



Virtual World: Applications and Issues

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ABSTRACT

We live in a fast changing world. From stone to bronze to iron to atomic and space age, we have now entered the information age. Convergence of technologies has shrunk the world and eliminated geographical boundaries. The latest emergence in Information age is that of Massively Multiplayer Online Worlds (MMOW) some of which are modelled as fantasy games with predefined objectives and yet others that are a model of real world itself are kept open ended. Residents of these worlds socialize, collaborate, explore, build and even trade virtual goods and services. These worlds have a thriving economy involving real money. There are major commercial, socio-psychological, educational and other implications of these trends. We are hereby, trying to summarize the challenges and prospects opening up through these Virtual Worlds.

KEYWORDS

virtual worlds, synthetic worlds, multi-user virtual environments, online games, virtual reality, human computer interaction, Second Life

Introduction

Virtual worlds like second life, There, Active World, World of Warcraft are taking convergence of technology to new heights. Basically meant to be computer based, simulated, immersive environment, they have evolved from mere games to an alternate reality. Businesses, media houses, museums, universities and governments are reaping benefits from collaboration opportunities offered by these platforms. While some of these Multi User Virtual Environments (MUVE) target specific demographics or functionalities, others are more general purpose. Starting from text based collaboration interfaces; they have come a long way today including 3D simulations, Animation and sonic Overrides, a series of GUI controls etc., the most exciting innovations among these being the latest Google Goggles and 3D printers. MUVEs are also referred as Collaborative Virtual Environments (CVEs), or Immersive Virtual Environments (IVEs), massively multiplayer online role-playing games (MMORPGs), Massively Multiplayer Online Games (MMOGs), etc. Users inhabit these worlds and interact with each other via their virtual personalities fashionably called Avatars from the Sanskrit word meaning reincarnation. There are real or fantasy world rules such as gravity, topography, locomotion, real-time actions, communication etc. These new spaces would especially benefit people that are cut off from the opportunities offered by the real world, for instance bed ridden or otherwise disabled patients or those confined by geographical or social limitations who cannot step out into the world can step into these alternate realities and have the whole world come to them instead. Although there is no strictly agreed on definition of virtual world, some of the desired defining properties are[1]:

- 1.) Synchronous and Real Time: It cannot be paused or cease to exist. It is continuous, being a shared collaborative platform, it continues its operation whether or not a particular user is 'logged into' that world. A single participant is not the center of this universe but another piece in a dynamic community.
- 2.) Representation as avatars: How a user chooses to identify oneself or their puppet representation in this world thus making the world more intuitive, more emotionally enriching and engaging.
- 3.) Using Network as backbone: Although simulated worlds can be built using pen and paper but the scale of data

management possible though networked computers cannot be achieved by any other means, surpassing imagination and boundaries.

In this paper, we are listing the areas of applications and the trends in this technology concluding with some of the precarious aspects of this new era.

II. AREAS OF APPLICATION

Other than the traditional entertainment based applications of role playing video games and social networking for socially isolated people such as hospitalized patients or otherwise secluded or incapacitated people, virtual worlds have opened up following avenues:

A.vEducation and Training

Perhaps the biggest power of virtual world is in enhancing the quality of education. The successful integration of these environments would come about when they are used as a means and not the end of pedagogical process, i.e. studying and guidance imparted by teachers, still remain the most important facilitators in the learning process. Perhaps the most important impact of these worlds would be on the most discounted for sector of distance education oxymoronically by eliminating distances.

Key goals served here are via[II]:

- 1.) Creation of learning communities that are not just for students but for teachers as well.
- 2.) Providing vivid experience via appropriate use of new technologies: Using technology for multiuser collaboration or modelling 3D worlds, learning can be made fun. The classroom teaching which might not be stimulating enough for some students could be replaced by more appealing setups modelled via these worlds. For instance engaging science experiments[III] that might be difficult or unsafe to perform in real world; teaching history by experiencing it by emotional immersion into the historical contexts in real time. Similarly other subjects like geography, mathematics and literature could be explored via these worlds more immersively thus promoting learning by doing rather than rote learning and only listening.
- 3.) Promoting socially responsible behavior[IV]: MUVEs including Role Playing Games (RPGs) provide opportunities for learning social skills such as meeting new people, leader-

ship and managing groups of people by coordination and cooperation by making it instrumental that users/players expand their social horizons via sociable interactions in order to accomplish certain quests. There is always something to talk about in these quest based worlds, chat interfaces enable mediated interactions with a longer response time and without the awkward pauses, moreover, there is lesser fear of failed interactions due to the anonymity offered by the avatars, there is no real stigma. Speaking in a separate context, if supervision is required, by a little tweak of code, the virtual world activities can easily be made monitorable.

- 4.) Specialized training: Virtual world environments are used for Military, security forces, intelligence agencies and other special training purposes, which might be hazardous carrying out in reality. On the other hand, these spaces are also used to impart cost effective corporate training by companies and by business schools.
- 5.) Architecture and modelling: Blueprints can be built by exploiting the 3D and 2D modelling capabilities provided by the virtual worlds. One could take a virtual tour of building still in design phase. Museums like Louvre and other art galleries have virtual presence, offering virtual exhibitions and tours. People can build their own exhibitions using VRML- Virtual Reality Modelling Language. Some enhanced softwares like Apple Computer's QuickTime VR used to create virtual spaces by combining a set of still photographs. The final product is a three-dimensional photograph that the viewer can move through, in and around.
- 6.) Science and Medicine research: The virtual worlds have tremendous opportunities for collaborative research using various modelling tools and latest technologies for visualization.

Cutting edge classrooms and digital libraries are revolutionizing the way education is delivered today, for this reason many universities, schools, laboratories and private businesses notably among these the public-private sponsored site WhyVille (an educational platform for kids) are exploiting the opportunities offered by virtual worlds. This list includes many schools and universities of multiple countries, such as National Physics Laboratory(UK), Harvard Law School, Georgia Institute of technology, MIT, Illinois Alliance Library System etc.

B.Business, Professional Services & Research

With the success of e-commerce, businesses have realized the importance of staying abreast of latest in technology. Today many businesses have an active telepresence. Some of the ways businesses benefit with presence on virtual worlds like second life are:

- 1.) Advertising and Market Research: Providing customers with a virtual tour of product ranges helps with feedback enabled advertising.
- 2.) Collaboration: The businesses are also actively using these platforms for virtual collaborations, for example- setting up a virtual meeting between participants across geographical or political boundaries thus increasing productivity and decreasing costs of doing business.
- 3.) E-commerce: Virtual world is not just a fantasy space anymore; it is a smaller version of the real world with real rules and even a thriving economy of their own. Some virtual worlds have currencies of their own like SecondLife by Linden Labs has Linden dollar exchangeable for a fraction of US dollar via SL Capital Exchange, SL Investor's Bank etc. Content in such worlds is user generated and people can trade it in open markets with real taxation associated. The shopping capabilities may be provided via a minibrowser or a link connecting to shopping portal. These worlds are reflections of real world and the real world brand's virtual representations are as popular with the residents. Such virtual goods not only work at enhancing image or social status, but might also add some intrinsic value to the user experience.
- 4.) Specialized functions: Some businesses reap specialized benefits from the virtual environments for example travel and leisure.

Some businesses having presence in the popular virtual world

are: ABN Amro bank, SAP, Adidas, Reebok, Sun Microsystems, IBM, Dell, Toyota, Apple etc.

C.Popular Media and Journalism

These mirror images of real world have witnessed concerts, fashion shows and digital storytelling by small and big names. ABC News, Reuters, Disney, popular Rock bands, popular names in fashion all have telepresence by now.

Journalism does not intend to be left behind. With the access to VR tools, the users would be able to get immersive out of body experiences like exploring a refugee camp or investigating a bombing site eliciting empathy even from the most indifferent of viewership [V]. Disaster management training and education on protection from pandemic crisis such as Ebola could be imparted through these portals.

Religious organizations are also recording their presence in these worlds sharing their vision and expanding their reach, e.g. modelling the Islamic Hajj pilgrimage. On the other hand, some virtual worlds have developed alternative religions of their own. Some gamers of these worlds report having transcendental experiences by being more than themselves and engaging in heroic experiences over long duration as discussed by Robert M. Gera[V]. Whether these experiences are results of addiction or revelation is an open question.

D.Diplomacy and Government

Embassies of various countries have entered the virtual world for guidance regarding visa, trade and and other information.Taxation of virtual world property and government investment in virtual world research demonstrates the government's stake in the mirror world. Moreover, there have been controversies that these worlds are training and facilitating grounds for terrorist activities, so from national security point of view as well, the governments are interested in monitoring the virtual activities.

III.Ethics and Issues

The massive scale, virtual elimination of geopolitical boundaries, involvement of real money and different stakeholders imply legal nightmare and naturally, a need for order and identification of the rules arises.

A.Legal and Jurisdiction Issues

Clearly, businesses have a stake in the respective Virtual Worlds. Many people are earning their livelihoods running virtual businesses. In the particular case of Second Life, its users fearing that their alternate universe might slip out in the hands of big conglomerates, destroying what had by now become sacred for them, launched Second Life Liberation Army. They undertook virtual protests burning virtual goods in front of the big brand's stores inside the Second Life, wrote real world petitions to the owner company, whose stake in the world is dependent on keeping the users happy. Government too has a stake in these worlds, which brings us to the question on who is running the show? The businesses, the company that owns the software, the government or the majority of residents of these worlds?

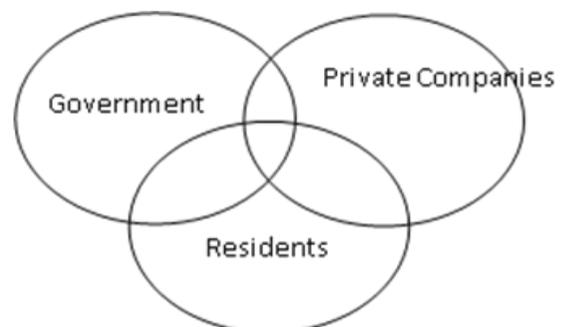


Fig.1. Source-[VII]

Another conflict arises from the fact that though the software comes under jurisdiction of the government where the owner

company is located but the participants being spread across different nations just like the internet, so the activities come under jurisdiction of the participant's countries as well. Then there is the issue of copyright and claims, whether or not the content created in these worlds must be considered Intellectual property, who has the copyright etc. are the questions that need to be addressed clearly. Moreover, many practices in cyberspace are untested in courts. This concern becomes all the more important when concerning activities of commercial nature.

B. Enterprise Security and Reputations

A world created on software involves software 'pathogens' and other IT-related security risks. Due to sheer size of the cyberspace, despite the best practices and technologies regarding confidentiality, identity authentication etc. the risks cannot be completely eliminated. In addition, they would in turn pose risks to brand and reputation management

C. Addiction and Health

- 1.) **Addiction:** The Virtual worlds are usually not objective based and even if they are, they are created so as to have a never-ending nature unlike traditional games. People have larger than life capabilities and missions thus making their lives more fulfilling, the personal gratification received from these worlds makes a user come back to them repeatedly and sometimes it becomes akin to drug problem. People are known to have lost jobs, relationships, homes in pursuit of 'virtual happiness'.
- 2.) **Detriment to physical and emotional well being:** Prolonged exposure to the virtual worlds may cause serious health issues like vision impairment, obesity, disorientation and nausea. Although previously in this article we stated that immersive experience can elicit strong emotional empathy, prolonged exposure on the other hand could lull the imagination and numb sympathetic feelings.
- 3.) **Damaging to the moral and psychological development of kids:** Though most of the virtual worlds restrict their users age but as parental controls slip slightly, the children could be exposed to adult content and obscenities. Some of the kids targeted virtual worlds overexpose children to commercial messages. In addition, the addictive nature of some of these worlds results in kids spending money without their parents' knowledge.

D. Terrorism & Propaganda wars

As already pointed out when discussing immersive journalism, virtual world technologies could be used to elicit empathy or rage and other strong emotions from the user by placing the user in real news context. But what is real news? The MUVE platform could be exploited by fanatics to start spreading propaganda, constructing augmented realities. Such 'mind control' or 'emotional exploitations' have ramifications for the real world. Already, it is believed by many that terrorists use these platforms actively. They can also be used to transfer real money illicitly [VIII].

IV. Conclusion & Future

From cave paintings to virtual realities, humans have come a long way. The full implication of Virtual Worlds will be visible in not so far off future, will it liberate us or enslave us? Already millions of people are spending considerable number of hours per day in these parallel worlds. Some people have experienced such strong lasting relations to these worlds that they wish their brains could be mapped to the software, with their bodies peacefully resting in pods outside as in science fiction scenarios. In another picture, these synthetic realities could enrich our lives. Some people would use these worlds for their own nasty ends while others would use it for constructive and healing purposes. In this complex tug of war going on since our origins between good vs evil it will be interesting to witness the human dignity being on the winning side.

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