Beyond the Internet: Exploring the Business Potential of "Virtual Worlds"

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Beyond the Internet: 
Exploring the Business Potential of "Virtual Worlds"

By the participants of the "Leveraging Groupware & Multimedia in Business" course (see www.insead.fr/Programmes/MBA/LGMB/Participants), INSEAD, Dec. 1996.

(1) Introduction

Virtual worlds promise to revolutionize the way individuals engage in social and business-related interactions via electronic means, making it possible for everybody to create 3-D environments in which distributed groups of people can "move", "communicate" and "interact" as if they were sharing the same physical space.

(1.1) Virtual Worlds vs. the WWW

The World Wide Web, and Gopher before it, brought an element of interactivity to an essentially static distributed document system. By providing for hyper linking, these systems allowed the user to conceptually arrange information to fit their personal needs. This "hyper archical" system, proposed by Bush and Nelson, allows the underlying data structure of the archives to be hidden under a collection of semantic organizations. In addition, the Common Gateway Interface added server interactivity to the database, providing an element of dynamism to documents, as well as making scarce or remote services available through a unified interface. These developments make the web ideal, and intuitive, for self-paced research, learning and, ... do business. An alternative exists in text-based conferencing, but the lack of graphical ability has until now limited the use of these systems to disciplines which survive in a graphically-starved environment. In particular, they have not been significantly used by science and business, until web servers became viable sources of support materials. There is a strong need to combine the collaboration inherent in systems such as the MOO, with the user interface presented by the Web, in such a way as to allow diverse use, and varying levels of detail. Preserving the client independence and hyper linking of the web will be a desirable feature as well. Such a fusion occurs in Virtual worlds such as Alphaworld and provides a useful setting for meaningful interaction with intelligent agents, programmed demonstrations, teaching software, marketing and transaction rich environments. Virtual worlds can be used as a marketing and presentation tool by allowing real time interaction with a model. The client can control what they look at and where they explore. The future of communications and interaction on the WWW is here, in spite of all the problems that still persist of which the internet bandwidth is not the lesser one, and as future business/marketing managers we can not afford to let this technology pass us by.

(1.2) Worlds Inc.: A Major Player

Worlds Inc. is the leader in 3D virtual reality worlds for the Internet. It licenses a complete suite of 3D Internet technology that includes a browser, authoring tools, and server software. Worlds has already gotten an impressive customer list. Some of their major customers are Absolut Vodka, AT&T, Escot, IBM, MGM, National
Information Infrastructure, Nokia, PC Magazine, Sony Pictures, Starbright Foundation, Tandem, Ungermann Bass, Interior and Visa. Worlds Inc. has publicly announced strategic investments from the following companies: Knowledge Adventure, Nissho Iwai, Pearson plc, Tandem Computers, Toppan Printing, Visa International.

Worlds has negotiated a partnership with the United States Information Agency to create a Digital Resource Center for USA libraries. The Smithsonian Institution and Library of Congress have announced their support of this platform. In addition, the Department of the Interior is developing a section of Yellowstone National Park, the Old Faithful area, in Active Worlds technology. Worlds is also building strong international ties by establishing partnerships around the world. Nissho Iwai and Toppan Printing in Japan has already established a customized Japanese version of Worlds Chat. Worlds has recently completed distribution agreements Voyager, the largest Internet Service Provider in New Zealand. Worlds is also currently in negotiations with Oz-Email of Australia, The Olivetti Group of Italy and Asia Online of Hong Kong.

(1.3) AlphaWorld: Worlds' most populated Virtual World

AlphaWorld was launched October 14, 1996. It is a user-modifiable 3D multi-user environment on the Internet, combines 3D graphics, Internet chat and multi-user avatar technology to empower virtual citizens. Unlike the millions of static 2D Web sites that crowd the Internet, AlphaWorld is a dynamic place where users can chat with other people, express their personality and mood, stake a claim to build their dream home, take a walk, or attend virtual events. AlphaWorld is the first 3D multi-user virtual world that enables users to modify their environment (using a newly launched Development Kit), thus keeping the experience fresh and new as the world evolves. Since the beta launch last year, more than 100,000 people have taken up citizenship in AlphaWorld. Citizens are represented in the virtual environment by 3D avatars that are visible to other users. Worlds has licensed Voxware technology to add point-to-point and multi-party voice capabilities into AlphaWorld. This means that users soon will be able to speak to one another instead of using written text as today. AlphaWorld is the first community in the Web-of-Worlds, a linked network of 3D virtual worlds that form a 3D World Wide Web, and serves as the home world and jumping-off place to other Web-of-Worlds communities. A virtual version of Yellowstone National Park, the University of Cincinnati's on-line campus, and a taste of Scandinavian sights and culture in Arctic Light, are all accessible through AlphaWorld. Currently, users can access 25 virtual worlds in the Web-of-Worlds. October 14, 1996, Worlds Inc. launched the Land Grant University program to provide universities, professors and teachers with the Active Worlds Development Kit to allow them to create 3D multi-user educational environments. Universities will use the 3D development kit to create virtual classrooms and educational applications that will allow teachers and professors to shape a new educational metaphor, independent of geography, using the Internet.

AlphaWorld also addresses the needs of the business community, with electronic commerce, interactive marketing and a whole new paradigm of strategic communications. AlphaWorld works on today’s PCs using today’s modems, and is currently free. A virtual version of Yellowstone National Park, the University of
Cincinnati’s online campus, and a taste of Scandinavian sights and culture in Arctic Light, are all accessible through AlphaWorld. Although still in beta, several **third parties** have contributed to the AlphaWorld experience: Sony Pictures continues to promote its movie Jumanji within the space, PC Magazine hosted a cybercast of its Technical Excellence Awards from AlphaWorld, and a marketing class at Harvard Business School built a series of prototype online businesses within it as part of their course work.

But in addition to Worlds Chat and AlphaWorld, Worlds’ has created **custom applications for a number of corporate customers**, including a 3-D multi-user interactive game for MGM, based on the television program Outer Limits; a virtual online banking web site for Visa; and a virtual play space for hospitalized children as a corporate sponsor of the Starbright Foundation.

Further, in keeping with its “total solutions” philosophy, Worlds is establishing partnerships with many leading technology companies to further enhance the usability features of its technology. And Worlds is working with the leading electronic commerce developers to pioneer secure, practical applications that will foster consumer confidence in online transactions.

Worlds Inc., the leader in Internet Virtual Reality, has new strategy to increase the prominence of 3-D multi-user technology on the World Wide Web with it’s **‘Active Worlds Family’**. This new family of developer tools and servers enable companies to build 3-D multi-user web pages, business applications and virtual environments. By combining three main components: licensing tools and servers, 3-D multi-user application services and custom production with aggressive international and domestic strategic partnerships, this technology enables the creation and use of 3-D multi-user virtual environments around the globe.

**‘Moving Worlds’**, a proposal for the next generation of the Virtual Reality Modeling Language (VRML, will bring multimedia and multi-user capabilities to the emerging standard for 3-D Web-based environments. The ‘Moving Worlds’ implementation will eventually move the existing VRML specification forward with such new features as multi-user capabilities; full motion; live content and animation; physical behaviors; importation of 3-D objects into HTML; enhanced audio features; and the ability to connect with databases. With these added capabilities, VRML has the potential to move beyond the relatively lifeless spaces created to date, to more dynamic and interactive environments that fully take advantage of the “Internetworked” computers.

Among the other industry leaders joining Worlds Inc. in supporting ‘Moving Worlds’ are IBM, Silicon Graphics, Netscape Communications, Sega of America, Electronic Arts, America Online and many others from the multimedia and Internet fields. This broad support positions ‘Moving Worlds’ as a likely successor to the existing VRML protocols as VRML 2.0.

**The Active Worlds Development Kit**, the first 3D toolset for building and viewing dynamic multi-user 3D virtual worlds on the Internet, will let users modify virtual communities online. 3D virtual environments created using the Active Worlds Development Kit will link together to form the Web-of-Worlds, a network of 3D virtual worlds that form a 3D World Wide Web.
As the CEO of World’s Inc once pointed out, building a compelling and dynamic presence on the World Wide Web is vital to business success. 3D multi-user environments provide a **compelling complement to traditional websites**. They draw people in, keep them coming back and involve them as never before. Now World can provide 3D environments built with the Active Worlds Development Kit which are richer and more engaging than 2D sites and link with other 3D user-modifiable virtual worlds to form the Web- of- Worlds. In addition, Worlds has licensed **Voxware** technology to add point-to-point and multi-party voice capabilities into its development platform, the Active Worlds Development Kit, and to integrate the technology into its 3D multi-user applications, Worlds Chat and AlphaWorld. Voxware’s innovative MetaVoice technology incorporates a voice code that creates an accurate, mathematical model of human speech and the VoiceFonts allows users to alter the pitch, tone and character of their voices and to transform them to selected “character” voices. Integration of voice capabilities is expected to add powerful communication capabilities and thoroughly enhance online experiences. For example, with this new voice capability, Worlds will be able to host more enhanced virtual events in Worlds Chat and AlphaWorld, including plays, speeches and forums.

### (1.4) Worlds’ Competition & Business Environment

Worlds Inc. competes directly with several other prominent makers of software for chats within Web-based worlds, including The Palace and OnLive!. CompuServe also offers its WorldsAway virtual space. *(PC Magazine—Trends On-line: A Universe of Virtual Worlds (7/3/96))*

**OnLive!** offers client and server software based on the company’s revolutionary multi-user voice technology. OnLive! products turn any web site into a community by enabling groups of people to socialize, communicate and collaborate with their own voices across the Internet. *(http://www.onlive.com)*

**The Palace** is different from other services in that worlds built with The Palace software are 2-D, not 3-D. According to officials at the Palace, performance is the reason for the 2-D choice. Among the companies building chat rooms based on The Palace's software are: Fox Television, Fox Film, Sony Pictures, MTV, SonicNet, Capitol Records, and New York's Tunnel night-club. Intel has announced in June that it has made an investment in The Palace. *(http://www.palace.com)*

The buzz surrounding virtual worlds on the Web has also created a software standards race. A consortium is backing VRML+, a proposed extension to the VRML virtual-reality language—which would support real-time interaction between on-line users in 3-D worlds—but agreements are being reached slowly. Meanwhile, the existing software providers for virtual worlds are carving out their own standards. The sites for The Palace, Worlds, and OnLive! all include extensive information on proprietary standards for virtual worlds. Both The Palace and OnLive! support audio-based chats, while Worlds will offer audio soon. VR Headsets, Data Gloves or even Overalls will be another step forward to increase the real life experience. Will we all end up sitting in a couch and experience life from there?
Cybertects are environmental designers of both the real and virtual worlds. They primarily utilize digital media to conceptualize, generate and produce their work (digital modeling, rendering, animation, imaging, graphics and hyper media- including home page design. For more information, see http://www.leonardo.net/cybertects or http://www.onuma.com.

(2) Business Implications

Overall, Virtual Worlds today appear to have potential, but also strong limitations. With the current state of technology virtual worlds seem more a playful gimmick than a way to produce commercial value. However, the future will not only bring better hard and software, but also a better understanding a new ideas of how such a new infoworld/virtual world could be useful. To make a concrete example, let's say that an infopreneur wants to create a virtual trade show using AlphaWorld. The objectives would be to reduce costs (of setting up a booth, taking the plane, taking the time, etc.) and to relieve the pain of traveling. This is the way in which Virtual Worlds would improve the service of organizing a trade show along the ICDT dimensions:

Information:

- Booths would be much easier to find (perform a search and teleport there),
- Brochures would be downloaded directly in customers' databases,
- Basic sales pitches would be replaced by information posted at the booth entrance, allowing salespeople to go directly into a more customized discussion with the clients.

Communication:

- Interactive discussions could take place either privately or with several people,
- People would not feel annoyed by aggressive salespeople (they could keep their anonymity),
- Conferences could take place, be recorded and placed wherever deemed necessary,
- Demos of software products could be performed online.

Distribution:

- The trade show would be open mindless of time zones and borders (one trade show for the whole world at the same time),
- Brochures would be made available more seamlessly,
- Software products and demos could be made downloadable.

Transaction:

- Electronic commerce would be possible (with the necessary security guarantees).
As can be seen, an existing service could be facilitated by this technology. But would people adopt it? Notably: Would they be satisfied to meet people only virtually? Would they trust the vendors? Would the trade show be more efficient in terms of visibility? Would it create enough traffic? Would the visual identity of the firms be respected? Actually, would a trade show still be necessary? One could imagine that organizing an event would be useless, since salespeople could hang out at scheduled times throughout the year in AlphaWorld in order to meet clients. That is, the booths would be permanent.

More generally, one can feel that those new technologies, such as AlphaWorld, put usual practices into question. There is no, or little, added value if one only tries to reproduce an existing service on a new medium. The medium itself changes the service in its very nature. That is where our imagination is weaker than technology: We still don't know exactly what to do with AlphaWorld! And that is why technology can drive business strategy.

(2.1) New Management Interaction & Collaboration Spaces
(internal, teams, customers, etc.)

A Collaborative System, for our purposes, is any mechanism that allows computer-mediated collaboration between a number of people in a manner not restricted by the geographical location of the participants. Such systems may consist of mono- or multi-media content, and make use of interpersonal communication mechanisms ranging from text to full motion video with audio. Current bandwidth limitations mean that the popular mechanisms use mainly text-based collaboration, although audio conferencing is becoming possible through effective compression. Alphaworld is a system that already offers this functionality today and is especially suited for collaborative applications.

3-D framework enables interactions that are currently "flat" to be made more lifelike, such as chat groups that are currently conducted on the telephone or internet. Corporations such as multinationals will be able to drastically reduce the travel cost and time in order to communicate effectively internally, with clients and with suppliers.

Currently, the virtual world is used as a chatbox by private individuals, which allows real time communication. We could see commercial use to that respect, that companies “listen” to conversations or initiate them and use the gained information as primary market research, e.g. comparable to focus groups. We see the problem, how the company first of all can attract virtual world visitors to its site and secondly can have them discuss certain issues.

A participant's VAE (Virtual Alter Ego) meets in a virtual room, tastefully appointed with realistic-looking virtual furniture, plants, chairs -- all computer generated. Each participant at the meeting sees the other participants as their computer-constructed persona. They see people that look as real as any on the street, and likewise they are seen as real. As mentioned above, the Internet will need to become more reliable and increase its speed before it becomes a true substitute to business meetings.
We believe that all of these are converging to the ultimate model of the "Virtual Corporation". This is not to say a virtual company! Look at operations such as: The Canadian Virtual Worlds Society (anima.wis.net) and The American Virtual Worlds Society (hitl.washington.edu)

(2.2) New Information Location/Search Approaches

The virtual world could replace the information search function of the internet (or the yellow pages for the telephone), if there were sign-posts that lead to other sites of interest (web pages). The virtual world sign-posts could allow to find information both in a logical and an accidental way, just like looking up a word in an encyclopedia or just browsing through. The virtual world could be set up identically to real cities (like London or NY) and the sign posts would lead to shopping sites, libraries and so on.

Virtual worlds may attract a larger amount and wider variety of customers. A virtual world, in fact, could/should come closer to real life, which will eventually reduce the barriers for older people (or simply anyone who is not a Tech-Head). Take a 55-year old lady who wants to buy a plane ticket from LA to Paris. So far, the lady was reluctant to use the internet since she felt intimidated by the complexity, hence, she always went to the local travel agent. With a virtual world (always up and running in her apartment), she would find her way to a virtual travel agent and do her business through the computer. The virtual communication space would be a new and more realistic mean to provide information, services, and products to the final customer. Our lady could in fact meet someone from the travel agent in the virtual world (talk to them and see them) without having to physically go to the travel agency.

(2.3) New Learning & Knowledge Sharing Spaces

For learning and collaboration, as well as for the most part of business settings, something more than just the ability to converse is required. A means to illustrate the concepts being discussed is paramount. A sense of 'location'. Internet bandwidth restrictions prevent useful adoption of video technology, but voice conferencing could be considered. World Wide Web integration is of great significance. All this means that a combination of the Web, a chat system, a shared visual environment, and voice conferencing, forms an important part of a collaboration, be it for business or distance learning purposes. However, a high degree of tool interconnectivity is required, which Alphaworld does not present yet.

A new project, called the Virtual Information Resource Center (VIRC), will allow students, educators, and businesses to connect from anywhere in the world via the Internet to a 3-D multi-user environment. VIRC will combine Worlds Inc.’s industry leading capabilities in multi-user 3-D environments with USIA’s expertise in distributing and disseminating information across cultural and linguistic lines. The partnership will develop an environment that is available to users worldwide and will feature full compatibility with the standard for Internet-based 3-D, VRML 2.0 and Java, to make it as accessible as possible. In addition, the project offers optimizations that allow true interactivity through multi-user capabilities that enable VIRC to come to life with the people who enter it online. The end result will be a virtual environment that users access through their computers to gain the latest information and interact with other people from anywhere in the world. This partnership between World’s and
USIA promises to open up the vast informational resources of the US Government for businesses, schools, and individuals worldwide. It enables the USIA to have a virtual USIA office accessible from anywhere on the globe, so that even as budgets and levels of staffing shrink, reach actually increases in ways unimaginable just a few years ago.

Universities, professors and teachers are to be provided with the Active Worlds Development Kit to allow them to create 3D multi-user educational environments. Universities will use the 3D development kit to create virtual classrooms and educational applications that will allow teachers and professors to shape a new educational metaphor, independent of geography, using the Internet. With this technology, educators can create schools and universities where the whole world can be the student body. Students and teachers from around the world can build and co-habit virtual worlds just as they currently use conventional classrooms. Several individuals within universities have already begun creating virtual classrooms using Worlds’ technology. A Harvard Business School class created virtual businesses with supporting business plans in Worlds’ AlphaWorld 3D virtual environment (PC Magazine—Trends On-line: MBAs Tackle Internet Commerce (2/20/96)). Other groups have begun building 3D virtual environments using a beta version of the Active Worlds Development Kit, including Victoria University in New Zealand, Intercollege in Cyprus, INSEAD (located on AlphaWorld at 0N 2100W), the leading European business school. Virtual technology is enabling educators to experiment and create virtual environments that meet the requirements of their individual universities, professors, and courses. The virtual world presents exciting opportunities to extend education outside of the classroom, and allows students to interact with world-class educators and businesses in an international context.

(2.4) New Marketing & Presentation Channels

Virtual worlds can be used as a marketing and presentation tool by allowing real time interaction with a model (e.g. the automobile example which can be found in www.carpoint.msn.com. If you are planning to buy a new car, leveraging your signing bonus you may want to try this site where you are allowed to see animated versions of the cars interiors, controlled by you). The client can control what they look at and where they explore. Virtual worlds can be used as a communication tool because they allow people from different parts of the world to view your proposal in real time. There can be 100's of people viewing your virtual world at one time. The potential for feedback is phenomenal.

We expect Alphaworld-type applications to expand significantly the Communication and Information dimensions with respect to existing “market-space”. The key features which will allow this are: possibility of one-to-one interaction as opposed to broadcasting, multimedia support (soon voice, video, etc.) and the easy to use customer interface which allows intuitive use. Transactions, negotiating and making deals, will also benefit, mainly because an easier interaction can ease the build of trust, even though we do not expect a boom in sales through this type of platform because a lot of psychological barriers are still in place.

Key issues determining the adoption of Virtual Worlds technology in the marketing area include:
• Virtual Worlds provide a platform for electronic commerce. A key issue here is the choice between human and electronic seller (technological possibility of having an intelligent SW deal with customers and social implications).

• Virtual Worlds provide a platform for "virtual" events, in which a high number of perspective customers would be invited to pre-scheduled meetings. This could be very effective to promote the release of new products, especially in sectors with high rate of innovation, such as computing etc.

• Virtual Worlds provide a good opportunity to display multimedia information; particularly appealing for products in which spatial examination is important for the perspective buyers: furniture components which can be assembled in different ways, industrial sub-components, etc.

• Virtual Worlds potentially enable people to visit your office to experience the environment, meet the people and to get an idea of what the company is like. This could be very useful for recruitment, for selling your company, for journalists to visit to get information for articles etc.

• Virtual Worlds are already used for advertising purposes - advertisements can be seen e.g. for PC World. Worlds can be constructed in such a way that it takes a participant some time to move around, constantly exposed to ads. One question is how to draw attention to your marketing tool? For a novice at least, it is currently a fairly haphazard process to travel around a Virtual World. As the number and scale of worlds increases, it is likely to become more difficult for a marketer to gain visibility/"SOV".

• Virtual Worlds are also potentially good for displaying any type of "visual"-rich product e.g. travel brochures (they could be used to give a prospective visitor an interactive tour of potential locations), landscape or any other design (houses, kitchens, whatever).

• Virtual Worlds potentially smooth cost barriers which in the real world keep the small players out - "location, location, location" would no longer be the cry of retailers!

• Virtual Worlds potentially allow for simultaneous visual demonstrations to accompany spoken explanations and thus has the potential to limit confusion. Especially significant if communication is across cultures and languages

A last key issue is the significant re-engineering of existing sales processes necessary for companies willing to leverage Virtual Worlds for marketing purposes, as well as potential conflict with other sales and marketing channels.

(2.5) New Modeling & Design Channels (Architecture/Engineering)

Virtual environments as a modeling and design tool is not a new concept to landscape architects. 3D models are used by landscape architects(cardboard and foam core models -- CAD models -- axonometric and perspective drawings) in different stages of the design process everyday. Virtual reality and the WWW can help in the design
process by giving the landscape architect the ability to test ideas in "real time" and in three-dimensional space. Virtual Reality will become the place to go to do things that you could not normally do in architect-designed buildings. Future architects may find themselves designing Virtual Environments instead of buildings. Architects involved in the creation of Virtual Worlds would need to reevaluate the way they design built environments. They would also need to be concerned with how the technology is being used, for example, what is being created, for whom, and to what purpose.

Advantages of a "virtual building" in it's "virtual setting" include a high degree of safety, the ability to move around without being physically tired, and the opportunity to do and see more because there are fewer obstacles (time, space). In a rather limited way, it is already possible to create a reality that has nothing to do with the world as we know it, and to think in terms of that reality. We do it everyday when we talk about having "money" in the bank or on a credit card. With a great leap of the imagination, we might imagine the power of a "virtual world" if, as with "virtual money", it is advantageous for us to believe in it, even if it is hard to imagine that a "virtual building" in it's "virtual setting" will ever be as good as the "real thing".

(2.6) Virtual Experiences (Entertainment & Tourism)

If AlphaWorld really takes off, Worlds probably could start charging users for visiting, e.g. a monthly fee. A great potential we see is in the distribution of a host of new products, such as travel. A virtual world could finally become a more realistic substitute for travel and museum visits.

For instance, a new project using Knowledge Adventure Worlds’ innovative 3-D navigable multi-user operating system, WorldsWareTM will allow children to design their own 3-D cartoon-like representation, which is then transmitted across the Internet or over standard telephone lines to “meet” with other characters. Users can, using Windows-equipped personal computers, represent themselves as Digital ActorsTM who move about rooms, buildings, schools, libraries, and open spaces, and interact with each other by typing, gesturing and moving together through elaborately-styled spaces. The system has the capability to let kids to go to the park, look at the Eiffel Tower from above, fly with some new-found friends to Japan, or simply communicate with their families after visiting hours have ended. This capability will arguably show how the Information Superhighway can be put to one of its best uses yet. KA Worlds seeks to establish this system as a standard for the next generation of on-line services, multi-user games, and entertainment products, and they recently announced alliances with major industry partners to embed this technology in other consumer products.

The Virtual World is the ultimate fantasy trip. In its immense dimensions, accessed digitally, there are theme parks where surfers can indulge their wildest fantasies. The equivalent of cities are devoted to gambling, sports, and adventurous role-playing. In crime-ridden electronic playgrounds you can steal or kill, or chase those who do, without breaking a single law. Cartoon Worlds of various kinds offer encounters with crazy animated characters with over-sized mallets ready to smash you thinner than a dime and then kick you into space. Exploding cars and rabbit holes to nowhere are readily available. Adult Corridors let people indulge every fantasy and fetish, while ethical realists debate whether such behavior is cheating or amoral. Time travel -- of a
sort -- has been permitted by the minute recreation of periods and milieus, all accurate as to place, personalities and events.


Art galleries and exhibitions are perfectly suited to the Internet. Art can be enjoyed and viewed by millions of people around the world. Galleries and other cultural events can be enjoyed, especially for those who live far from any cultural center. (www.art-n-glass.com/personal/artnman/artnman; frieda.art.uiuc.edu/arted204/virtual; http://www.aizu.com/art/russia; http://www.virtuo.com/virtart)

A tourist can select over 100 city or country destinations anywhere and receive an exciting interactive journey. (http://www.dreamscape.com/frankvad/search.travel; www.jaring.my/stb/travel; tpeaks.com/links/vrtltravel)

A last domain in which Virtual Worlds may play a significant role is the one of Movies-on-demand: Visit the movie theatre with your chosen friends/date etc to watch a movie. More interactive than watching it at home on your own, giving you the ability to discuss the movie with other people in the world at the same time as watching it.

(2.7) Virtual Shopping

Clothing suppliers/department stores/fashion boutiques could sell their clothes through outlets in a more advanced virtual world. The customer would need a “customized” robot according to his/her body measures, which would try on different clothes. (No cheating has to be guaranteed!) The “try-it out” feature allows the customer to check the fit of the clothing with no time lack, thus reduces the barrier to purchase. It also adds some emotional feature to the “Cyber-space-shopping” which is currently not available through internet shopping. The possibility that other people could shop in the same store (and maybe comment on the fit?) could enhance the likeliness of a visitor actually purchasing something.

(2.8) Infrastructure Services & Intermediaries

For companies like Worlds Inc. as well as new entrants, the following opportunities are opening up:

(1) Selling the software to other companies that can make their own worlds (e.g. Absolut Vodka)

(2) Renting out space within AlphaWorld to companies wanting to build shopping malls or someone just wanting to make their own sculptures etc.
(3) Letting companies advertise on AlphaWorld (e.g. setting up Coca Cola billboards)

(4) Model your body in your Avatar: Currently there exist about 5 Cyberware stations in the world (giant circular contraption) that use laser beams to scan the human body, in 3-D, in just 17 seconds. The machine, which projects four lasers in a ring around the body, measures distances between 400,000 points on the body. The data showed up on screen as a 3-D, wireframe representation, which could then be stored on the Web for downloading at a later time. (PC Magazine—Trends On-line: A Day at Siggraph (8/16/96))

Psychological, legal, financial etc advice: Any advice that people currently seek over the telephone or in person. A person could visit their advisoir in a virtual world. This is more personal and interactive that using the phone, fax etc and far less time consuming than a personal visit. It could also enable greater confidentiality as the visitor could guard their identity.

(2.9) Financial Transactions

We found no existence of VTS in Virtual Worlds today. This is an area, however, that should emerge as E-cash and online payment systems progress and become more widely accepted. Shopping malls and VTS services do exist and are increasingly making use of online payment methods, however, this does not seem to have expanded into the Virtual Worlds. One such example would be the Security First National Bank, the first online bank. When you enter the internet site, you are welcomed by an actual bank floor, and you can conduct all retail banking needs online. SFNB however, is not a virtual bank. VTS in virtual delivery is likely to be the next development.

Virtual banking and retailing applications are being delivered via the Internet. Visa and World’s Inc. are going to combine the power of multi-user virtual reality and secure transaction processing to create advanced online environments for consumers, merchants and financial institutions. The prototype includes an interactive bank in which consumers can check account balances, transfer funds and apply for loans. The flat, two-dimensional ‘home pages’ available on the Internet today are expected to eventually evolve into compelling three-dimensional web sites where people bank, shop and interact.

The ‘Electronic Courtyard’ is a three-dimensional, commercial online environment that can be deployed today over the Internet. It allows users to explore their surroundings from a first-person perspective using their mouse or keyboard. Within virtual rooms and spaces, individual users can interact with other people such as bank tellers, loan officers, financial advisors and salespeople who can help the user conduct business online or purchase merchandise electronically. This technology has already proven itself in Worlds Chat, the only 3-D online chat environment available in the world.

The Electronic Courtyard will use Visa’s remote banking subsidiary, Visa Interactive, to provide connectivity between financial institutions and consumers. Leveraging the Visa infrastructure to provide the back-end processing will enable banks to reach their customers in new and innovative ways without creating costly new systems.
(3) Critical Factors

(3.1) Technical Issues

The Internet will need to become more reliable and increase its speed before it becomes a true substitute to business meetings. Virtual Worlds are still technically imperfect: the software (alphaworld) crashed many times and the user interface is not trivial. Another issue is the maturity of the content: The current worlds are like a kindergarten where people are experimenting. There are still no worlds where the content is sufficiently controlled or guided so that it can really be used for useful discussion.

(3.2) Social Issues

Anonymity can elicit behaviour/comments that people would not do normally/or admit to doing normally! Great importance will be attached to security issues pertaining to recognition of users, one can imagine that hackers will be able to enjoy enormous freedom in a world where face to face identification is no longer possible. Thus the systems will need to use excellent identification mechanisms of voice and picture recognition together. This will be much better than the current signatures and passwords which are open to forgery and misuse.

The net provides an ever increasing selection of virtual environments in which to spend time. These environments or 'virtual worlds' are diverse, covering categories from art galleries, to chat lines or discussion forums, to theme parks, to bizarre sexual worlds etc. and provide the ability to form relationships between all those who enter. Both the advantage and disadvantage of these sites is the fact that they bridge the gap between a tangible and an intangible interaction, and are limited only by the imagination of the participants. This is largely new territory for most people, and the effects of operating in a virtual world have yet to be properly analysed. This potentially mind expanding experience could prove no substitute for real, physical interactions, and lead to the creation of a sub-culture who are only capable of existing on a virtual basis, for whom real human contact is something that they are not equipped to deal with.

The psychological effects of the net is largely unexplored - what is certain is that the participants of this virtual world are only connected cerebrally, and that some virtual worlds are more attractive than others. What else can explain the popularity of pornography on the net? Either way, the proliferation of virtual alternatives to real life is here to stay, and will have an impact. The children of today will face an altogether different set of pressures, you are now less likely to skin your knees on the playground, but are more likely to suffer from a cyber mind fuck - can the parents of today handle this? A new set of communication rules is required for the virtual world. However the modes of communication are not necessarily more limited. Environments which reflect the mood, and personality of the occupant can be easily created and changed and can more accurately and imaginatively reflect the feelings of the occupant. The key is in the translation, and a new language of symbols as well as text will emerge to reflect the full range of human emotion. This has yet to occur, but once it does
there is no reason why this could not emerge as the location of preference for business and other types of interaction. Virtual worlds are safe - at least from physical injury. The harm that can be done is mental, but not necessarily less damaging. Some sort of code of conduct needs to emerge which ensures that those who don't play by the acceptable norms are sent to 'cyber-coventry', given that there is no actual way of preventing them from participating. Virtual worlds are great equalisers - the physical dimension (beyond tiredness) is removed, thus helping to breakdown preconceptions and barriers. Equally, there is nothing to prevent a dislocation between your real character and your virtual one. An individual could take on any number of virtual personalities far removed from the actual.

From a business perspective, how long will it take to have SW intelligent enough to engage in a conversation with perspective customers? Will customer accept to talk to a machine? May they accept to do it to retrieve information but not to negotiate a price?

(3.3) Required Skills

Architects as designers of Virtual Worlds will be required to make these environments rich, interesting and engaging places. Creating Virtual Worlds has implications on quality of life. Architects could potentially help to make the Virtual World a pleasant and stimulating place to work and live in.

Virtual Worlds will need to provide a degree of changeability, as in reality, to stop them from becoming too static. For example, a "virtual workspace" should have furniture that is easily rearranged (like in the Alpha World), and could have a choice of "views" to see through your window. Or a "virtual art gallery" would be able to have changing and interactive exhibits, and could conceivably be "cut and pasted" by individuals to include only certain art displays.

Another benefit may result from reconstructing (low cost) proxies for environments people are comfortable with (school, supermarket, society). Still this approach might not be interesting for certain types of services: imagine buying a CD on Alphaworld. It might take you almost as much time as going to a real store (as it imitates all the intermediate steps of the purchase) and you still would have to wait for your CD to be delivered.

Impact on existing business processes: Today, sales persons communicate, get feedback, engage in the transaction process; How will companies need to reorganize? How much will the new system complement / overlap with existing traditional sales force networks and practices?

(4) Other Interesting Links

(not already mentioned in the text)

http://www.ccon.org/hotlinks/hotlinks.html (lots of VW-related info & analysis)