensions.

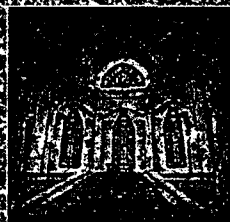
(U) Virtual worlds, however, do not inevitably move in the direction of the three dimensional, for several reasons. First, as graphics approach photorealism, humans begin to be disturbed. Experts call this the "uncanny valley": the concept that graphics can be "too real" and that humans begin to feel revulsion when they encounter something that looks human, but isn't.¹⁷⁵ Even if verisimilitude doesn't cause the revulsion reaction, humans view highly realistic settings as less forgiving—people are much less willing to maintain suspension of disbelief when confronted with things that look real. Second, from a game design perspective, many types of game-play do not lend themselves to 3D. In fact, for more abstract games like puzzles or geometry-based games, a 3D interface can get in the way; moreover, the simpler the graphics, the greater the number of computers that can operate the virtual world software. To reach the largest possible audience, developers keep graphics to the simplest level possible that can still engage the target demographic. Thus, the developers of children's worlds generally do not use photorealistic graphics technology—even if they had the choice, this medium would not reach their target audience. Finally, photorealism consumes time and money. Producing high quality 3D art, and the technology to support it, raises the costs of a game.



(U) Platform. Virtual world experiences are not limited to the game console or the personal computer. Mobile devices, such as cell phones, can contain games, and gamers increasingly use them for two player or multiplayer games. Many Asian users do not have the economic status to afford a high-end PC, so they preferentially choose mobile devices for gaming. Augmented Reality Games combine virtual and real objects and experiences together and often use mobile platforms such as PDAs and cell phones. ■



(U) Appendix 3: Demographics of Virtual Worlds Users



(U) *World of Warcraft*. *World of Warcraft*, the most popular MMORPG in the world, reached 10 million users worldwide in January, 2008.

Over two million subscribe in Europe, over 2.5 million in North America, and approximately 5.5 million in Asia.¹⁷⁶ Blizzard currently offers *World of Warcraft* in seven languages, with a Russian version in development and scheduled for release later in 2008, and a localized version for Latin America that was scheduled for release on 25 July 2008 in Mexico, Chile, and Argentina, that will have a Spanish-language customer support team.

(U) The real life gender distribution of *World of Warcraft* players is 84 percent male and 16 percent female, which contrasts with an in-game character portrayal of 65 percent male, 35 percent female. Men play approximately 55 percent of female characters in *World of Warcraft*.¹⁷⁷ Motives for "gender-bending" included attempting to gain a perceived in-game advantage, as well as having a more stylish character.

(U) *EverQuest 2*. *EverQuest 2* led the MMORPG market prior to the launch of *World of Warcraft*, and still maintains a player base of several hundred thousand players. A recent

study of *EverQuest 2*, or *EQ2* (Sony Online Entertainment) found that the average age of players was 31.16.¹⁷⁸ The gender distribution was 80:20 percent male and 19:20 percent female.

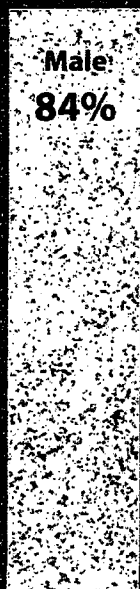
(U) Contrary to expectations, this study found that females spent more time playing than males. Females played an average of 29.31 hours per week while males played an average of 25.03 hours per week.¹⁷⁹ The researchers also found that *EQ2* players spent 21.56 hours per week watching television, compared to 31.5 per week for the general population. Since online game play serves a social activity, while one generally watches television alone and passively, this may be a positive trend.

(U) *Lineage and Lineage 2*. The most popular MMORPG in Korea, the *Lineage* series, requires a monthly subscription to play (as do *World of Warcraft* and *EQ2*). Publisher NCsoft reported 610,918 unique users during the month of March 2007.

(U) Dr. Leo Sang-Min Whang and Dr. Geunyoung Chang of the Department of Psychology, Yonsei University, Seoul, Korea have extensively studied Korean *Lineage* players and reported their findings in a paper entitled "Lifestyles of Virtual World Residents: Living in the On-Line Game 'Lineage'."

They report that they have observed real-world behavior being affected by the status and legend of the player's character within the game.

(U) Gender of Players

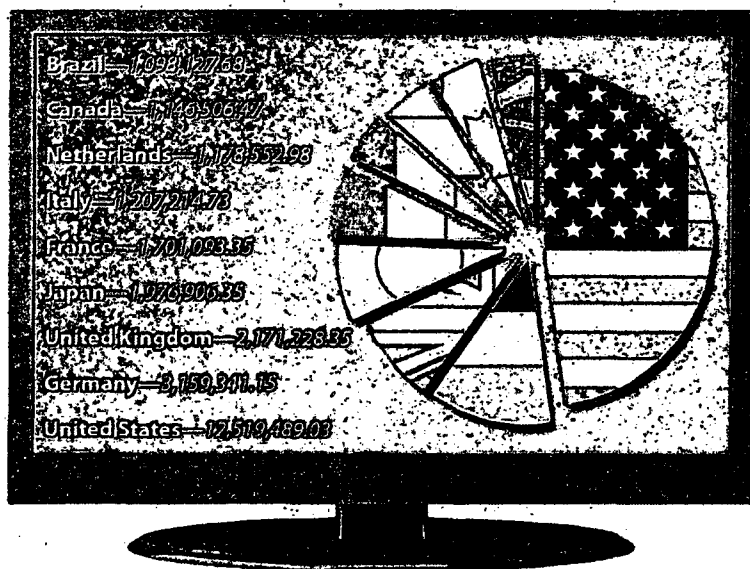


(U) Gender of Characters



(U) *Second Life*. As of 23 July 2008, *Second Life*, the most well known virtual world, had 144,64,687 total registered accounts. However, only eight percent or 1,209,375 were active users; additionally, these numbers may inflate the actual number of users, as a single person can register more than one avatar, and with each avatar constituting a unique account.¹⁸⁰ For example, in a recent interview Linden Lab CEO Mark Kingdon revealed

(U) Chart 3.1: Percentage of Second Life Users by Country



that just 0.45 percent (68,000) of the 15 million registrations use Second Life at any one time.¹⁰¹

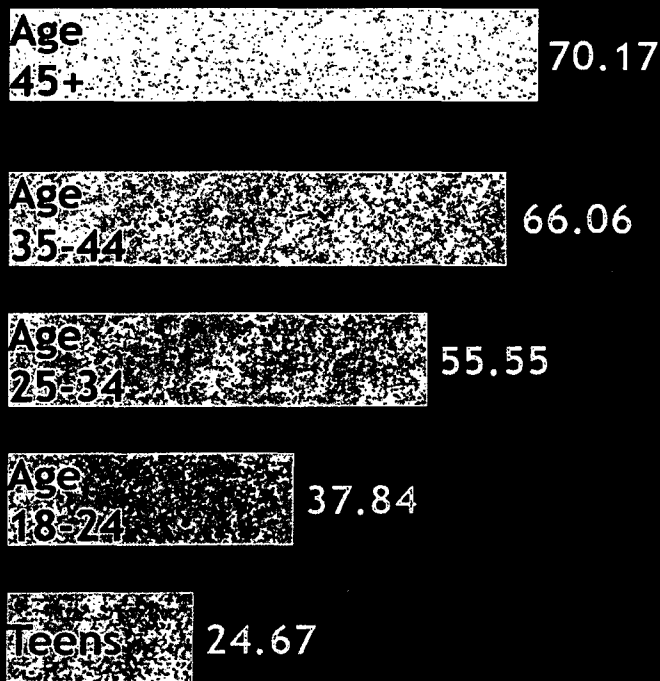
(U) Linden Lab, the creator of Second Life, provides detailed demographic information in terms of user hours (rather than individual users). Americans account for fewer than 40 percent of user hours, demonstrating that Second Life is an international, not merely American, phenomenon.¹⁰²

(U) Second Life users split by gender into 45.5 percent female, 54.5 percent male.¹⁰³ This is an interesting statistic, because on-line games are predominately male. However, as occurs in other virtual worlds, a significant number of males probably control female Avatars in Second Life.

(U) Second Life, unlike gaming communities, seems to appeal to an older population. Older users spend far more time in Second Life than younger users.

(U) HiPiHi: This Chinese-developed virtual world has many similarities to Second Life (to the degree that some have claimed that it is a clone of Second Life). The developers are currently beta testing the software as of April 2008.

(U) Chart 3.2: Second Life User Hours per Month by Age



(U) Originally introduced in Finland, Habbo has now expanded to 32 communities in countries across six continents. Globally, Habbo has nearly an equal split between boys and girls; 70 percent of users are 13-16 years old and 64 percent visit Habbo every day. On average, Habbo users spend about 39 minutes per visit to the site.¹¹⁶⁵

(U) *Barbie Girls*. Barbie Girls, created by Mattel to extend its Barbie brand, provides children, mostly girls between the ages of eight and 15, with a quickly growing virtual world. Mattel publically acknowledged in April 2008 that it maintained more than 11 million users, and the company recently began to offer a premium subscription in addition to free play on the site.¹¹⁶⁷

(U) *Webkinz*. Webkinz, aimed at children ages 6-13+, boasted one million users and sold more than two million units of their toys to retailers in 2007. The fact that it was the second most popular search term on Google in 2007 demonstrates its popularity.¹¹⁶⁸ Ganz, the company that owns Webkinz, does not release financial statistics.

(U) *Club Penguin*. Club Penguin had over 12 million active users and 700,000 paid users in August 2007, when Disney bought the site for 700 million US Dollars. At that time, Club Penguin users resided mainly in the United States and Canada, and ranged primarily from age 6-14. As of June 2008, Disney was considering Australia as a new market.¹¹⁶⁹

(U) *Gaia Online*. Gaia Online has more than five million unique active monthly users. Developers aim the site at teens; more than 300,000 "Gaians" log in each day. Time Magazine named the site one of their "Best 50 Web Sites of 2008 for Fun and Games." According to an April 2008 report by research group Hitwise, Gaia Online holds the highest average visit time among social networking sites, including Facebook and MySpace. According to Quantcast, females comprise 60 percent of the users (although there have been references to gender bending, which may skew these statistics). Nearly twice as many users are based globally than in the United States.¹¹⁷⁰

(U) *Neopets*. Neopets, owned by Viacom, boasts over 44 million registered users.¹¹⁷¹ Neopets exists in 11 languages and generates more than five billion page-views per month.¹¹⁷² According to Quantcast, 58 percent of the users are female; 38 percent of the users fall between ages 12 to 17, 21 percent between 18 and 34, and 19 percent between three and 11.¹¹⁷³

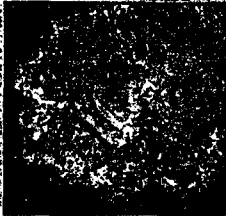
(U) *Xbox Live*. Xbox Live now asserts over 10 million gold subscribers (users who pay the premium subscription fee) that can access downloadable content and games, as well as send and receive messages and create social networks (buddies list). According to Microsoft, the males make up 80 percent of users. Seventy percent of users are ages 18-34, 40 percent own HD TVs, and 54 percent have a WiFi home network.

(U) *Wii Online*. Nintendo has sold over 10 million Wii's in the United States. Each comes with internet connectivity and allows the user to create a customized Avatar known as a "Wii." According to Nintendo, males with an income of over 50,000 US Dollars per year make up 79 percent of Wii users. About 45 percent of other household members are female and play for an average of five hours per week.

(U) *Playstation Home*. Sony will start beta testing a virtual world community for Playstation 3 users in the fall of 2008. This world will allow players to interact with one another utilizing three-dimensional space and user-created Avatars.

(U) Forecasters find it difficult to predict future numbers of users, since some vendors do not release figures. One industry analyst estimates that there will be in excess of 30 million players worldwide by 2012.¹¹⁷⁴ However, the analyst's estimates do not include the "free to play" virtual worlds such as Second Life or Habbo Hotel, do not include the kid's worlds described above, and do not account for the fact that some users play multiple games; this estimate is therefore very rough.

(U) Appendix 4: Today's Virtual Economic Landscape



(U) The virtual world industry has taken over a significant sector of the real world economy in a remarkably short period of time. In 2007, the online game industry generated 6.6 billion US Dollars in revenue.¹⁸ The largest virtual world, World of Warcraft, generates more than 100 million US Dollars per month alone. Projections by industry analysts suggest World of Warcraft will generate 14.4 billion US Dollars worldwide in 2012.¹⁹ The total value of the virtual world economies in 2007 came to roughly 28 billion US Dollars, on the basis of in-world Gross Domestic Product (GDP), rivals Sri Lanka and Lebanon.²⁰ As of the first quarter 2007, the total value of Real Money Trading (RMT) was approximately 1.8 billion US Dollars.²¹

(U) The online game development industry is growing globally. In addition to company employed game designers, several hundred thousand people make their employment as independent content creators; they make money by providing content to open user-generated virtual worlds such as Second Life, There.com, Lively and MUVS.

Economies retain users in virtual worlds; users lose interest in virtual play if there runaway inflation occurs or if the real world value of their virtual creations behaves unpredictably. The virtual world Entropia Universe has chartered banks operating in-world and issued its own ATM card that automatically converts in-world currency to US Dollars at a set exchange rate for real-world ATMs. The QQ currency of QQ Online virtual world is a negotiable currency in China.²²

(U) Independent Virtual World Content Creators

(U) Most major games and virtual worlds actively manage their in-world economies with the principal and explicit goal of maintaining their currencies' values and price levels. This is because one of the principal play mechanisms of most major virtual worlds is the production and trade of virtual goods.

(U) The institutions that enable trade and currency exchange in-world and via third parties are fairly primitive, but are complex enough to include business models from simple subscriptions to virtual item sales, "land" sales, franchising, gambling, and paid tournament play.

(U) These transactions require game developers to build extensive systems for financial authentication, exchange, conversion, and storage. Soon, they will begin to match the efficiency of the real-world financial infrastructure.

(U) Appendix 5: Governance in Virtual Worlds



(U) Many of virtual world policy and governance concerns extend from current cyber issues. The direction of development and the degree to which individuals

and corporations embrace the Metaverse will likely determine the implications on current policy.

(U) *Metaverse.* Control of the Metaverse by a single organization or company has the potential to create the greatest difficulties for the United States, especially if the controlling party is foreign. Many of the policy and governance issues that exist in today's 2D Internet will likely continue to be concerns in 3D spaces. If a corporation not headquartered in the United States controls the dominant virtual world application, the following implications may arise:

• *Security Questions.* If a foreign company or country controls the software code or servers that dominate the Metaverse platform, all the information in the virtual world may be at risk. Law enforcement efforts to secure data may be hampered. The control of the major platform by a foreign company may negate the future opportunities for E-government. Privacy rights of Americans may be compromised, leading to potential blackmail.



Political Questions: The country that creates and controls the dominant technology platform may influence standards and norms through its ability to export cultural and national values to the virtual world. Virtual worlds may serve as a platform for passing along the political ideology and values of the platform's creator.

Economic Questions: Foreign control of the dominant Metaverse platform may have implications for American businesses trying to do business in the Metaverse.

(U) Foreign control of the technology and standards that become incorporated in the Metaverse may create significant anti-trust issues over which there would be no US control. This could stifle competition for future platforms and software. Foreign control may result in exemptions of businesses within their country, taxes or competitive limitations on US companies, and monetary problems for the United States if virtual world currencies with real world value are pegged to a foreign currency.

(U) Multiverse: The current status of cyber space can be described as a Multiverse; many current internet policies and issues apply to the Multiverse path. All web sites exist as communication spaces or work environments, and many people may in essence live in one of these competing environments. The decentralization of these spaces should alleviate, at least to some degree, concerns about privacy, security and trade that derive from single entity control of the Metaverse.

Security Questions: In the Multiverse, every web site may become a communication or interaction medium. In order to investigate a crime, law enforcement may need to focus on a wide range of web sites. In addition,

US persons issues may become an increasingly important topic if US companies control many of the Multiverse applications. Could a Multiverse still create law enforcement challenges regarding data retention and data sharing with law enforcement if in some spaces, such rules may not be enforceable with foreign companies who might not be willing to acknowledge our subpoenas or work with law enforcement?

Privacy Concerns: Even in a decentralized system, such as the internet today or the Multiverse tomorrow, foreign control of a single connective function, such as search or identity verification, could have implications for privacy. Could dependence or increased use of spaces such as virtual worlds create situations in where citizens may need more privacy protection? A Multiverse may not allow a safe environment for government to provide services virtually.

Political Questions: The Multiverse may be a realm where political battles play out. Griefing and other attacks in a decentralized system may become an exacerbated problem if the Multiverse becomes a more integral part of life. Virtual world alliances may become more important than geographical nation-state alliances.

(U) Sovereignty issues will likely become matters of concern in virtual worlds. The ability to establish an embassy may be raised with the embassy's country or the owner of the server declaring ownership of the embassy. The validity of seeking virtual asylum may also be an issue. The US may be able to use economic or liberties-based enticement to secure hostings of virtual worlds in the United States. Policies will likely be needed to minimize the dangers of a nefarious group sprouting from

a Multiverse. Real-world users may use a Multiverse to form a different government to overtake the real world government.

Economic Questions: The creation of standards by the US Government for interoperability will likely ensure that the emergence of foreign standards does not disadvantage American companies.

Intellectual Property Questions: Much of law in this arena will focus on issues of whether the law should treat virtual places, items, and avatars solely as intellectual property, or whether and how other real world laws will apply to virtual equivalents. Individuals will likely challenge that they hold rights to the virtual items they create; international standards will most likely need to be set to protect intellectual property.

(U) Reality:

(U) The juncture of mobile computing, new interface devices, and geospatial information may lead to new security, economic, and political issues.



Economic Questions: If people are truly able to telecommute by projecting themselves at work or by projecting their work environment around them, the decreased need for office spaces and other physical assets may in turn decrease government tax

revenues. However, if the government places high tax or regulatory burdens on virtual augmentation technology companies, those companies might relocate to other countries.

(U) In a Reality+ future, the standards and infrastructure put into place may have implications for US competitiveness in the future. Intellectual property issues will likely become increasingly important with the intersection of the physical and virtual. The ability to copy and reproduce ideas and technologies will likely remain something that continues to require protection.

Political Questions. An augmented Reality+ may have outstanding advantages and opportunities for government and the world. Could virtual interest in a physical space lead to spillover into the real world?

(U) The success of government

involvement in virtual worlds will depend on the consent of the governed. Governments that protect online identity, privacy, and property will likely gain a competitive advantage and gain the cooperation of virtual world communities.

(U) Consent of the governed may only be done well by

establishing clear rules that respect the social contract between government and citizen. For intelligence and law enforcement purposes, this includes the question of when a US person's private information may be collected by law enforcement and the intelligence community. The US Government uniquely stands positioned to lead on the issue of protecting citizens' personal information from bad actors.

(U) Serious costs will likely result from not seeking the consent of the governed. The press and the public have viewed government involvement in virtual worlds and video games negatively.²⁰⁰ Concerns include the following: analysts do not understand the technology; governments are rushing to regulate because of hysteria about new forms of media, and the cost of government involvement in virtual worlds will exceed any plausible benefit.²⁰¹ Virtual world populations are technologically sophisticated, geographically dispersed, and actively creative.

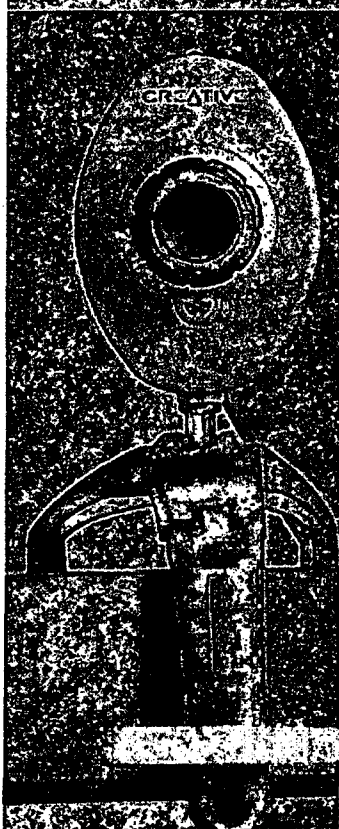
(U) Personal privacy is a leading issue for virtual world populations. Without appropriate controls and regulation virtual worlds could follow the model of Jeremy Bentham's Panopticon Prison.²⁰² Bentham's Panopticon permitted a single guard in the center of the prison to monitor all of the prisoners, all of the time. Bentham hypothesized that as the prisoners became used to being constantly watched, it would become less and less necessary to actually watch. The same applies in virtual worlds: the game god constantly surveys the denizens of virtual worlds.²⁰³ The game god—as a telecommunications provider—then may be required to comply with law enforcement and intelligence requests for the information. The result would be that the

game god's "cameras" are on all the time, and the footage could reach the government through several paths.

(U) At the same time, bad actors will hide among the virtual world population. The majority of internet users will likely use some form of virtual interface by 2011.²⁰⁴ Forecasters project that a majority of companies will use virtual world technology by 2013. Law enforcement and the intelligence community may need clear guidance as to the framework for using the enormous amount of data potentially available to them about virtual world populations.

(U) Constitutional rights, especially the right to privacy, must be fully protected in virtual worlds if real world government wants to harness the cooperation of virtual world populations in governing virtual worlds.

(U) *Crowd-Sourced Governance.* Virtual worlds also present the possibility of using Web 2.0 techniques to govern them. Administrators often find that the best way to catch bad actors operating within a virtual world is to give the population the information and tools necessary to deal with them.²⁰⁵ If the social structures built using virtual world tools are intricate, organic, and extremely valuable, a virtual community can combine the experience of 10 million members to seek the solution to a single problem. Virtual communities hold the potential to solve problems that supercomputers cannot.²⁰⁶ Virtual world denizens live by reading social cues that people not used to the environment miss. Involving these communities may make virtual governance effective, and may increase cooperation from the virtual world population. However,



convancing populations to help will likely require government transparency and clarity.

(U) The creators of Second Life based the bottom-up governance structures on this, whereby groups of landowners form virtual political systems. Ownership of land permits the owner to engage in self-help to exclude, track, limit, or otherwise police people on the land. Traditional bottom-up online communities routinely use bottom-up governance tools. Reputation systems and flagging systems help eBay users determine whether to trust a counterparty to a transaction, or permit YouTube members to report sexually explicit material for review and removal.

(U) But as with flagging or reputation systems on Web 2.0 web sites, virtual world operators can nudge bottom-up information gathering with top-down decision-making; in fact, operators usually use this as the standard model of reporting in virtual worlds: players report, but the game god decides and takes action. There is a caveat—players must feel that the system is worthwhile, effective, and in their best interests to use. People will use bottom-up software tools to assist in virtual world governance if they are convinced that their best interest lies in doing so. Without the consent of the governed and the cooperation of at least some portion of virtual world communities, governments necessarily face limits in their attempts to regulate virtual worlds.

(U) *Rational Expectations of Privacy in Virtual Worlds.* The basic legal regime for privacy restrains the intelligence and law enforcement communities from collecting a US person's private communications without a warrant.²⁰⁷ The constitutional standard holds for reasonable expectations of

privacy. If a US person expects that her communications will be private, then the collecting party will need a warrant that meets the standards of probable cause in order to conduct a search (the Fourth Amendment) so long as that expectation is "reasonable." This does not apply if the official collects from a non-US person abroad.²⁰⁸

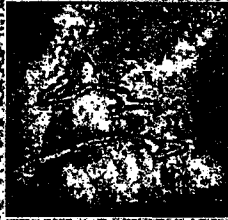
(U) Courts face difficulties determining what constitutes a reasonable expectation of privacy online. The basic question concerns whether reasonable expectations of privacy are technological or normative. The abstract question tackles whether reasonable expectations of privacy ought to be determined by what the government can collect versus what it ought to collect. Often, the decision favors the former approach. For example, law enforcement has successfully argued that the Fourth Amendment does not protect search queries, since the user chose to send the query to the service provider and therefore there could not have been the rational expectation that the communication would be kept secret.²⁰⁹

(U) When misapplied, the standard becomes famously circular. Without privacy protection, there cannot be any rational expectation of privacy; government *can* collect anything.²¹⁰ Under this theory, by denying any privacy protection, government can ensure that citizens have no expectation of privacy and maintain a vicious cycle. If technology drives the question of rational expectations of privacy, then the Fourth Amendment is a dead letter. Thus, courts generally try to determine which communications the speakers reasonably deem private, regardless of whether someone could overhear the conversation through advances in technology.²¹¹ The alternative requires the courts to make a normative determi-

nation: when humans act as though their communications are private, courts choose to respect that choice when it is generally reasonable, even though government possesses the technology to access the information.²¹² Government must allow privacy for people to have any rational expectation of it. The fact that government can wiretap telephones or "see" through bedroom walls with thermographic cameras does not reduce the expectations of privacy of US citizens in bed or on the phone because society generally is prepared to expect that these communications and activities are private.²¹³ Nor does communication to a third party involve disposition. Citizens assume privacy of their telephone conversations, even though they pass through the telecommunications carrier's servers.²¹⁴

(U) Government is also restrained by statutes and policies that provide protection beyond the constitutional minimum of the Fourth Amendment. For example, electronic surveillance for foreign intelligence purposes must comply with the Foreign Intelligence Surveillance Act enforced by the Foreign Intelligence Surveillance Court. In addition, all collection, retention and dissemination of intelligence information involving United States citizens, residents, corporations or organizations ("U.S. persons") is governed by the requirements of Executive Order 12,333. This regime requires each agency of the intelligence community to have procedures, approved by the Attorney General, for handling such information, even where no warrant is required to collect it. These procedures are enforced by agency offices of general counsel, inspectors general, and by the requirement to report violations to the President's Intelligence Oversight Board and to the Congress.

(U) Appendix 6: International Relations in Virtual Worlds



they must also compete or collaborate with other national standard setters to win the hearts and minds of virtual world populations. As tens of millions and then hundreds of millions of citizens begin spending large amounts of time and investing large portions of their identity in virtual worlds, world governments will face several simultaneous challenges. The speed and effectiveness with which varying governments address these challenges while preserving their own national interests could lead to a new way to determine national power and influence in an age of virtual worlds.

(U) Competing Claims to Governance and Jurisdiction

(U) The global availability of this technology and the current legal jurisdiction issue that necessarily result from this availability, pose a unique challenge to lawmakers. In the United States, this technology raises the question of not only what should be governed, but also who should govern. An almost limitless range of activities can occur in the virtual world. The global nature of the internet leads to problems in tracking down the perpetrators of crimes. What happens when the resident of one country virtually ha-

sses a person in another country? What governing body exists to hear the case?

(U) Even when the scope of the jurisdictional problem is limited to U.S. territory, the question of which governing body will lead the effort becomes important. For example, because internet activities involve some type of commerce, will the Commerce Department lead? Does the Department of Justice receive jurisdiction in a terrorist act in a virtual world? If the criminal activity originates outside the state, would the State Department receive jurisdiction in the case? The question of international jurisdiction is also an issue to be dealt with. When virtual games affect real people, government will have to act, despite these enforcement gaps and jurisdictional difficulties.²¹⁵

(U) National Identity of Virtual Worlds

(U) As the arrival of hundreds of millions of users in to identity-based virtual worlds accelerates the fragmentation of the Multiverse, there will be an urge to classify the newly created multitude of worlds. It is likely that a certain clustering effect will emerge over time, as virtual worlds each amass a dominant shared identity. The primary organizing trait will likely be either the national identity or linguistic affinity of users, leading said users to choose a particular group based on these traits. Secondary organizing traits, such as an interest in science fiction or a particular era of history,

cal re-enactment, will then lead to the clustering of these worlds within loosely defined spheres. It remains to be seen if shared interests across linguistic boundaries can overcome the communications barriers (easy-to-use automatic translation software might lower these barriers).

(U) After virtual world populations reach into the hundreds of millions and the clustering of individual worlds by primary and secondary identity characteristics has begun to stabilize, governments will likely attempt to pull these affinity clusters into a national sphere of influence, over which they exert varying degrees of governing authority. China's government will likely assert its authority over virtual worlds populated by Chinese nationals and Mandarin-speakers, pulling these clusters into orbit around the nationally-sponsored H1P11 virtual world. Government will be motivated to establish a sphere of influence within the Multiverse by both a desire to impose some form of taxation on value transactions and an attempt to steer the influence factors aimed at its real world citizens through the virtual realm.

(U) Assuming that virtual worlds will in large part both reflect the real world and contain real-world legal systems for governance purposes, the future of the Multiverse and the creation of spheres of influence will be greatly affected by the ability of governments to come to an agreement on what laws govern which virtual worlds. For example, French courts have placed legal restrictions on the sale of Nazi memorabilia by an



American corporation via the web. The First Amendment protects such activity in the United States, however, creating a conflict between two governments' legal codes in a transnational space.²¹⁹

(U) This same conflict will almost certainly arise in the Multiverse, as the virtual worlds designed to cater to one nation's population, governed by that nation's laws, will overlap with the conflicting laws of another nation that governs its own population and associated virtual worlds. If these conflicts go unresolved, then the trend will be towards more strictly defined spheres of influence governed by national interests. If nations are able to negotiate recognition of each others' legal systems and work out a method for resolving conflicts between differing systems, then the trend towards spheres of influence will be weakened.

(U) *Collaboration: Drawing the Map with Your Neighbors* The global scale of interest and eventual participation in virtual worlds will lead to a plurality of governments seeking to have input to the common set of operating protocols and governing rules of the Multiverse. While the United States will likely be a major player in this process, it will not be in a position to dictate the outcome. It will be in the best interests of the United States to collaborate with other important actors such as the governments of China, the European Union, and other countries in order to agree upon a universal set of protocols upon which to build the Multiverse. This collaborative approach may result in an outcome that the United States considers less than ideal, but it ensures that the United States will have a seat at the table.

(U) *Consent of the Governed* The success of attempts by states to

extend authority or impose governance on emerging virtual worlds will in large part hinge upon the consent of the governed. While populations in the real world are generally unable to escape the government of the land, populations in virtual worlds may find it easier to pick up and find another host. Governing authorities, whether governments or corporations, might discover that the citizen-users of virtual worlds refuse to be held hostage to poor governance; this could lead to virtual ghost towns.

(U) *Foreign Policy* New policies will be needed to address how virtual worlds interact with other governments and non-state actors in this new environment. The challenges of "ungoverned spaces" and transient self-identification with a nation, cause, or community will be even greater than those experienced during the early days of the 21st century.

(U) *International Governance* Once state-level conflict spills over into virtual worlds (or spills over into the real world from a virtual dispute), the international forum will begin to discuss these issues. Based on historical precedent, we can assume that international actors such as the United Nations, the International Criminal Court and regional political organizations will want to become involved in resolving virtual world conflicts. In fact, a large portion of the global population's time and energy in virtual worlds will serve as a leveling device for international competition, as the people of Nairobi find themselves in Denver rather than in the real world. Government should be prepared for a global discussion of who owns the Metaverse. National interests may be challenged by an irate, transnational movement to prevent the greed and warmongering of the past to intrude into these new virtual worlds.

(U) Ungoverned Spaces

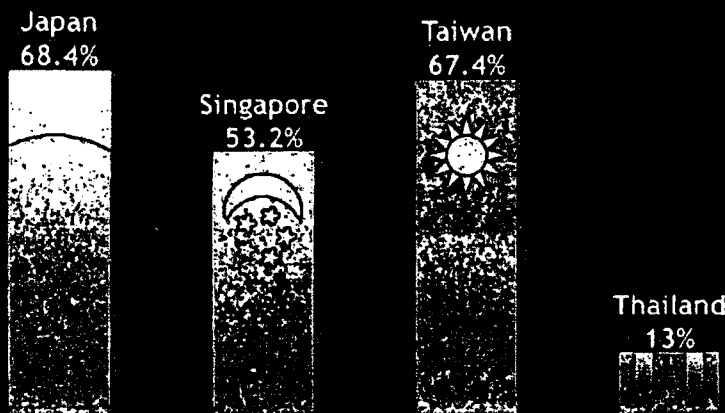
(U) *Stateless Individuals & Communities* Futurists have warned for decades of an impending shift from national identity to individual identities without regard for national borders. The increasing popularity of virtual worlds may allow the realization of these predictions as individuals have already begun to identify themselves as "residents" of various virtual worlds and online gaming communities. Sociologists and psychologists are studying the impact on individual identity when someone spends more of their waking hours in a virtual world than undertaking activities in the real world. Government should expect a cascading wave of its own citizens to begin disassociating themselves from their national identity, and perhaps from their obligations as citizens (voting, paying taxes, contributing to the national defense). The creative genius of the vast populations of virtual world "residents" will be applied to finding ways to establish independence from the real world in a meaningful way. Although physical presence within a nation-state will still permit enforcement of national law, citizens will increasingly be able to shield their activities by removing them to virtual locations. For example, the website "The Pirate Bay" (a BitTorrent search engine) offers US citizens the ability to circumvent US copyright law. How will governments cope with citizens "unplugging" from the real world to live their lives in a virtual world free of government intrusion?

(U) Further, virtual worlds excel at self-reinforcing community building. Criminals need echo chambers—close communities of interest that reinforce new social norms that deviate from the mainstream. To the extent that virtual world technology

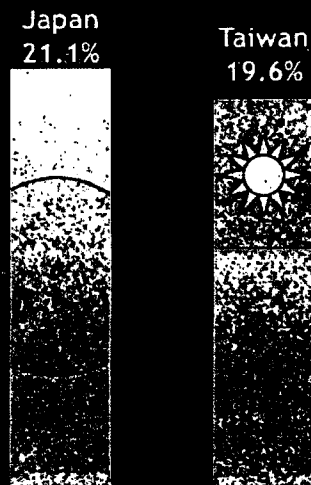
succeeds in strengthening the social networks of online communities, it will foster trust and intensify the collaborative ability of these ungoverned communities.

(U) Not all participants in virtual worlds will be dismissive of the real world, however. Government will also face the challenge of organized criminal groups and non-state actors such as terrorists using virtual worlds to achieve their goals. Once tens or hundreds of millions of citizens begin to spend some portion of their lives in virtual worlds for recreation, socialization or business, governments will be faced with protecting these citizens while the potential attackers use them for cover. Will government deny a terror group the ability to plan a future real world attack using a virtual world? If it also means denying the legitimate use of the virtual world by millions of citizens? □

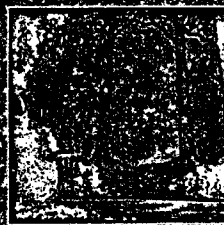
(U) Appendix 7: Other Asian Online Gaming Industry



(U) Chart 7.1: Percentage of Internet Penetration²¹⁷



(U) Chart 7.2: Percentage of Broadband Subscribers²¹⁸



(U) The Asian online gaming model has generally been "free-to-play and pay to upgrade" since 2004. This

model puts control in the hands of the users, lowers the barriers to entry, and lures users to participate in item selling/trading methods. South Korea remains the leader for export of gaming software; it has high distribution to other Asian countries such as Japan, Taiwan, Thailand and Singapore. Even though China's domestic gaming market is slowly pushing out South Korean products, available data predicts that China will likely dominate its internal market before branching out to the international arena.

(U) Charts 7.1 and 7.2 indicate available data on the percentage of internet and broadband penetration in select Asian countries.

(U) Japan. In 2005, one of the earlier Japanese online game companies, Warpgate, converted the South Korean game Knights Online from subscription-based to a free-to-play model with item trading. With its risky decision, the company saw



revenue increase of 400 percent for an aging game.²¹⁵ Japan's virtual world, *Meet-Me*, was released in February 2003. It is similar to *Second Life* with the following exceptions: the world uses rules to govern avatar behavior, the creators intended it only for a Japanese audience, and it virtually represents Tokyo. In addition, five Japanese game developers partnered to create *All Sp@ce*. This project is still in development, but it hopes to monetize the virtual world to include real money trade and billboard ads.²¹⁶

(U) Singapore. Most of Singapore's popular online games have been exported from Thailand. Thailand's software developer, AsiaSoft, won the rights to publish three popular South Korean online games in Southeast Asia: *Cabal*, *Ragnarok Online 2*, and *Darkness & Light*. Without domestic development and publishers for online games, Singapore imports games from the United States, Taiwan, South Korea, Japan, and Thailand. Singapore's Media Development Authority in mid-2007 launched a project to build a Metaverse platform, *Avinity*, to enable the development, management, digital distribution, and deployment of virtual world products and services for education, social networking, and tourism.²²²

(U) Taiwan. In 2002, Taiwan's online gaming industry forecast was dim; however, the introduction of *Kart Rider* by South Korean game company Nexon in 2004 revived Taiwan's online gaming industry. Currently Taiwan has over 10 major online game companies; some of the most prominent and popular ones are Gamania, Digital Entertainment, Way International Entertainment, and UserJoy. One of these top 10 game companies, Soft World International Corp. (a Japanese game

company) distributed more than 30 percent of its products to Taiwan. In 2007 Taiwan's most popular online games included *Soul of the Ultimate Nation* (SUN), *Webzen*, *CABAL*, *Fugleman*, *Freestyle*, *Cayenne Tech*, *Rohan*, and *YNK Korea*. China, South Korea, and Japan are just a few of the companies that dominate Taiwan's online gaming industry.

(U) Thailand. AsiaSoft, Thailand's main gaming developer, distributes to Vietnam, Singapore and Malaysia. AsiaSoft requires users to register and obtain an AsiaSoft Passport as a method to access all of its corporate games. AsiaSoft also hosts the popular South Korean online game *Ragnarok*. AsiaSoft provides the free-to-play model, and as of 2004, it claimed over one million registered users.²²³ In recent years, *World of Warcraft* and *Starcraft* have infiltrated the Thai gaming market; furthermore, the Thai government is building a 250-million US Dollar development with a thematic architectural firm, Creative Kingdom, Inc. (CKI), called *Cyber City*, aimed at media production and IT development.²²⁴ CKI plans to build a planet inside *Entropia Universe*; this project is slated for release in 2010. The technology introduced by this project will enable other companies within the media, film, music and gaming industries to efficiently acquire their own planet within *Entropia Universe*.²²⁵

(U) Console games have not found success in Asia, other than in Japan. Some argue that this is because the Chinese and South Korean governments control the distribution of certain electronics. Others say that disposable incomes and physical space are limited, and households consider having a television a luxury, so parents usually would not allow such game play to take place.²²⁶

(U) Pay-to-Play & Pay-to-Upgrade

(U) Pay-to-Upgrade and Pay-to-Play are contrasting business models for online games. One theory is that they represent fundamental differences between East Asian and Western cultures. According to this theory, East Asians playing Pay-to-Upgrade games enjoy aggressively killing other players, while Westerners playing Pay-to-Play games enjoy more cooperative strategies and have more regard for the social aspects of gaming. But is this really the case?

(U) Pay-to-Upgrade has certainly proven an effective business model in East Asia, and it has a telling impact on game design. In Pay-to-Play models, users typically pay a subscription fee that allows them to play for some length of time. Pay-to-Upgrade models were first developed in Korea by Nexon in 1996 and introduced to China by Giant Interactive with the enormously popular *Zhengtu* in 1995. As noted in the accompanying text, Pay-to-Play works less effectively in China owing to the lack of credit cards and rampant piracy. Pay-to-Upgrade lowers barriers to entry. Conversely, *Zhengtu* players pay by buying cards that resemble the cards many Chinese use to buy time for mobile phones.

(U) It is also true that the style of play in the Pay-to-Upgrade game, *Zhengtu*, differs from that found in the popular American-developed Pay-to-Play game, *World of Warcraft*. *World of Warcraft* divides users into two camps, the Alliance and the "Hordes," and players are prevented from killing members of their own groups. *World of Warcraft* players may even select servers where they can only be killed by members of the opposing group under special

(U) Appendix 8: Examples of Extremist Presence in and Nation-State Manipulation of the Virtual World



(U) Numerous leftist groups have set up shops in Second Life. Some represent virtual counterparts

to real-world organizations, such as the Swedish Communist Party, but the majority of them appear to be purely virtual groups. As one might expect, given the medium in question, the majority of these leftist groups have an anarchist ideological orientation, with group names such as Anarchici, Anarchism Angels, Anarcho-Syndicalists, and Republic Anarchy. Others appear to have a Marxist orientation, such as the Communist Group, Cuban Socialist

Revolution, Real Action, The Red Star, Second Life, GWR, and the United Soviet Socialist Republic. Still others seem to be more ideologically moderate, such as the Citizens Social Democratic Faction and the Democratic Socialist Party of Second Life (DSSPL).

(U) A number of workers or union organizations also exist in Second Life, such as the Avatar Workers Union (AWU), the Second Life Trade Union Confederation, and the Second Life Workers Self-Defense Corps, as well as a number of groups with humorous monikers, such as the Leftist Beards, Revolutionaries, and the Worried IBM Peoples. In Second Life, one can also find a virtual version of the Skinheads Against

the serious ideologies and activists really compose the majority of these apparent left-wing or anti-fascist groups in Second Life, since in some cases they seem to be clever monikers conceived by bored Second Life aficionados and designed mainly for entertainment purposes.²⁰ Moreover, the list of leftist groups posted on the Commonwealth Islands of Second Life as both incomplete and outdated.²¹

(U) How Nation States Manipulate Cyberspace

(U) *Cyber Government Services.* Many nation-states use cyberspace for some or all aspects of government services. These include not only static web pages, but robust interactive content that allows users to apply for and receive government services as well as participate in government-sponsored activities. In the case of Estonia, this capability is very robust, and includes virtual banking as well as other government-provided services.²² Some nation-states have created an official or semi-official presence in virtual worlds such as Second Life. This list includes Sweden, Estonia, the Maldives, Macedonia, the Philippines, and more.²³ The rate of nation-state adoption of cyberspace as a means for interaction and providing services to its populace depends on many factors, including the percentage of the population using a technology, the costs and benefits to the



circumstances. Zhengtu, on the other hand, actually does promote intense conflict among players. Users accustomed to one of these games may dislike the format of another game.

(U) Game design firms do have to consider cultural differences and differences in local business practices. For example, it is not clear that American players would appreciate the Simic back story or iconography of Zhengtu, or that sales via cards would be as successful in the United States as in China.

(U) But these differences are not tied to fundamental cultural differences. World of Warcraft enjoys extreme popularity in both China and Korea, and some Pay-to-Upgrade games such as Club Penguin and RuneScape have proven successful in the United States. Little real evidence exists that the Chinese are essentially more violent, aggressive or less cooperative than Americans.²⁴

Racial Prejudice (SHARP), a real-world anti-fascist skinhead group. Surprisingly, many tech-savvy eco-radical groups, such as the Earth Liberation Front (ELF) and the Animal Liberation Front (ALF), do not yet appear to have established a presence in Second Life, although Earth First and a group called Against Animal Cruelty have established presences.²⁵ It is unclear whether

nation-state and geographical or infrastructure considerations (e.g. geographically dispersed population away from government business centers, hindrances to freedom of travel, availability of utilities). Nation-states will likely transition to a more robust use of virtual worlds for government-provided services and interaction with the population as the adoption rate of virtual world use by its population rises.

(D) Cyber Warfare. The reliance on cyberspace to provide goods and services has created some opportunities for nation-state directed cyberwarfare. On 26 April 2007, a month-long cyber-war attack began against the nation-state of Estonia. The attack disrupted official government services as well as virtual

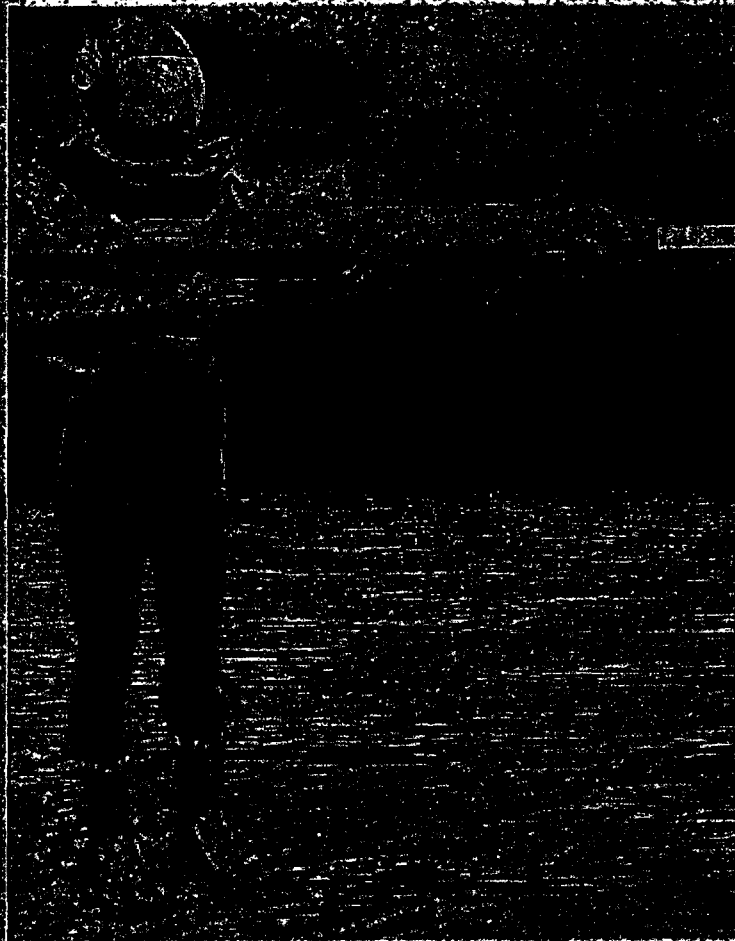
banking. Pillar Avelaid, the director of Estonia's Computer Emergency Response Team, explained the significance of Estonia's cyberspace presence by saying, "For people here the internet is almost as vital as running water, it is used routinely to vote, file taxes, and with their cell phones to shop or pay for parking." Estonia's defense minister Jaak Aaviksoo described the situation as "a national security situation." Although no specific nation-state attribution was proven, it was widely speculated that some of the computers of a nation-state supported the attack. Over time, nation-states will likely engage in virtual world cyberwarfare as a force multiplier when exerting pressure on other nation-states. The extent that virtual world cyberwarfare succeeds will rest heavily

on the amount of dependency the defending nation-state has on their virtual world infrastructure and services. The Second Life headquarters for four of the candidates averaged approximately 48,000 per day. Virtual violence occurred at the Second Life campaign headquarters of Jean-Marie Le Pen in January 2007, when protestors clashed with Le Pen security forces.²²⁵ Virtual world use for political purposes will become more viable as public adoption of the medium increases, creating greater opportunities to exert influence over larger audiences than might otherwise be possible within a nation's normal broadcast audience.

(E) Cyber Recruitment. France's military used Second Life from November 29 to December 4, 2007, as a French Navy recruitment opportunity. They placed a virtual frigate in Second Life crewed by real navy sailors who gave visitors a tour of the ship; users interacted with navy sailors in order to learn about the jobs and careers within the French Navy.²²⁶ France reportedly had a recruitment goal of 3,800 for 2008 and wanted to use Second Life as an opportunity to reach that goal. Experience gained through current corporate virtual world recruitment efforts will provide more refined models for increased efficacy in cyber recruitment in the future, and will likely be adopted by more nation-states.

(F) Cyber Politics. Some countries have already begun using virtual worlds during political campaigns. During France's 2007 presidential campaign, several candidates established campaign headquarters inside of Second Life, where they gave political speeches and provided other political information. Visitations by real people to

the available evidence of nation-state cyber espionage shows the use of cyberspace as a means of computer intrusion and data exfiltration.²²⁷ However, given the allegations that some NGOs have been infiltrated by foreign intelligence services, or conversely have been used for intelligence operations, the growing presence of NGOs in virtual worlds make it more likely that nation-states will attempt to conduct more espionage within the virtual worlds.²²⁸



(U) Appendix 9: Plausible Virtual World Geo-Modeling for Simulations



(U) Open source geospatial data and commercial video game software can be used to create potentially highly realistic virtual world environments for a variety of simulation purposes. The US IC and its strategic competitors could leverage this technology to model real world environments, enabling them to plan missions at little to no cost and with minimal vulnerability to becoming compromised.

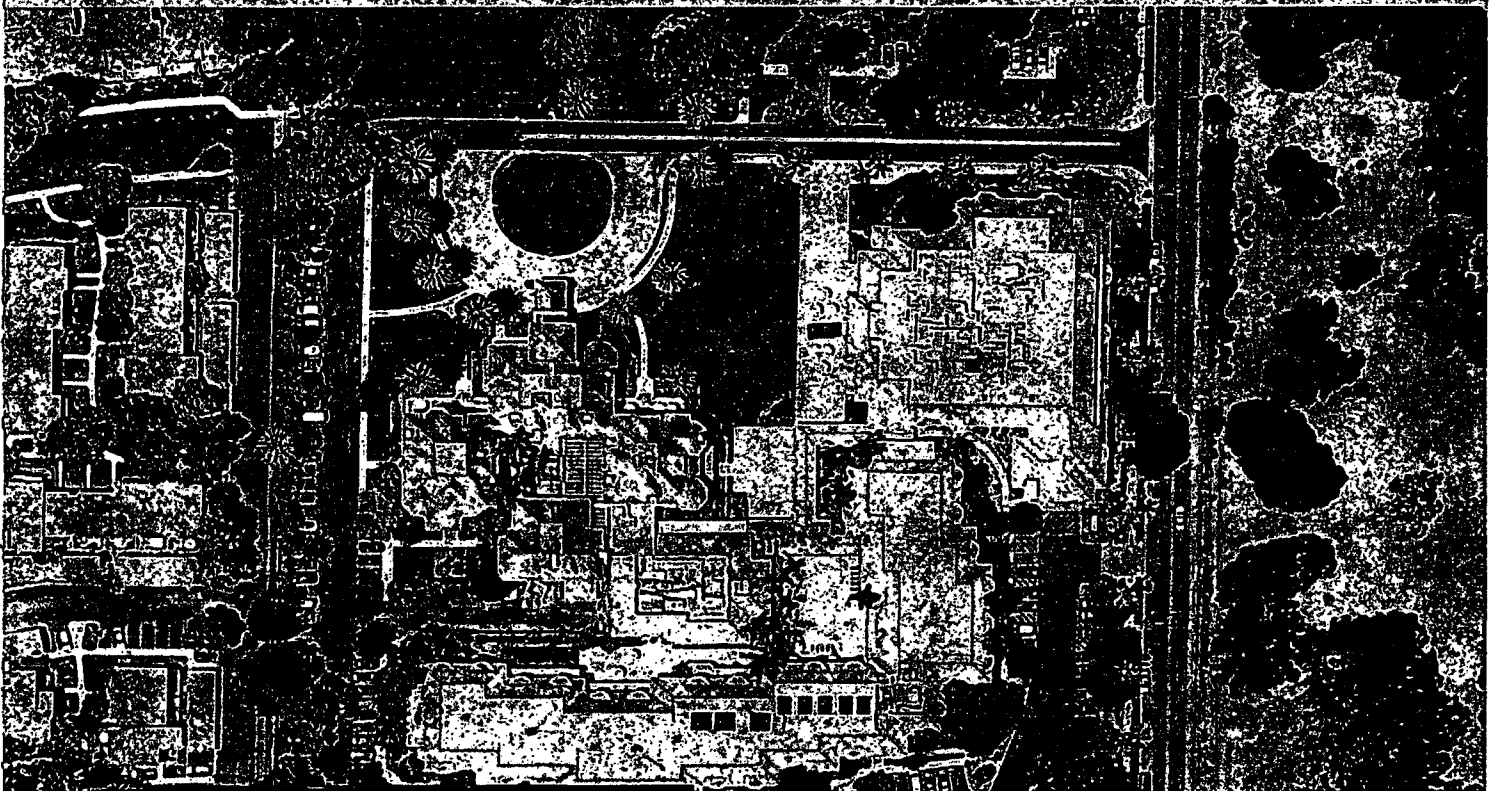
(U) The example in this appendix will describe how the Dolce Hayes Mansion in San Jose, California—one of the sites for SHARP 2008—could be geospatially modeled with relatively good spatial accuracy without the modeler ever needing to visit the hotel.

(U) Data Acquisition

(U) Figure 9.1 (below) depicts the Dolce Hayes Mansion in Google Earth, which can be located by performing a search of the hotel name inside the application.

(U) A mirror world application that provides access to partner- and user-generated data, the Google Earth application provides recent, orthorectified imagery of the hotel and surrounding neighborhood. From this imagery, the hotel's size and general appearance (roof structure and colors) are apparent, as are the two main vehicle entrances to the hotel.

(U) The imagery does not reveal the hotel's elevation (number and height of floors) due to its near-nadir perspective. To determine the elevation, an actor could use Microsoft's Virtual Earth, which is also a free



(U) Figure 9.1. The Dolce Hayes Mansion—San Jose, CA—Google Earth (Google 2008)



application and provides access to "Birdseye" imagery which allows exploration of real aerial photographs. This is demonstrated in the Northward, Eastward, Westward, and Southward collage presented in Figure 9.2 (below). These views allow an actor to distinguish the number of floors for each location, identify properties of the exterior walls, and better comprehend the layout of the hotel.

(U) Despite Google Earth's lack of accuracy in displaying elevation, the application allows the exploration of additional data layers that may give insight to further comprehending the hotel's layout. One of these layers is the geotagged immersive imagery that Google collects in major cities under a program called Street View. Each of the yellow camera icons in Figure 9.3 (top right) indicates an immersive scene that a user can enter

to gain a "street view" perspective of the environment.

(U) Google contracts photography teams to collect the immersive images linked to each camera. The teams drive around cities with GPS units and cameras that face multiple directions at once. The data processors then stitch together the immersive scenes, which cover a 360° area. Google then makes all of these scenes available via Google Maps online and the Google Earth desktop application.

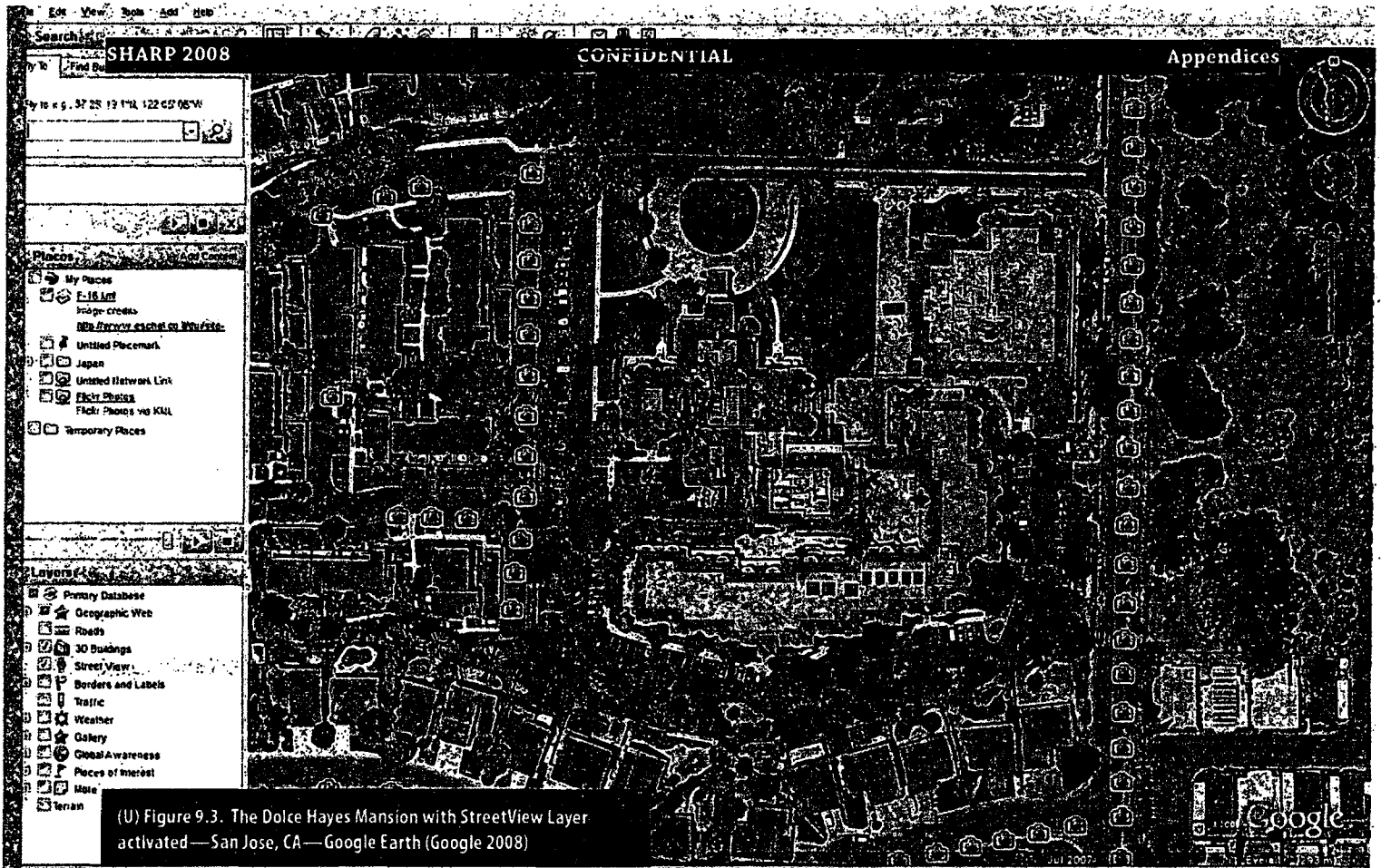
(U) When collecting images around the Dolce Hayes mansion, the team did not travel along the private roadway inside the hotel's grounds, but it did travel along the streets surrounding the hotel, collecting images of the entire perimeter from the ground perspective.

(U) Figure 9.4 (bottom right) demonstrates the result of entering one of the detailed immersive images near the main entrance.

(U) The internet provides access to tremendous amounts of user-generated images in the form of web pages, wiki pages, and personal photo sites. A search through popular photo-sharing site, Flickr.com, over the geospatial extent of the Dolce Hayes Mansion returned around 30 images of both inside and outside the hotel. More images likely exist that have not had a specific geospatial attribute included in them for discovery in Google Earth, however, the Flickr search returned more than enough images of interest to model the hotel.



(U) Figure 9.2. The Dolce Hayes Mansion aerial perspectives—Microsoft Visual Earth "Birdseye" Imagery perspectives. (2008 Microsoft Corporation, 2008 NAVTEQ, and Imagery courtesy of USGS, 2008 Pictometry International Corp)



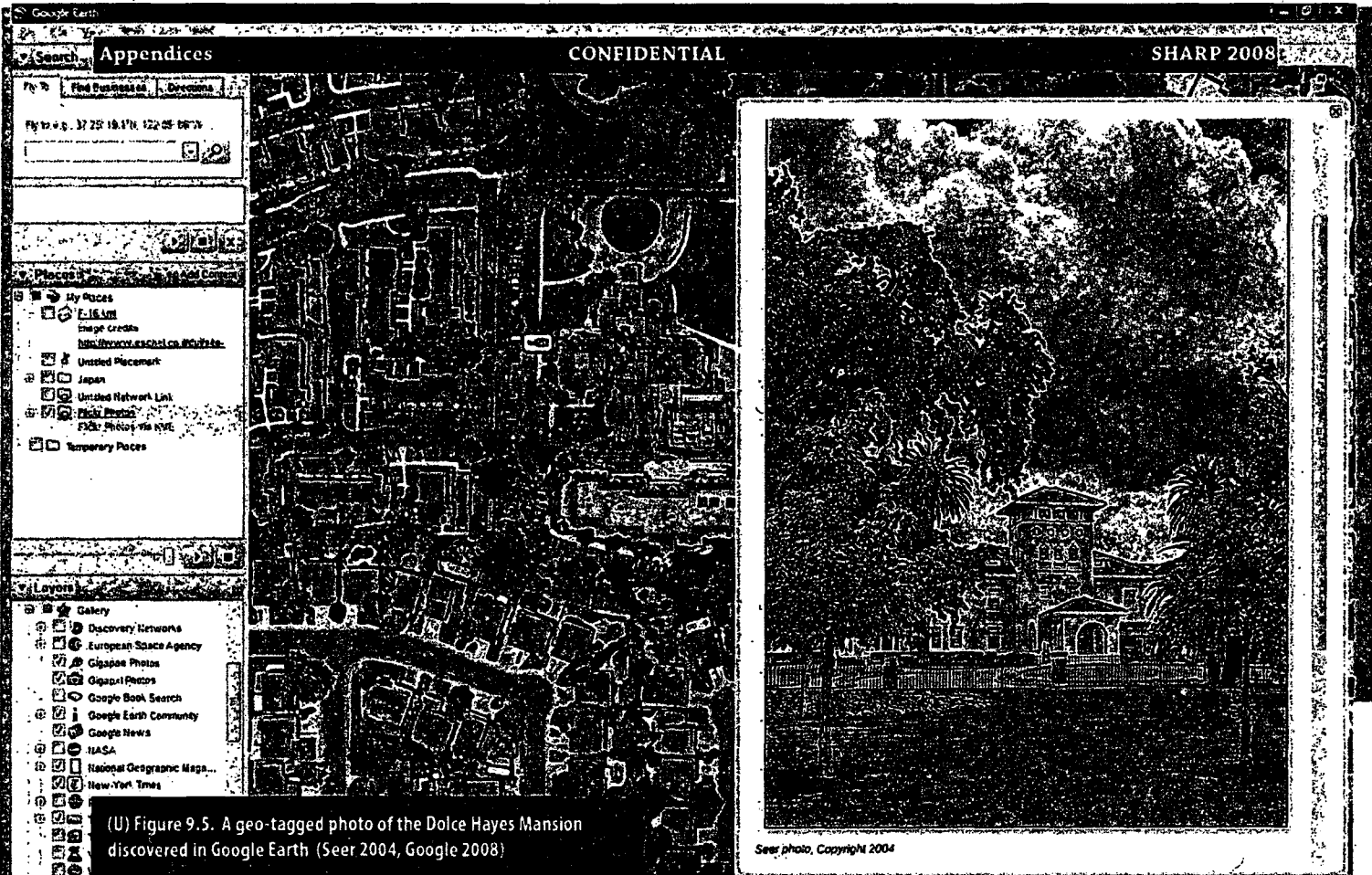
(U) Figure 9.3. The Dolores Mansion with StreetView Layer activated — San Jose, CA — Google Earth (Google 2008)



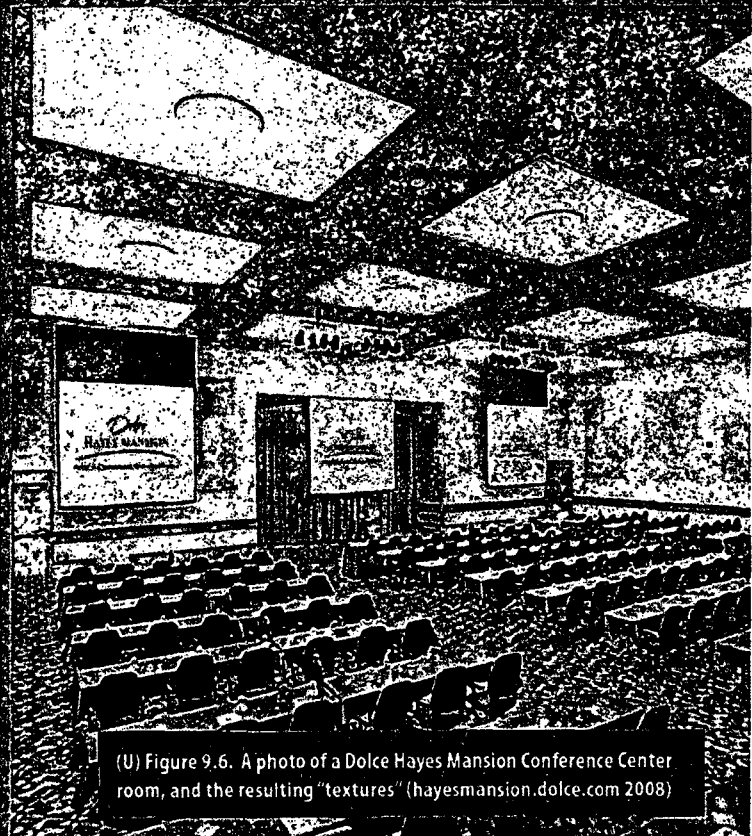
(U) Figure 9.4. A StreetView image of the Dolores Mansion entrance (Google 2008)

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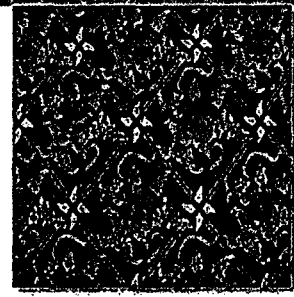




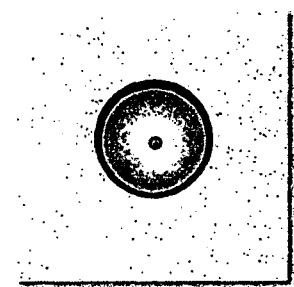
(U) Figure 9.5. A geo-tagged photo of the Dolce Hayes Mansion discovered in Google Earth (Seer 2004, Google 2008)



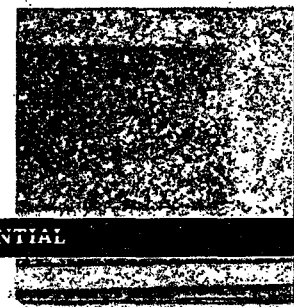
(U) Figure 9.6. A photo of a Dolce Hayes Mansion Conference Center room, and the resulting "textures" (hayes mansion.dolce.com 2008)



Carpet



Ceiling



Walls

(U) Figure 9.5 (top left) illustrates a geospatially referenced web page which describes the Dolce Hayes mansion, and provides a nice photo of the reception area of the hotel taken from within the hotel's property.

(U) Historically, third party sources including user-generated sources have been used for data acquisition which is proving to be an increasingly rich data stream in the early twenty-first century. Yet most public businesses, especially hotels, go to great lengths to publish their own data on their own internet sites to advertise their properties, amenities and attract business. The Dolce

Hayes Mansion's public web site offered useful data that is similar to that offered by most hotels and conference centers.

(U) Modeling for Simulation

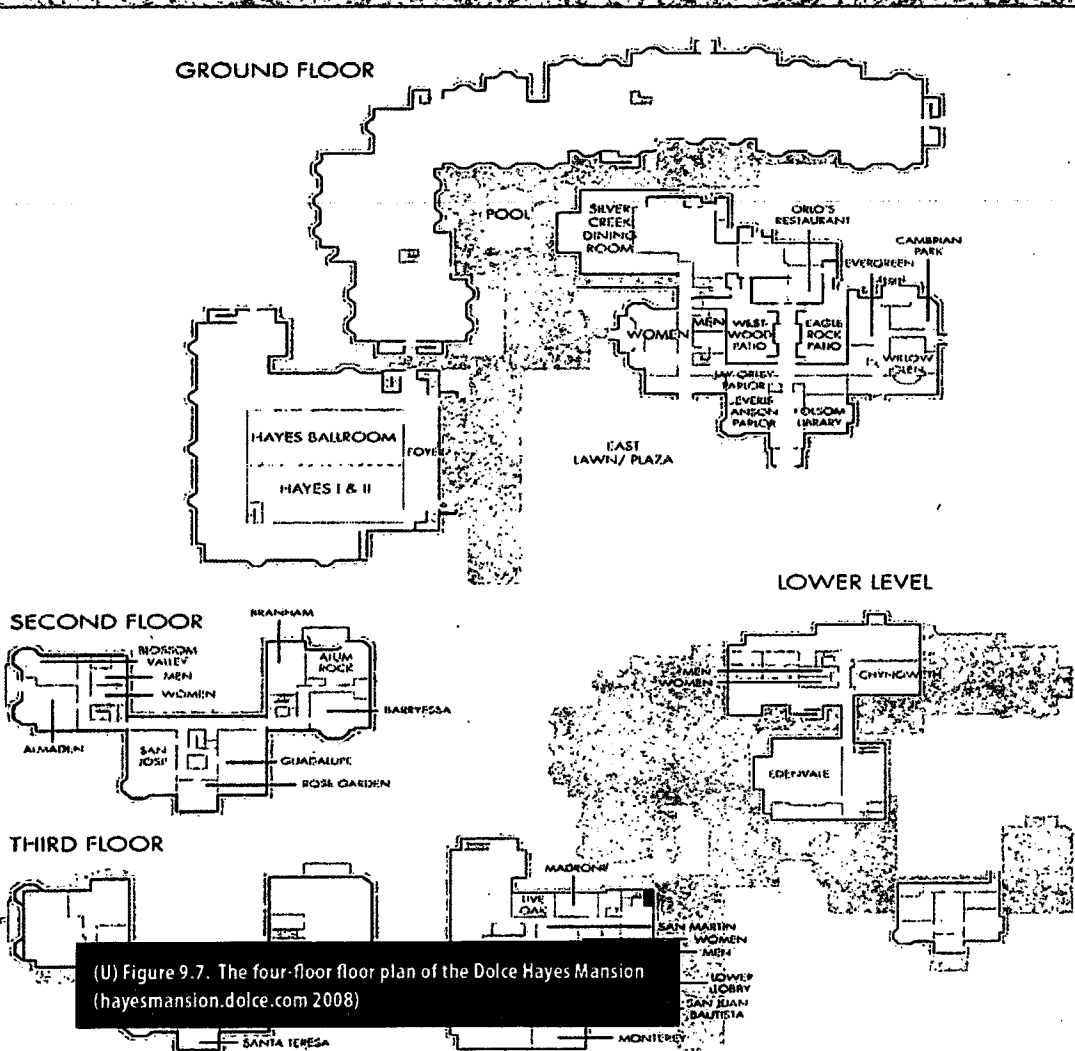
(U) The following exercise walks through the process of geo-modeling a section of the Dolce Hayes Mansion for simulation purposes. This exercise is a rough first cut and represents the potential of a self-taught individual with moderate computer graphics skills. In reality, writing this appendix took more time than did creating the model for simulation. The modeler will use only commer-

cial off the shelf tools to create a platform for simulation.

(U) The left-hand side of Figure 9.6 (bottom left) is a photo of a room in the Dolce Hayes Mansion Conference Center which was found on the hotel's public website. The goal for this modeling simulation is to build a spatially accurate section of the hotel with properties similar to the room in this photo. From user-generated data on the internet, the carpeting and general wall covering and ceiling structure appears to be similar in many of the public spaces in the hotel.

(U) The first step, as outlined in the right-hand side of Figure 9.6 is to acquire the necessary textures which that modeler will then apply to the 3D model. With basic photo editing software these key textures of the floor, ceiling and walls can be obtained from even odd perspective shots like the photo on the left of Figure 9.6. These textures will give a sense of realism to the otherwise stark and generic primitive surfaces that will be the model's frame. They make the difference between a simulation in a generic box and a simulation of being in the Dolce Hayes Mansion.

The Dolce Hayes Mansion website offered detailed floor plans of the hotel (see Figure 9.7, left).



(U) Figure 9.7. The four-floor floor plan of the Dolce Hayes Mansion (hayes mansion.dolce.com 2008)



(U) The modeler in this exercise wants to make the model and resulting simulation as realistic as possible, but has a set of floor plans that have no dimensions on them. Thankfully for the modeler though, he can register these floor plans to the relatively geographically accurate orthorectified imagery from Google Earth, by directly importing the scene in Figure 9.1 into Google's free and publicly available SketchUp 3D modeling application shown in Figure 9.8 (below).

(U) Google intends for users of SketchUp to generate spatially accurate 3D models for inclusion in the Google 3D Warehouse, which feeds the user-generated portion of the "3D Buildings" layer in Google Earth.

(U) In this exercise, after using the "Import Scene from Google Earth" function in SketchUp to bring in a geospatially accurate base, the modeler overlaid the floor plans and "rubber-sheeted" them to fit perfectly with the overhead imagery. The modeler then outlined the floor plans and extruded them to 3D for both the ground floor and the lower level under the conference center.

(U) At any time, the modeler can export a preview of the model to Google Earth which will instantly transfer the

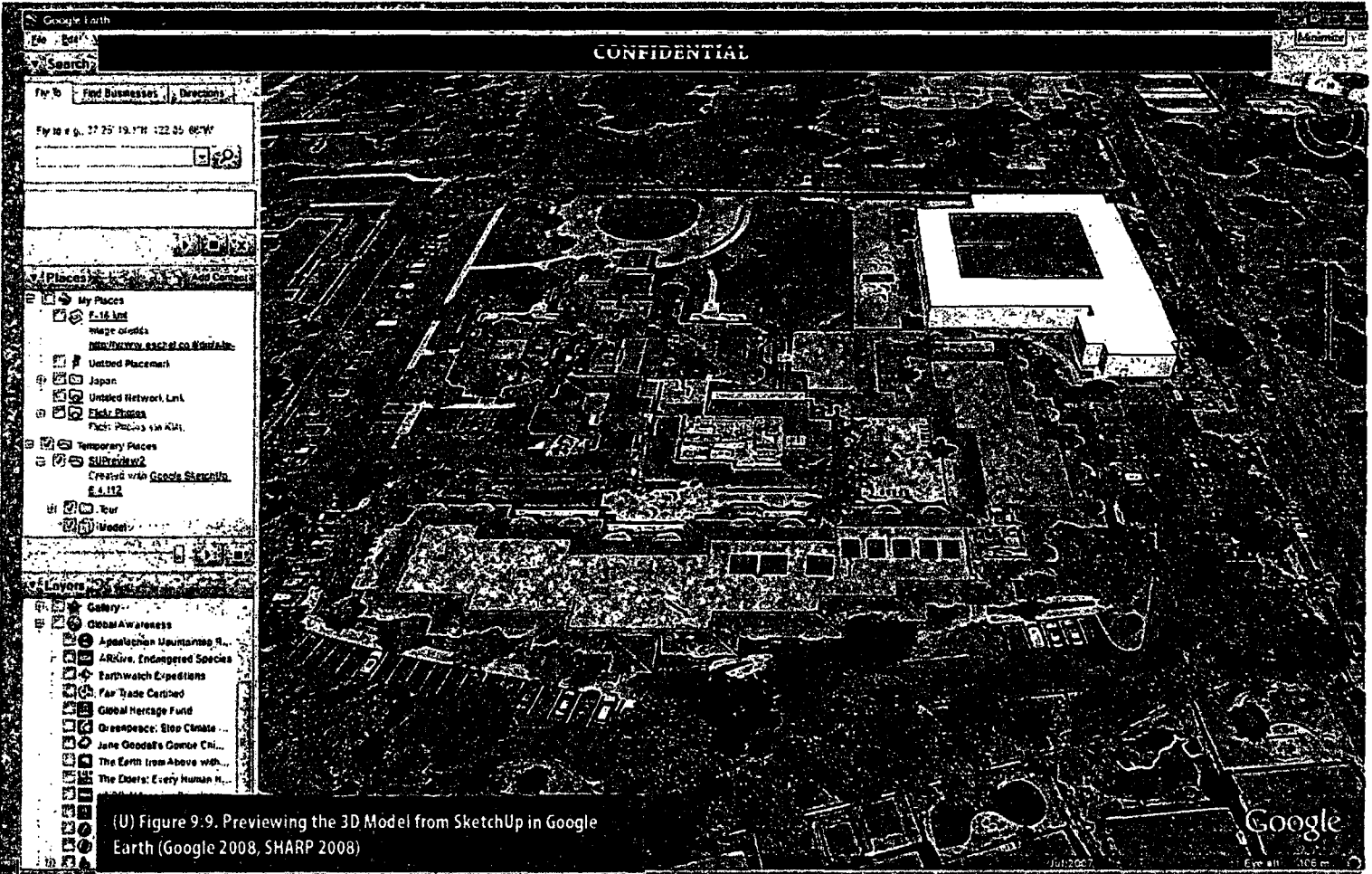
model from SketchUp to Google Earth for inspection, as shown in Figure 9.9 (right). A modeler in the real world would likely take much more time and develop the entire model in SketchUp before moving forward, but for the sake of explanation this exercise will move past the modeling phase into the simulation testing.

(U) To run a simulation in a Virtual World, the modeler needs to export his model from SketchUp and import it to a 3D rendering engine and platform that can handle the requirement of the simulation. SketchUp offers the ability to export 3D models to a variety of standard 3D file formats, which means they can be highly detailed in applications such as 3D Studio Max, or AutoCAD, or even exported into any custom format for which the user base develops an export plug-in through the SketchUp Application Programming Interface (API).

(U) The majority of the SHARP 2008 simulation session participants have concluded that the video game industry will likely continue to define the standard for "state of the art" in 3D engine platforms. To emphasize the point that industry has been leading the field, the modeler for this



(U) Figure 9.8. A section of the Dolce Hayes Mansion modeled in Google SketchUp (Google 2008, SHARP 2008)



(U) Figure 9.9. Previewing the 3D Model from SketchUp in Google Earth (Google 2008, SHARP 2008)

appendix will use a 10 year-old video game engine called "Unreal," which was first introduced by Epic Games in 1998. Specifically, the modeler will use the Unreal engine from "Unreal Tournament" of 1999 which offers a focus on the multiplayer environment. Though the engine is ten years old, the graphics are more than sufficient.

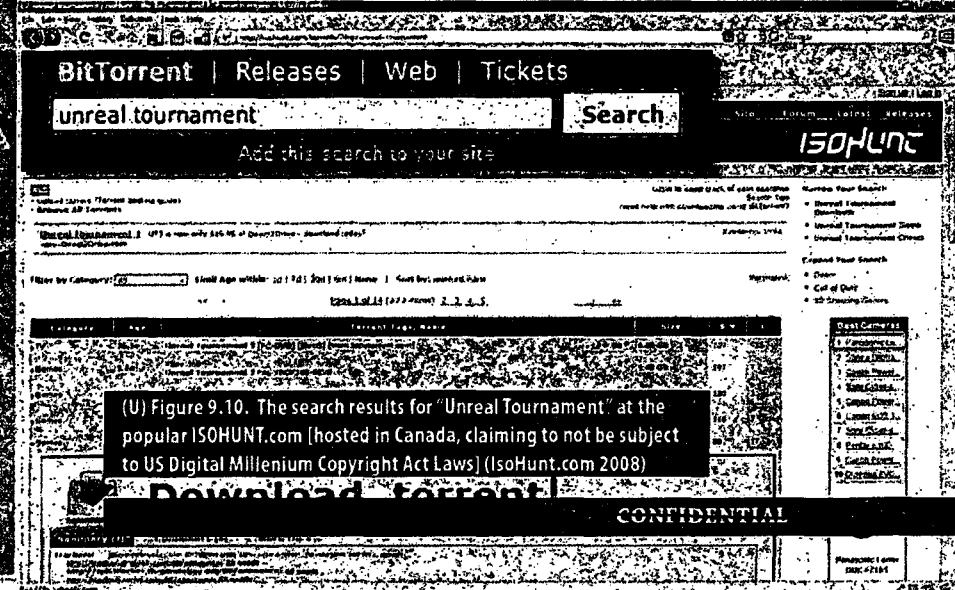
(U) One of the benefits of using Unreal is that the game from 1998 shipped with an application called "UnrealEd" which was intended to allow gamers to create their own highly detailed maps or levels for the game. The game and engine also have the advantage of being available on the internet from legitimate web-based retailers for around 10 to

20 US Dollars new, and available on E-bay used for two to 10 US Dollars.

(U) Of course, some of the US IC's parties of concern may not care to deal with purchasing from legitimate online retailers or even E-Bay and can either acquire copies of the software in local black markets or simply choose one of the various web-based methods of obtaining a pirated version of the game and engine which they can then distribute as many times as they would like.

(U) For example, Figure 9.10 (left) highlights a rather healthy "BitTorrent" for a small (280MB) self-extracting version of Unreal Tournament that requires no administrative privileges to install once downloaded.

(U) Regardless of the path by which the Unreal Engine is acquired the modeler



(U) Figure 9.10. The search results for "Unreal Tournament" at the popular ISOHUNT.com [hosted in Canada, claiming to not be subject to US Digital Millenium Copyright Act Laws] (IsoHunt.com 2008)





(U) Figure 9.11: Using UnrealEd to texture and light the 3D model exported from SketchUp (Epic 1998, SHARP 2008)

can quickly import the basic 3D model from SketchUp and apply all of the textures collected earlier in about a minute, as demonstrated in Figure 9.11 (above). (The ceiling on the ground floor is invisible in this view to allow editing.)

(U) 3D Simulation

Once the 3D model from SketchUp has been imported into UnrealEd and textured to the modeler's specifications, the modeler can further customize the simulation as will be run by the Unreal Engine—this includes placing non-player characters (security guards, staff, and bystanders) and any other elements that participants may be expected to find or recover.

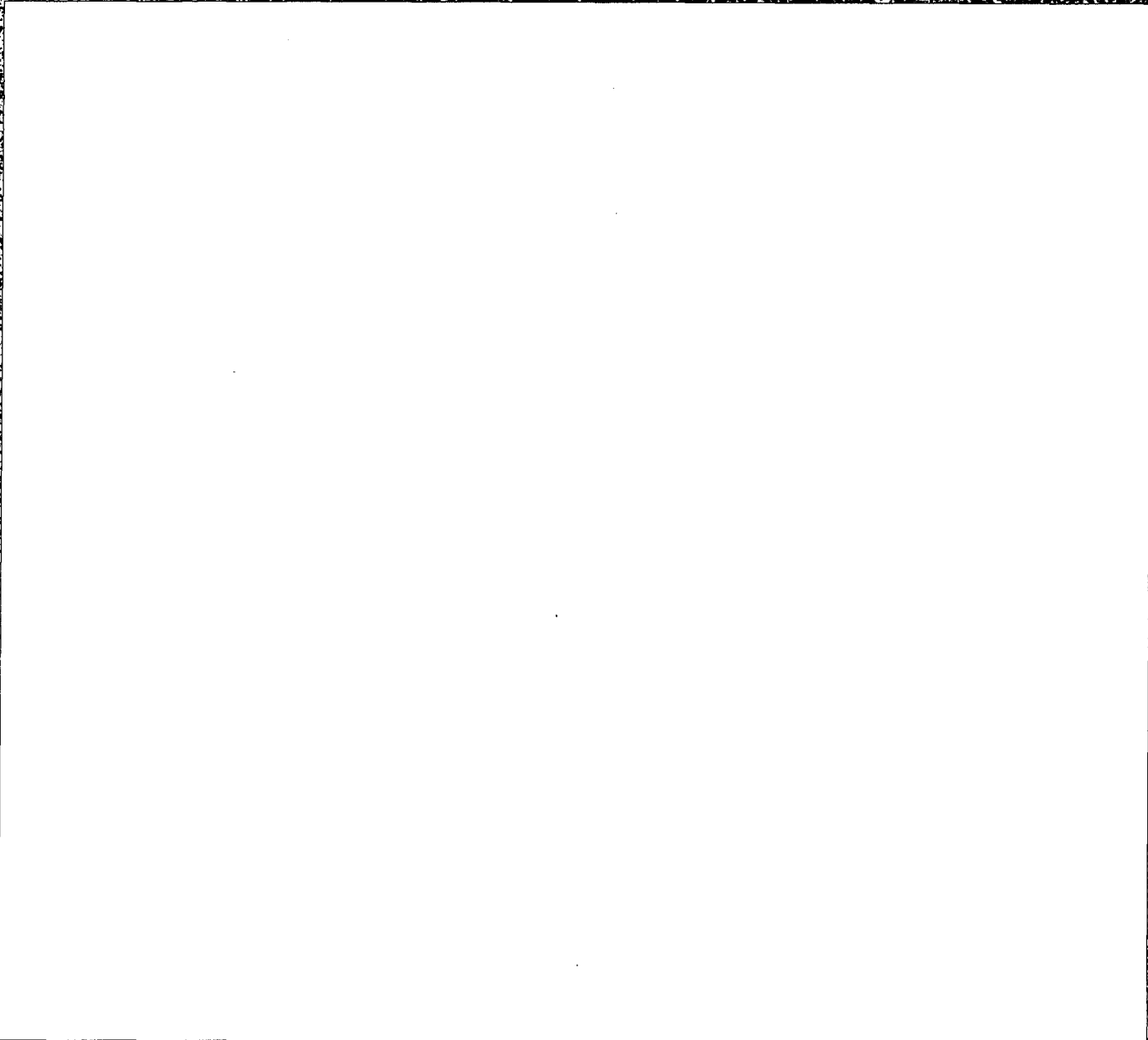
Depending on the amount of time the modeler has to create the simulation platform, the modeler

can choose to use the default Unreal weapons and player uniforms (which are futuristic / sci-fi in nature), utilize the large library of user-created weapons and uniforms available on the internet, or even model custom weapons and uniforms to suit the simulation.

Once these elements are in place, the modeler can preview the simulation at any point by sending the simulation to the Unreal Engine as demonstrated in the first person perspective of a pistol-holding character in Figure 9.12 (below).



(U) Figure 9.12: A simulation of the Dolce Hayes Mansion being tested in UnrealTournament (Epic 1999, SHARP 2008)



(U) Appendix 11: Future Law Enforcement Challenges of Virtual Worlds



(U) Virtual world property theft complaints are common. In 2003, South Korean police received 22,000 virtual world property complaints. This represented over half of the total number of cybercrime complaints that year.²¹⁰ That same year, South Korean media reported

that law enforcement arrested 10,137 teenagers in that country for virtual property crimes, which equates to 28 arrests per day for this type of crime.²¹¹

(U) Ginko Financial operated a virtual bank in Second Life until August 2007. Avatars could deposit and withdraw Linden Dollars in interest-bearing accounts at several virtual ATM locations. About 18,000 accounts are reported to have been established at Ginko Financial, which offered rates of return in excess of 30 percent for depositors.²¹² Ginko Financial collapsed in early August and caused depositors to suffer an unknown amount of loss.²¹³ Numerous online forums and bulletin boards reported this loss as anecdotaly significant. As a direct result, Linden Lab stopped allowing unregulated banks to accept money in interest-bearing accounts. This move may have a negligible effect, because the global nature of virtual world activity means that these unregulated financial institutions now can charter in their pick of countries.

(U) Virtual World Real Estate Example

(U) On 2 May 2006, MindArk, the company owning the virtual world known as Project Entropia, announced the introduction of an ATM card enabling players to withdraw the real-world currency equivalent of their Project Entropia Dollar (PED) funds directly from any real-world Versatel ATM machines. As reported on the BBC, users could sell virtual items online and then purchase a dinner for themselves in real life with this cash card technology. In 2005, 165 million US Dollars had "passed through the game."²¹⁴ MindArk also established a complex, multi-layered economy based on the PED, which trades against the US Dollars at the rate of 10 to one. This economy includes a virtual sales tax payable by business owners to mall owners. The malls are owned by individuals who

purchased them from MindArk, which in turn collects taxes from the mall owners.

(U) Three shopping malls were purchased from MindArk. Twin Peaks Shopping Mall was sold for 35,000 US Dollars (350,004 PED) to avatar "Onkel RobRoy Bob."²¹⁵ Port Atlantis Shopping Mall was sold for 70,067 US Dollars (700,667 PED) to avatar "Epsilon Lips Vaz." Emerald Lakes Shopping Mall was sold for 74,601 US Dollars (746,007 PED) also to "Onkel RobRoy Bob."²¹⁵ A police officer may encounter a number of challenges if investigating the theft of virtual property from a virtual store located in Emerald Lakes Shopping Mall owned by Onkel RobRoy Bob, who purchased the mall from MindArk, a company incorporated in Sweden and that maintains its servers in various European countries.

(U) In May 2007, MindArk finalized an auction for five virtual banks, which cumulatively sold for 464,000 US Dollars. These banks sold to entities that would pose a challenge for any US law enforcement agency needing to acquire business records to further an investigation. This does not take into account the challenge of identifying, locating, and interviewing the real witnesses known only by their avatar names. The five "banks" were purchased by:

- Avatar "Janus JD D'Arcwire," representing Wirecard Bank AG, paid 59,060 US Dollars.²¹⁶ Wirecard is a brick and mortar German bank that also operates virtual banks in Second Life.²¹⁷

- Russian Internet Payment Provider MONETA.ru, with avatar "Yuri INtellect Eftemov," paid 99,900 US Dollars.

- Entropia celebrity and famed virtual night club owner, "Jon NEVERDIE Jacobs," paid 90,000 US Dollars.

- Avatar "Anshe Chung" paid 60,000 US Dollars. "Anshe Chung" is the virtual pseudonym for an undisclosed individual that maintains a brick and mortar office in Wuhan, China. This individual also engages in materially significant financial transactions in Second Life, valued at over \$250,000 per year.²¹⁸

- Avatar "Jolana Kitty Brice," an Entropia Universe participant and entrepreneur, paid 95,000 US Dollars.²¹⁹

(U) Appendix 12: Virtual Worlds and Games in Education and Training



(U) Introduction

(U) A time when knowledge continues to increase faster than our ability to absorb and update curricula, it has become increasingly important for educators to teach how to learn. Students must be

equipped with the ability to seek out and explore knowledge, to make well-founded judgments about the quality of information available, to plan projects while practicing time management, and to work as a team (cooperating to achieve a common goal). These skills will enable students to continue lifelong learning and to work in a world of ever-expanding knowledge and ever-changing technology.

(U) In order to comprehend the far-reaching strategic implications learning has within the 3D virtual environments, one must understand the complexities of applications, market forces, and trends. Each of these highlights the impact that learning has on innovation and collaboration.

(U) One way to examine the impact of this market on education is to take a bottom-up approach by evaluating the learner. The student plays an important role in the learning activities within a virtual world. He or she applies, analyzes, and problem solves pertinent course content and ideas. These exercises may include any or all of the following:

- Interacting with instructor-built (or creating student-built) simulations of physical or procedural processes.
- Operating simulated equipment.
- Roleplaying.
- Designing and building things such as bridges, businesses, and clothing.

(U) The learner operates in a 3D virtual environment, creating an avatar in the process. An avatar represents the learner and engages in the virtual world within either a closed or an open environment. When a learner access-

es a platform on someone else's server via the internet, then the learner is operating in an open environment.

(U) Linden Lab's Second Life platform represents an open environment. This is important to note, due to the authentication, security, and identification issues pertaining to accessing a remote system. A closed environment allows the learner to operate within a platform on a local or home server. For example, Terra software illustrates a closed environment system. As the number of 3D virtual environments increases, access control and information assurance will become contentious issues for many sectors, especially the government. Also, as the lines between real and virtual worlds blur, individuals will find 3D virtual environments more accessible and easy to use.

(U) Increased collaboration between the private sector and academia has helped to enable virtual world technologies. Several collaborations have sought to address security and authentication issues (for example, ANCH and the San Jose State University School of Library and Information Sciences).

(U) Applications

(U) Social interactions are not only facilitated by a variety of internet-based software applications, including vlogs, blogs, webinars, wikis, email clients, and instant messaging, but also by 3D virtual environments that use variants of earlier communication technologies.

(U) Learners will likely act riskier and more assertively when operating in a virtual world than they would normally. Immersion in these environments causes individual approaches to learning and interaction with others to differ from real-world experiences. Learners demonstrate these social and learning contrasts as they make their own decisions and initiate and direct their own learning experiences online. This type of learning, known as constructivist learning, fosters advantageous learning scenarios for the student.

(U) Learners often change their gender to immerse themselves in these online learning experiences. Doing so allows them to see from the opposite



gender's point of view, how that gender conducts social interaction in a virtual world. These observations identify particular social behaviors, norms, and folkways that are persistent in the virtual world, and can contrast with those of the real world. Learners may develop social engineering skills so that they may hone their empathy, negotiation, and persuasion abilities, but the learner may also use these skills to carry out illegal or illicit affairs within the virtual world.

(U) 3D virtual environments have impacted teaching, learning, and creative expression. Numerous educational institutions, including both K-12 and higher education, have sought to leverage this new technology to defray costs by promoting the research, development, and implementation of virtual worlds.

(U) Students can learn via virtual

classrooms where they prepare for virtual environments and globally distributed work teams. The amount of money invested in 3D virtual environments by venture capitalists and grant-sponsored agencies shows the value placed on creative expression. According to the New Media Consortium, a non-profit association comprising more than 250 colleges, universities, and museums focused on emerging technologies, there are 1,400 educational islands and hundreds of schools that offer classes and seminars in Linden Lab's Second Life. These 1,400 islands represent 10 percent of Second Life's total of 65 square miles.

(U) 3D virtual environments perform many functions. One is the virtual meeting. These meetings can take place in the form of virtual classrooms or conference rooms. Due to the increased sophistication of triple-

play (video, voice, and data) and internet bandwidth, virtual meeting environments using new technologies can serve as a natural complement or alternative to real world meetings. Communication between learners can take place via chat, VoIP (Voice Over Internet Protocol), text message, or some other medium. As mobile technologies flourish (especially high speed wireless), virtual meeting environments will continue to leverage the mature business aspects of software and infrastructure. Even the availability of optical fiber to the home or office (DSL) can serve as an advantage to the learner.

(U) Both learners and instructors benefit from the increased access to remote content experts that 3D virtual environments provide. Distance learners and residential learners benefit from the real-time interaction, because 3D virtual environments

(U) Examples of Education and Training Fields within Virtual Worlds²⁵⁰

Emergency Response
 Homeland Security
 Health Care and Wellness
 Biotechnology
 Nanotechnology
 Government Outreach
 Civic Participation

Cultural Awareness
 Global Warming
 Environment and Ecological Action
 Civic Economic Development
 Business
 Language and Cultures
 The Arts

foster a sense of community through data sharing and student conversations. Opportunities abound from the positive and collaborative efforts garnered through engaging in 3D virtual environments. Two positive effects include the time saved by the learner and the reduction of costs (fuel, hotel, and airplane). Some institutions encounter difficulties while trying to (or simply cannot) procure books, labs, or ancillary items. Hence, the virtual world allows for the minimization of costs.

(U) Many applications exist for learning in 3D virtual environments. According to a study by the American Federation of Scientists, more than 70 virtual world platforms exist. American companies developed only a handful of these. Colleges and universities use these 3D virtual environments for research, teacher instruction, and student collaboration. Universities (for example, Harvard University's CyberOne and the Kansas University Medical Center), businesses (BMW and IBM), and organizations (the Center for Disease Control) are just a number of current participants in this space. In the United States military, senior representatives have commented that enhanced decision-making processes would benefit from the use of 3D virtual environments. Regardless of the

learning environment, student and user experiences have become more real and visceral due to the use of 3D virtual environments.

(U) Interoperability

(U) Developers have become more interested in interoperability within virtual worlds since platforms exist with minimal protocol standardization. Thus, interoperability will likely enable virtual world-based technology. Technology users would benefit from this endeavor by enhanced information sharing. Several factors would affect interoperability, both pre- and post-amalgamation.

(U) Real and virtual worlds will likely begin to merge over time. As this happens, technological innovation will affect the platforms operating within the open and closed environments. Issues pertaining to interoperability and its impacts on software and hardware security, operational ease, and the Metaverse architecture will in turn impact how virtual world environments affect society and world economies.

(U) Three distinctive trends, as outlined in the testimony of New Media Consortium chief executive officer, Laurence Johnson, demonstrate potential effects of interoperability:

- An increasing focus on people and the proliferation of social networking applications

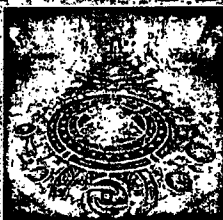
- The visual representation of data and its movement in real time across networks

- User-generated content as the driver behind such Web 2.0 phenomena as Facebook and YouTube

(U) Funding in Education

(U) Venture capitalists pour money into virtual world projects to spur innovation and collaboration and to take advantage of (or leverage) the current technologies associated with virtual worlds. For example, Global Kids.org, a non-profit organization, was awarded the 2007 Motorola Innovation Generation Grant, and used the money to develop a new curriculum for a Brooklyn-based high school. A direct relationship exists between the increase in confidence and the funding of 3D virtual environments by academia, venture capitalists, and the US government. Monitoring these transactions will provide insight and a deeper understanding into the direction that virtual worlds will move next. □

(U) Appendix 13: Mirror World Simulation



(U) Introduction

(U) The 2008 San Jose SHARP session included a simulation designed to provide participants an opportunity to act out a scenario and role play in both a mirror virtual world and the real world. By design, the setting for the simulation was a university with a bio-medical laboratory that bore a resemblance to the Dolce Hayes Mansion, which hosted the San Jose SHARP session.

(U) The designers developed a scenario that would allow participants to draw analytic conclusions on how virtual worlds can be used in ways other than they were intended, on the challenges created by real and virtual world coalescence, and the ways virtual worlds can foster unconventional networks and access to otherwise restricted or out-of-reach information. The simulation scenario also was developed to illustrate the differences between analyzing the 2008 Naples SHARP Hard Problem using traditional research methods and using virtual world technology. An ancillary goal was to explore whether virtual world technology might enhance analytic capabilities.



(U) The employment of a simulation was a new and creative initiative for the SHARP program. Given the short time frame in which it was developed, the 2008 San Jose SHARP participants essentially engaged in a beta-testing of a concept. For a variety of reasons, the majority of the participants focused not on the content of the simulation, but rather on the process of completing the simulation in a virtual world. As with any beta test of a product, the group learned more about the technical requirements, design requirements, and allowances for user behavior required for useful simulation experience.

(U) Scenario

(U) The setting for the simulation scenario was a Chinese institution, the Biomedical Research and Development Center (BRDC) at the Shanghai Jiao Tong University's College of Life Sciences and Biotechnology. Forterra's OLIVE platform rendered the virtual environment as a mirror world reflecting the real layout of the Dolce Hayes Mansion.

(C) The characters in the scenario included students, scientists, BRDC staff, government personnel, and corporate representatives. While most were Chinese nationals, there were also characters from the United States, Austria, India, and Japan. The descriptions of the characters and their roles included information about their personalities, likes and dislikes, motivations, and life situations (for example, whether they were married, divorced, widowed, or dating). This information provided insight into whether an individual was vulnerable to manipulation or other forms of exploitation or if the character might be driven to take advantage of someone else in furtherance of personal goals.

(U) The simulation developers designed four plot lines to evolve throughout the simulations: intelligence and counterintelligence operations, industrial espionage, exploitation of an avatar, and advancement of Falun Gong political goals.

(U) The scenario was essentially a "walk and talk" simulation. Although interactive objects such as a lab microscope, notepads, and test tubes existed in the mirror world, the majority of the simulation involved characters interacting with each other. SHARP session planners set aside time for participants to reflect on the experience and provide written experience. In addition, participants took part in a group "hot wash."

(U) The simulation took place on a part-time basis over five working days. On the Friday before the simulation week, participants viewed a video laying out the background and received written profiles of their characters to study in preparation for the scenario.

(U) Participants, designers, and facilitators noted a number of "take-aways" from the simulation experience described above. Four core lessons learned emerged to identify key issues that hindered the realization of the stated goals.

(U) *The experimental nature of combining traditional sophisticated role-playing simulations with virtual world technology—with all of its limitations—resulted in the simulation serving as a beta-test for concept design and execution.* While the objective of comparing traditional research methods to applied virtual world technology was a laudable

goal, the simulation was too nascent to allow the SHARP participants to truly compare and contrast traditional research methods and the experiential learning gleaned through operating in virtual worlds. The chances for success would improve if the degrees of change are limited. As one participant mentioned, "We were doing 'new on new on new'... New game. New platform. New content. New environment. New player group." Scheduling part-time play over five days was a deliberate choice on the part of the designers and session planners to allow time for unanticipated technological glitches.

(U) *The virtual platform's technical limitations were a significant impediment to achieving the overarching goal of developing analytical conclusions.* Each plot required characters to be able to speak privately or surreptitiously with another character. Communications in a virtual world are often not visually noticeable. However, these capabilities were unavailable in the simulation, making it nearly impossible to meaningfully demonstrate new ways in which communications could occur. The inability to fully manipulate objects relevant to the plot—and the presence in the virtual space of objects irrelevant to the plot—distracted players and inhibited effective role playing.

(U) *Simulation role-playing is enhanced if the background and experiences of the players is relevant to the roles they are playing.* While playing the role of a student or teacher should have been fairly straightforward, few San Jose participants knew how to "be" Chinese or a scientist with an expertise in biotechnology. The lack of knowledge inhibited several participants, preventing them from developing

their characters and advancing their plot lines. Nonetheless, by the end of the simulation, the overwhelming majority of the participants were impressed with the quality of the storyboarding.

(U) The addition of the technology domain to the traditional simulation led to unexpected emergent behavior, which could be deemed both positive and negative. Users interact differently in virtual environments than they do in the real world. In fact, a certain level of disruptive behavior in the virtual world is considered clever, and in the technology domain users are often drawn to attacking system weaknesses. True to form, many SEARP participants demonstrated disruptive behavior. Designers in the gaming community acknowledge these behavioral differences and endeavor to encourage or restrict certain actions in their approach to a game design. To achieve the goals of the simulation, SEARP simulation designers could encourage these behavioral inclinations or provide opportunities for participants to channel their disruptive behavior in productive directions.

4. Recommendations

(U) The group identified a number of recommendations that, if implemented or adopted, would improve chances for the simulation to be played to the conclusion of one or more of the plot lines. The following overview addresses various issues grouped into four areas: technology and facility limitations; game and scenario design limitations; participant limitations; and facilitator and moderator limitations.

Communications: Any future iteration of this simulation needs to

include more communications tools, both written and verbal options, and allow for privacy. A future version of this simulation could employ any of a number of common communications tools available in MMORPGs and virtual worlds.

Technology platform: Thoroughly test the ability of the simulation in the mirror world to initiate with the maximum number of avatars. Identify the necessary bandwidth and server capacity requirements. When 36 people attempted to log on simultaneously, the system frequently crashed or froze for a large percentage of the users. If employing an untested platform, expect that adjustments will need to be made and build that time into the simulation schedule.

Facilities: Provide ample physical separation among participants who are operating in the mirror world. Since all participants were physically located in the same computer lab, it negated the need for participants to use the virtual world to communicate. Similarly, it also meant that players could overhear virtual world conversations in the real world.

Avatar Capabilities: Incorporate into the technical design an ability to restrict features, decrease options, and keep the scenario consistent. Technical design also requires an understanding of the requirements for player actions required for the scenario. In crafting a scenario, technical designers must ensure that players have the virtual capability to carry out actions consistent with their character and character interactions with the environment.

Applicability of Scenario: Develop scenario options that can be easily tailored to the background of the

participants. Some participants had expertise with the cultural aspects of the scenario's China references and recognized inaccuracies that broke the realism for them. Participants felt aggravated that a group like Falun Gong was misrepresented as a terrorist organization and that character responses were inconsistent with how a Chinese character would likely have perceived or responded to some aspects of the scenario. Additionally, the lack of knowledge or experience in biotechnology frustrated some participants who had roles as faculty or students.

Hands-on training: Develop a tutorial and allow participants ample time to familiarize themselves with the technology. This will enable participants to focus on the scenario, not the interface, at the start of the simulation. Training should occur in an environment that is outside simulation parameters (characters and settings) so that players cannot "over explore" and become bored with the simulation before it begins.

Facilitator-Participant Interactions: Give all characters an active purpose or mission to pursue, and ensure that the technology supports the characters' assigned activities. Even the characters whose actual purpose is to be exploited must have "something to do." Participants should be told their goal is to take some action that is minimally consistent with their real world knowledge so that they have enough direction to actively play out the scenario and not be bored or disengaged. Their goal, however, should be outlined without dictating a specific method for achieving it so that participants will be unconstrained enough to allow creativity. If expected events do not happen, be prepared to include injects to get the scenario "back on track."



(U) Appendix 14: Glossary

(U) Acronyms

AI	Artificial Intelligence
ARG	Augmented Reality Game
AMMORPG	Adult Massively Multiplayer Online Role Playing Game
API	Application Programming Interface
AR	Augmented Reality
BBS	Bulletin Board System
CCG	Collectible Card Game
FPS	First Person Shooter
GPS	Global Positioning System
HCI	Human Computer Interface; Human Computer Interaction
HMD	Head Mounted Display
IM	Instant Messaging
MMORPG	Massively Multiplayer Online Role Playing Game
MOO	MUD Object Oriented
MR	Mixed Reality
MUCK	Multi User Created Kingdom
MUD	Multi User Dungeon
MUSH	Multi-User Shared Hack (or Hallucination)
MUVE	Multi User Virtual Environment
NGO	Non-Governmental Organization
NPC	Non-Player Character
PMOG	Passive Multiplayer Online Game
PSTN	Public Switched Telephone Network
RMT	Real Money Trade
RPC	Role Playing Character
RSS	Really Simple Syndication; RDF Site Summary; Rich Site Summary
RTS	Real-Time Simulation
SLLA	Second Life Liberation Army
SMS	Short Messaging Service
UI	User Interface
VE	Virtual Environment
VoIP	Voice over IP
VR	Virtual Reality
VW	Virtual World
WoW	World of Warcraft

(U) Terms**(U) 2D Internet**

(U) The traditional "flat" Web page based Internet derived from document format pages.

(U) 3D virtual environment

(U) A user interface and support infrastructure that presents data in a 3D perspective to the user and often stores and manipulates data in 3 dimensions

(U) 4G Wireless

(U) 4G (also known as Beyond 3G), an abbreviation for Fourth-Generation, is a term used to describe the next complete evolution in wireless communications. A 4G system is intended to provide a solution where voice, data and streamed multimedia can be given to users on an "anytime, anywhere" basis, and at higher data rates than previous generations. The international telecommunications regulatory and standardization bodies are working for commercial deployment of 4G networks roughly in the 2012-2015 time scale. There is no formal definition for what 4G is; however, there are certain objectives that are projected for 4G. These objectives include: that 4G will be a fully IP-based integrated system. 4G will be capable of providing between 100 Mbit/s and 1 Gbit/s.

**(U) Active Subscription**

(U) An enrollment to a VW or game that is regularly used by a player, as opposed to one that is activated, then abandoned, but still counted by the operator as a subscription.

(U) Anamaya

(U) "Anima" is the Latin word for the Greek psyche (psyche) or soul (spirit) of the individual. "Maya," in Indian religions, is the principal deity who creates, perpetuates and governs duality in both the spiritual and physical space. Bringing these two concepts together to describe a digital soul, a common thread that runs through multiple expressions of self in the Virtual World, produces the term "anamaya". The anamaya represents the underlying personality, morals, values and beliefs that users impose on the avatars they create. The anamaya is the being and presence of self that a user projects on his or her virtual activities and in virtual environments.

(U) Artificial Intelligence

(U) John McCarthy, who coined the term in 1956, defines it as "... the science and engineering of making intelligent machines, especially intelligent computer programs."

(U) Alternate Reality Game

(U) An alternate reality game (ARG) is an interactive narrative that uses the real world as a platform, often involving multiple media and game elements, to tell a story that may be affected by participants' ideas or actions. The form is typified by intense player involvement with a story that takes place in real-time and evolves according to participants' responses, and characters that are actively controlled by the game's designers, as opposed to being controlled by artificial intelligence as in a computer or console video game.

(U) Augmented Reality

(U) A field of computer research which deals with the combination of real-world and computer-generated data. At present, most AR research is concerned with the use of live video imagery which is digitally processed and "augmented" by the addition of computer-generated graphics. Advanced research includes the use of motion-tracking data, fiducial marker recognition using machine vision, and the construction of controlled environments containing any number of sensors and actuators.

(U) Authentication

(U) The means by which the authenticity of a user can be established.

(U) Avatar

(U) The representation of a person in digital form in an interactive environment. The "character" that appears on the screen in a VW or game. An avatar often has the appearance of a human being, either realistic or comic.



B**(U) Bulletin Board System (BBS)**

(U) A Bulletin Board System, or BBS, is a computer system running software that allows users to connect and login to the system using a terminal program. Originally BBSes were accessed only over a phone line using a modem, but by the early 1990s some BBSes allowed access via a Telnet or packet radio connection. Once a user logged in, they could perform functions such as downloading or uploading software and data, reading news, and exchanging messages with other users. Many BBSes also offered on-line games, in which users could compete with each other, and BBSes with multiple phone lines often offered IRC-like chat rooms, allowing users to meet each other. In recent years, the term BBS is sometimes incorrectly used to refer to any online forum or message board.

(U) Blog

(U) An online diary, meant to be read by users of the Internet.

(U) Botnets (bot network)

(U) A group of computers that is controlled by another computer, often without the owner's consent.

C**(U) Collectible Card Game**

(U) Collectible card games (CCGs), also called trading card games, are played using specially designed sets of cards. While trading cards have been around for longer, CCGs combine the appeal of collecting with strategic gameplay in different settings. For example, the game Magic: The Gathering is based on the fantasy genre, so many of the cards represent creatures and magical spells from that setting. CCGs are distinguished from other genres of games because the card can dynamically reconfigure the rules during play.

D**(U) Dark Web**

(U) The online anonymity of the web that allows extremists and criminals to use it for content related to potentially dangerous or criminal activity. Such web content is often purposefully difficult to find.

(U) Digital Distribution

(U) The distribution of digital data by means of downloads, as contrasted to the purchase of media on a CD at a brick and mortar store.

(U) Digital Tribe

(U) Social groups that coalesce around a common interest or activity, or a shared set of knowledge or beliefs because of the opportunities, support, or protection that the collective can provide to the individual

(U) Distributed Computing

(U) A general term to describe the use of many computers, often geographically dispersed, operating in unison to solve a single or broad-based problem.

E**(U) eBay**

(U) A web-based auction site.

(U) e-Gold

(U) A general term used to describe in-world currency. It is often specifically referring to the gold of World of Warcraft, but can be used to describe the currency of other environments. Also a private company.

(U) e-government

(U) The use of web technology by government bodies for public outreach, and business to business or government partnering.

F**(U) Free-to-Play**

(U) A service that makes game play available without charge. Some free-to-play services charge for the program, others charge for game upgrades. This usually refers to the lack of a periodic service charge.

G**(U) Game God**

(U) A corporation or person who creates, maintains, and controls the game world.

(U) God Game

(U) A construction and management simulation that casts the player in the position of controlling the game on a large scale, as an entity with divine/supernatural powers, as a powerful leader or with no specified character and places them in charge of a game setting containing autonomous characters to guard and influence.

(U) Gold Farmer

(U) A player who engages in deliberate activities to acquire ("farm") items of value within a game by exploiting elements of the game's mechanics, usually for the purpose of selling these items for real money.

(U) GPS

(U) Global Positioning System; a widely used aid to navigation worldwide that uses a constellation of between 24 and 32 Medium Earth Orbit satellites that transmit precise microwave signals enabling GPS receivers to determine location, speed, direction, and time.

(U) Griefing

(U) A form of emergent game play where players engage in the act of harassing other members of an online community in a manner that is consistent with the code of the system, but which may violate the spirit or terms of service of the system.

H**(U) Haptic Device**

(U) A mechanical device that mediates physical communication between the user and the computer. Haptic devices allow users to touch, feel and manipulate three-dimensional objects in virtual environments and tele-operated systems.

I**(U) IGE**

(U) A company based in the country of Vanuatu that deals in virtual currencies and exchanging them for real currencies.

(U) IM

(U) Instant messaging; a service that allows two users to "chat" with each other using text; very common in virtual worlds, though not limited to them.

(U) Internet Café

(U) Often found in developing countries, it is usually a concentration of computers and online capabilities that are rented to users by the hour.

(U) Interoperability

(U) The ability of one system to work with another.

K**(U) Killer App**

(U) A term used to describe a powerful and useful application, one that is in high demand because of its features and drives adoption of an enabling technology or platform.

L**(U) Linden Dollar**

(U) The currency used in the virtual world, Second Life.

M**(U) Malware**

(U) Also known as Malicious Software, it is software designed to infiltrate or damage a computer system without the owner's informed consent.

(U) Manager Game

(U) See God game



(U) Massively Multiplayer

(U) A type of game that is capable of supporting hundreds or thousands of players simultaneously.

(U) Massively Single Player

(U) A marketing term coined for a new game that allows indirect, asynchronous, online interaction between players.

(U) Memes

(U) Denotes any learned feeling, thought or behavior especially those that are easily passed from person to person.

(U) Metaverse

(U) A virtual world, originally described in Neal Stephenson's 1992 science fiction novel Snow Crash, where humans, as avatars, interact with each other and software agents, in a three-dimensional space that uses the metaphor of the real world.

(U) Mirror-World

(U) A representation of the real world in a virtual fashion including accents and details that provide a sheen of reality.

(U) Mobile Devices

(U) Pocket size computer device, connected to a wireless network, typically having a display screen with touch input or miniature keyboard. These devices can be telephony based.

(U) MOO

(U) MUD Object Oriented; a text-based online virtual reality system to which multiple users (players) are connected at the same time. The term MOO is used in two distinct, but related, senses. One is to refer to those programs descended from the original MOO server; and the other is to refer to any MUD that uses object oriented techniques to organize its database of objects, particularly if it does so in a similar fashion to the original MOO or its derivatives

(U) MUCK

(U) Multi User Created Kingdom; is a type of user-extendible online text-based role playing game, designed for role playing and social interaction. Similar to a MUD or MOO.

(U) MUD

(U) Multi User Dungeon; A forum for virtual role-playing. Can be conceived of as a thematically charged chat-room with a focus on role-playing. Certain types - so-called MOOs - operate with objects that the players/users can interact with (and sometimes alter/create).

(U) Multiverse

(U) A future defined as a plethora of virtual worlds. Multiple virtual geographies each of which may be proprietary and not necessarily interoperable.

(U) MUSH

(U) Multi-User Shared Hack (or Hallucination); a text-based online social medium to which multiple users are connected at the same time. Similar to a MUD or MOO.

N**(U) Netizen**

(U) "Net-citizen," a participant in an internet culture.

P**(U) Passive Multiplayer Game**

(U) PMOG (Passively Multiplayer Online Game) is an online game which players 'passively' participate while browsing web pages. Players earn data points or acquire digital "items" by visiting unique domains, which they can spend on various game items that can be attached to web pages to trigger events when another player next visits that page.

(U) Pay-to-Play

(U) Business model for online games in which players maintain a subscription or pay on the basis of how long they are in world.

(U) Pay-to-Upgrade

(U) Business model for online games in which players can play for free, but must pay for upgrades such as better weapons or armor.

(U) PC Bang

(U) PC bang ("bang" approximately means "room" in Korean) is a variation of LAN gaming center, where one can play multiplayer computer games with others. PC bangs are extremely popular among young South Koreans. It became extremely popular when Starcraft came out in 1997. Although computers and broadband penetration per capita were very high, many young people went to PC bangs to play LAN-based multiplayer games, with others.

(U) Persona

(U) A persona, in the word's everyday usage, is a social role or a character played by an actor. The word derives from the Latin for "mask" or "character", derived from the Etruscan word "phersu", with the same meaning. A person's total online presence including email, phone, chat, and web surfing.

(U) Phishing

(U) It is the criminally fraudulent process of attempting to acquire sensitive information such as usernames, passwords and credit card details, by masquerading as a trustworthy entity in an electronic communication. Communications purporting to be from PayPal, eBay, YouTube or online banks are commonly used to lure the unsuspecting. Phishing is typically carried out by e-mail or instant messaging, and it often directs users to enter details at a web site. Phishing is an example of social engineering techniques used to fool users. Attempts to deal with the growing number of reported phishing incidents include legislation, user training, public awareness, and technical security measures.

(U) Phreaking

(U) A slang term coined to describe the activity of a subculture of people who study, experiment with, or explore telecommunication systems, like equipment and systems connected to public telephone networks. The term "phreak" is a portmanteau of the words "phone" and "freak." It may also refer to the use of various audio frequencies to manipulate a phone system. "Phreak," "phreaker," or "phone phreak" are names used for and by individuals who participate in phreaking. Additionally, it is often associated with computer hacking. This is sometimes called the H/P culture (with H standing for Hacking and P standing for Phreaking).

(U) Pseudo-Photograph

(U) A pseudo-photograph is an image produced manually which is indistinguishable from a real photograph produced using a camera. Although the term pseudo-photograph can be applied regardless of what it depicts, in law its meaning is especially relevant regarding child pornography. In the UK, the Criminal Justice and Public Order Act 1994 amended the Protection of Children Act 1978 so as to define the concept of an "indecent pseudo-photograph of a child."

(U) Public Switched Telephone Network

(U) It is the network of the world's public circuit-switched telephone networks, in much the same way that the internet is the network of the world's public IP-based packet-switched networks. Originally a network of fixed-line analog telephone systems, the PSTN is now almost entirely digital, and now includes mobile as well as fixed telephones.

Q

(U) QQ Coins

(U) The QQ Coin is a virtual currency used by QQ Online, a popular set of online services in China and South Africa, which users use to "purchase" QQ related items for their avatar and blog. QQ Coins are obtained either by purchase, one coin for one, for using the mobile phone service, or via prepaid, debit, or credit cards. Due to the popularity of QQ in Chinese young population, QQ Coins are now accepted by more and more online stores and gaming sites in exchange for "real" merchandise such as small gifts, and

raised the concern of replacing (and thus "inflating") real currency in these transactions. They are also accepted in some real world establishments.

R

(U) Reality+

(U) Real-world geographies enhanced by virtual elements, data, and interactivity.

(U) Real-Time Strategy

(U) Strategy game in which the action is played out continuously without breaks (as opposed to turn-based strategy games).



(U) Rhythm Games

(U) Music based games such as Guitar Hero and Rock Band.

(U) Real Money Trade

(U) The exchange of virtual items and currency for real world currency or vice versa.

(U) Role-Playing Game

(U) A game in which the participants assume the roles of fictional characters and collaboratively create or follow stories. Participants determine the actions of their characters based on their characterization, and the actions succeed or fail according to a formalized system of rules and guidelines. Within the rules, players can improvise freely; their choices shape the direction and outcome of the games.

(U) RSS

(U) A family of web feed formats used to publish frequently updated content such as blog entries, news headlines, and podcasts in a standardized format.

S**(U) Seclimine**

(U) A virtual drug sold in Second Life.

(U) Second Life Liberation Army

(U) An experiment run by Roderick Jones to see how terrorist groups might form and operate in virtual worlds. Jones was able to recruit real people to his cause and successfully demonstrated the possibility of virtual world terrorism.

(U) Simulations

(U) A set of rules, often embedded in a videogame or computer program designed to mimic actions and operations in the real world. Games, for example, are often simulations of real life activity. Not all games, however, are simulations and not all simulations are games.

(U) Smart Card

(U) A card (usually the size of a credit card) which contains embedded processing and secure data storage. They are typically used for authentication and stored value applications. Currently more resistant to forgery, fraud and hacking than magnetic stripe cards they are being replaced with RFID cards.

(U) Spyware

(U) Software surreptitiously installed on a computer that reports back to the controlling entity about the use of, and information on and accessed by, that computer.

T**(U) Telepresence**

(U) A set of technologies which allow a person to feel as if they were present, to give the appearance that they were present, or to have an effect, at a location other than their true location. Telepresence requires that the senses of the user, or users, are provided with such stimuli as to give the feeling of being in that other location. Additionally, the user(s) may be given the ability to affect the remote location. In this case, the user's position, movements, actions, voice, etc. may be sensed, transmitted and duplicated in the remote location to bring about this effect. Thus information may be travelling in both directions between the user and the remote location.

(U) Turn-Based Strategy

(U) A type of game involving strategy where players move sequentially, one after the other (such as chess); compare to "real time strategy."

U**(U) Ubiquitous Computing**

(U) A combination of widespread input and output devices associated with everyday objects such that the ability to make use of computer capabilities is embedded in the environment (rather than restricted to specific tools such as a PC or cell phone).

(U) User Interface

(U) The means by which the user connects to the virtual world; can be a variety of devices including but not limited to a keyboard, game controller or head mounted display. Typically refers to the software configuration being used.

V**(U) Virtual 3D Realm**

(U) A synonym for virtual world.

(U) Virtual Currency

(U) Currency used in a virtual world. Can often be exchanged for "real" currencies such as Dollars or Euros. Examples are QQ Coins and World of Warcraft gold.

(U) Virtual Economy

(U) The economic environment created within a virtual world. Often has goals, such as game play balance, not usually attributed to real world economies.

(U) Virtual Environment

(U) A synonym for virtual world.

(U) Virtual Property

(U) Property owned in a virtual world. The property is usually considered intellectual property although there is a on-going discussion concerning the ownership of land and chattel in virtual worlds (for instance should the law of real property or the laws of intellectual property apply?).

(U) Vishing

(U) The criminal practice of using social engineering and Voice over IP (VoIP) to gain access to private personal and financial information from the public for the purpose of financial reward.

(U) Virtual world

(U) A common platform that allows for multiple users to connect for entertainment or business, allowing each user to communicate or collaborate with one another in real time over a network infrastructure. Includes both games and non-game platforms.

W**(U) Web 1.0**

(U) The early internet, characterized by static web page design and limited interactivity.

(U) Web 2.0

(U) A set of technologies and applications that are intended to enable efficient interaction among people, content, and data in support of collectively fostering new businesses, technology offerings, and social structures via the internet. The term is often used to describe the use of more dynamic and interactive internet technologies.

(U) WiBro

(U) Wireless broadband; Korea's version of WiMax.

(U) Wiki

(U) A collection of web pages designed to enable anyone who accesses it to contribute or modify content using a simplified markup language.

(U) WiMax

(U) A wireless broadband standard.

(U) World of Warcraft Gold

(U) Money used in the online game, World of Warcraft. While forbidden by the creators of the game, World of Warcraft Gold is freely traded on a number of unregulated markets and large numbers of Chinese and other non-US nationals make a living "farming" gold and selling it to westerners. This practice is called real money trade.



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 - Encourage interactions. A well functioning economy can motivate players to meet with each other for trade and work.
 - Motivate users. There are many possible goals in a complex game, just as in real life. Acquiring wealth will generally help a player along the road towards any goal they select. In fact, acquiring wealth can serve as a default goal when the game setting or the player's imagination temporarily fails.
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131

(U) For a good overview of how terrorist groups nowadays exploit the Internet, see Gabriel Weinmann, *Terror on the Internet: The New Arena, and New Challenges* (Washington, DC: United States Institute of Peace, 2006); and Philip Seib, ed., *Terrorism and the Internet* (New York: Palgrave, forthcoming); and Jialun Qian et al., "Analyzing terror [sic] campaigns on the Internet: Technical sophistication, content richness, and Web interactivity," *Human-Computer Studies* 65 (2007), pp. 71-84. For Islamist and jihadist exploitation of the Internet, see, for example, Gary R. Hunt, *Islam in the Digital Age: E-Jihads, Online Farwa, and Cyber Islamic Environments* (New York and London: Pluto, 2003); idem, *Virtually Islamic: Computer-Mediated Communication and Cyber Islamic Environments* (Cardiff: University of Wales, 2002); and the recent study by James Brunton, *Virtual Caliphate: Islamic Extremism and their Websites* (London: Centre for Social Cohesion, 2008), which is focused on the situation in the UK.

132

(U) "Terrorism Research Roundup: Not Much in Second Life," *Virtual worlds News*, 8 May 2008, available at <http://www.virtualworldsnews.com/2008/05/terrorism-resea.html>, internet, accessed 5 August 2008. In response to allegations that Islamist terrorists have been using SL to "recruit and mimic real-life terrorism," Linden Labs CEO Philip Rosedale said that "[w]e have never seen any evidence that there is any such activity going on." Cited in Eric Reuters, "Rosedale discloses FBI grieving probe to Congress," *Second Life News Center*, 1 April 2008, available at <http://secondlife.reuters.com/stories/2008/04/01/rosedale-discloses-fbi-grieving-probe-to-congress>, internet, accessed 5 August 2008.

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(U) See "Fighting the Front," *New World Notes*, 15 January 2007, available at http://nwn.blogs.com/nwn/2007/01/stonger_than_h.html, internet, accessed 5 August 2008; for this quote, as well as for other information in the paragraph. Cf. also Jacqui Cheng, "Political group's in-game presence sparks virtual war," *Ars Technica*, 17 January 2007, available at <http://arstechnica.com/news/ars/post/20070117-8643.html>; and Oliver Burkeman, "Exploding pigs and volleys of gunfire as Le Pen opens HQ in Virtual world," *Guardian* [London], 20 January 2007. According to this communiqué, which was actually issued on 5 December 2006 by the Front National de la Jeunesse (FNJ), the youth wing of the FN, the purpose of opening this FN office in SL was to "promote the candidacy of Jean-Marie Le Pen in the 2007 presidential elections...constitute a permanent representation of the FN [in SL]...gather [or rally] the members and sympathizers of the FN...serve as a party showcase for both the French and foreigners...[and] promote the presence of French and French-speaking organizations and companies in Virtual worlds, which have up till now been dominated by the Anglo-Saxons." See the French text in "Another SL First? French Extreme Right Political Party Opens Office in Second Life," *Second Life Herald*, 9 December 2006, available at http://www.secondlifeherald.com/slh/2006/112/another_sl_firs.html, internet, accessed 5 August 2008. According to a blogger named Anonymous Européen, however, the FN was not the

first French political party to enter SL, since the satirical Little Deauville Project, the HQ of a caricatured version of Ségolène Royal, an official of the Parti Socialiste, was founded in SL in mid-November of 2006.

134

(U) See, Chris Gourtay and Abul Taher, "Virtual jihad hits Second Life Website," *Sunday Times* [London], 5 August 2007, available at http://www.timesonline.co.uk/tol/news/world/middle_east/article2199193.ece, internet, accessed 22 September 2008; and Natalie O'Brien, "Virtual Terrorists," *The Australian*, 17 July 2008, available at <http://www.theaustralian.news.com.au/story/0,25197,22161037-28737,00.html>, internet, accessed 22 September 2008. Cf. also Hsinchun Chen, Sven Thoms, and T. J. Fu, "Cyber Extremism in Web 2.0: An Exploratory Study of International Jihadist Groups," chapter for *IEEE International Conference on Intelligence and Security Informatics*, forthcoming.

135

(U) Gourtay and Taher, "Virtual Jihad hits Second Life Website." One of those "provocative names" that was actually listed as such was "Irhabi007" ("Terrorist 007"), the moniker of a major al-Qa'ida-linked jihadist operative in Britain. However, in a subsequent interview Gunaratna claimed that his apparent suggestion that "Irhabi007" was also operating in the Virtual world, or that someone else with that same moniker was doing so, was the result of an error by *The Times*. For skepticism about Gunaratna's claims about jihadists operating in SL, see Wagner James Au, "Jihad and Second Life," *New World Notes*, 7 August 2007, available at <http://nwn.blogs.com/nwn/2007/08/second-life-and.html>, internet, accessed 22 September 2008.

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(U) DHS, Office of Intelligence and Analysis, *Virtual World Environments: Potential Extremist Tools*, 27 May 2008, pp. 4-5. Compare also Rita Bush and Kenneth Kisiel, *Information & Behavior Exploitation in Virtual Worlds: An Overview*, Office of the Director of National Intelligence report, 29 November 2007, which also emphasizes (on pp. 4-6) "virtual activities" such as collaborative learning and training, social networking, and "virtual economics," all of which could be carried out by terrorists. The authors then go on to list (p. 8) covert communication, training/rehearsal, money transfer/laundering, information warfare, and Denial of Service (DOS) attacks as specific activities in which terrorists could engage. Note, however, that apart from the use of "virtual people" (p. 4), i.e., avatars—including "bots"—most of the above-listed activities are identical to those that terrorists already engage in on the Internet. In that sense, Web 2.0 offers them the same types of opportunities as Web 1.0.

137

(U) For more alarmist predictions, see Dan Verton, *Black Ice: The Invisible Threat of Cyber-Terrorism* (New York: McGraw-Hill, 2003).

138

(U) Weinmann, *Terror on the Internet*, pp. 49-110 (on the "communicative uses" of the Internet), 49 (quote).

139

(U) *Ibid.*, pp. 111-45. On the subject of networking, Weinmann and others have emphasized how the Internet, given its reduction of transmission time and costs, is especially well-suited to the "new" loose, decentralized, horizontal, segmented, and flexible types of terrorist organization, such as al-Qa'ida, in which incitement and inspiration rather than direct hierarchical control is paramount. See *ibid.*, pp. 114-17. For a case study, see Merlyna Lim, *Islamic Radicalism and Anti-Americanism in Indonesia: The Role of the Internet* (Washington, DC: East-West Center, 2005).

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- 142 (U) See Integrated Threat Assessment Centre [Canada], *Cyber-Terrorism: Terrorist Use of Online Gaming*, 25 June 2008, p.1 ("Key Points") and *passim*. Cf. the even greater skepticism expressed by Juan Cole, "Osama bin Laden's 'Second Life,'" *Salon*, 25 February 2008, available at <http://www.salon.com/opinion/feature/2008/02/25/avatars>, internet, accessed 5 August 2008.
- 143 (U) See Roderick Jones, "MetaTerror: The Potential Use of MMORPGs by Terrorists," *Counterterrorism Blog*, 1 March 2007, available at http://counterterrorismblog.org/2007/03/metaterror_the_potential_use_o.php, internet, accessed 5 August 2008; responses to Jones' article can be found at "The Potential Use of MMORPGs by Terrorists, Part II," *Counterterrorism Blog*, 12 March 2007, available at http://counterterrorismblog.org/2007/03/part_ii_of_metaterror_the_pote.php, internet, accessed 5 August 2008. For a conference organized by that same blog site on this same theme, see Andrew Cochrane, "Event Transcript and Related Links: 'Meta-Terror: Terrorism and the Virtual World,'" *Counterterrorism Blog*, 7 March 2008, available at http://counterterrorismblog.org/2008/03/event_transcript_and_related_l.php, internet, accessed 5 August 2008. See further: Jones and Michael Schrage, "Jihadinets," *Counterterrorism Blog*, 17 December 2007, available at <http://counterterrorismblog.org/2007/12/jihadinets.php>, internet, accessed 5 August 2008; and Jones, "Virtual Assassination as a Counterterrorism Tool," *Counterterrorism Blog*, 28 May 2008, available at http://counterterrorismblog.org/2008/05/virtual_assassination_as_a_cou.php, internet, accessed 5 August 2008.
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- 207 (U) Katz v. United States, 389 U.S. 347 (1967).
- 208 (U) Beyond the current scope of this analysis is whether warrantless wiretaps of hybrid US and foreign conversations are constitutional and permitted by FISA as amended by the Patriot Act, and again in 2008. Although this is a serious question, it is not one unique to Virtual worlds.
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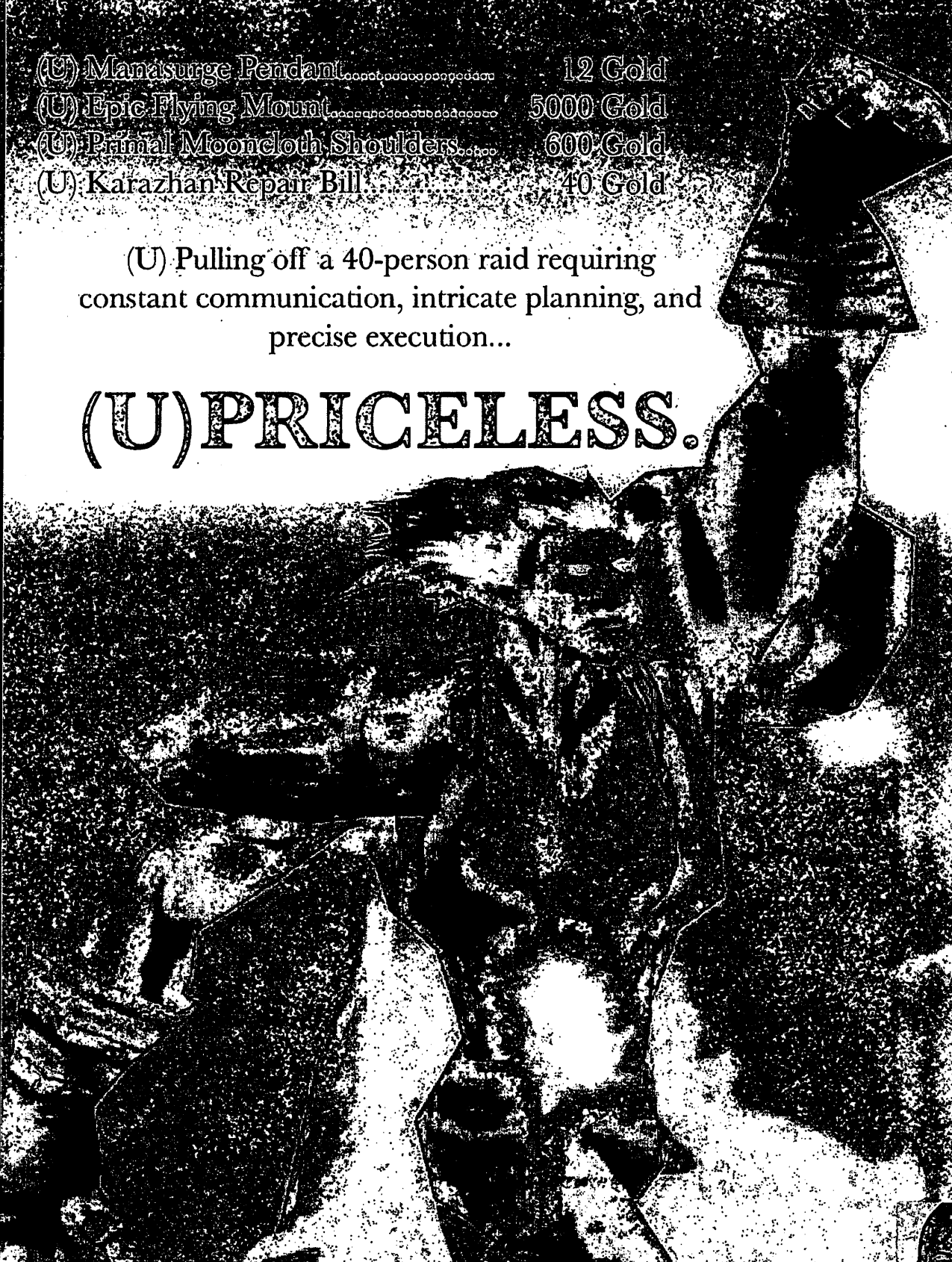
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