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Towards a Theoretically-Grounded Framework for Evaluating Immersive Business Models and Applications: *Analysis of Ventures in* Second Life

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Abstract

Second Life has emerged as the de facto virtual world for immersive business. However there is no de facto guideline or even corpus of knowledge about how to build an immersive business. We address this opportunity by presenting work that will lead to a theoretically-grounded evaluative framework for immersive business models and applications. We identify high profile examples from Second Life and analyze them using two theories that explain why a user may choose between 'clicks,' 'bricks,' or immersive: Rich Media Theory and Task Closure Theory. We then state propositions about characteristics of successful immersive business models and applications, and conduct an exploratory study of proposed Second Life business plans to identify and support the most appropriate propositions for future empirical enquiry. Finally, we conclude our study by positing the following characteristics of potentially successful immersive business models and applications: (a) feedback and interactions between users are not dissipated, (b) productive tasks can be started and closed within the virtual world, and (c) users are compelled to form a social presence, which is then leveraged.

Keywords: virtual worlds, immersive business, Second Life, Media Richness Theory, Task Closure Theory.

Towards a Theoretically-Grounded Framework for Evaluating Immersive Business Models and Applications: *Analysis of Ventures in* Second Life

By Kelly Lyons, University of Toronto

In 2006, *Time* magazine named *You* as the Person of the Year (Grossman, 2006): "look at 2006 through a different lens and you'll see another story, one that isn't about conflict or great men. It's a story about community and collaboration on a scale never seen before. It's about the cosmic compendium of knowledge *Wikipedia* and the million-channel people's network *YouTube* and the online metropolis *MySpace*." This statement is a landmark recognition of the enabling technologies that contribute to Web 2.0. It also serves as a reminder that only roughly ten years removed from when everyday people started using the World Wide Web, its next version is now touted as nothing less than a harbinger of cultural and social revolution. We see the interest in Web 2.0 as a call to ask and investigate what is next; in short, to envision a Web/Internet 3.0. We believe that a significant piece of this vision will be the *3D Internet*—a Web of three-dimensional, computer simulated *virtual worlds,* which are visited by real people who interact with others and are served by businesses hosted in these worlds (Hof, 2007; Shankland, 2006).

There are numerous virtual worlds (Book, 2006) on the Internet. Most fall under the category of Massively Multiplayer Online (MMO) games. These are capable of supporting thousands or even millions of players connected via the Internet, playing simultaneously in a persistent world where events occur continuously and the effects of player actions persist (Book, 2005). The largest ones are fantasy role-playing sites such as *World of Warcraft*, *GuildWars*, and *RuneScape*; as of June 2007, these sites had nine, three, and one million subscribers, respectively (Blizzard Entertainment; Runescape.com; Sinclair).

Similar in scale in terms of the number of subscribers is *Second Life*--a virtual world whose raison d'etre, in part, is commerce (Linden Lab, 2007). Second Life debuted in June of 2003, and is the creation of the privately owned company Linden Lab. It is often described as a game in the broad sense that its users participate because they enjoy it, but unlike, for example, World of Warcraft, there are no competitions or points to be won. It is intended to provide its participants with a "second life"—an alternate world in which an avatar (an animated incarnation of the user) explores, mingles, chats, shops, and works.

Many of these activities, especially shopping, represent commerce opportunities. With numerous small entrepreneurs and multi-national corporations involved, Second Life is the ideal place within which to evaluate and test out virtual, or *immersive*, business models and applications. Said a representative from *American Apparel*, a retailer who had created a presence in Second Life: "There's a gap between the current online shopping experience and the next generation. A virtual world can at least bring you closer to the store experience without actually bringing you there. I'm not convinced Second Life is that answer, but it is a step along the path" (Tedeschi, 2007).

So, as in the early days of e-commerce, norms are being extemporaneously developed, which means that currently there is no generally widely accepted, academically-oriented framework for assessing immersive business applications and models. We view this situation as a truly exciting research opportunity, and present, in this paper, our pursuit towards developing an evaluating framework grounded in established management theories.

The goal of this study then is to develop propositions and initial insights that will serve as a starting point for a framework for evaluating business models and applications in an exemplification of a virtual world, Second Life. To that end, the paper is structured as follows. In Part 1, we describe Second Life in more detail. In Part 3, we present a simple typology to classify Second Life ventures. In Part 4, we progress toward a framework based on theories from the Management Information Systems field and state preliminary propositions based on the theories and exemplar evidence. In Part 5, we identify those propositions most appropriate to be translated as hypotheses for empirical enquiry by conducting an exploratory analysis of case studies comparing the propositions against twenty student business plans for Second Life ventures. Finally in Part 6, we present concluding remarks and outline future work that will help converge toward an evaluative framework for immersive business. This paper is an elaboration of work presented at a conference to an audience with interests in services and system science.

Part 1: Second Life

Second Life provides users with the experience of participating in a virtual world as animated avatars, which can be customized in various ways. In addition to their more mundane abilities like walking, these avatars are also provided with the ability to fly, drive vehicles, and teleport. Importantly, Second Life is a social experience, with users able to see and communicate with each other, both publicly and privately, through media including instant messaging and a voice communication system (Nuttal, 2007).

Figure 1: Second Life Homepage (www.secondlife.com)

Second Life has enjoyed considerable attention from both the news media and from real world businesses. Much of the attention paid to Second Life has been propelled by its embrace of open source software, which allows its users to design their own environments and virtual goods, and to retain intellectual property rights for their creations. Goods and services can be traded in both Linden dollars (which have as of May 2008 a currency exchange of about L$270 to one US dollar) and in real world currency. Several users have become Second Life entrepreneurs,

making a real world living by selling virtual goods and services, such as clothing, furniture, legal advice, and sex (Harkin, 2007).

The extent to which users can customize their experiences is attractive to businesses and public figures as well. In the public sector, for example, Sweden has created a virtual embassy in Second Life, Democrat contenders Hilary Clinton and Barack Obama have opened campaign offices, and extremist French politician Jean-Marie LePen provoked a virtual riot when avatar protesters attacked his Second Life office (Grossman, 2006). Educators have also noted its potential and schools including Harvard have conducted classes in Second Life (Lagorio, 2007).

Companies have invested in a variety of business models and applications in Second Life, despite a lack of any clear, indisputable evidence that a Second Life presence will lead to a healthy return on investment (ROI). Among the businesses that have established a presence are American Apparel (which at one point sold both virtual and real clothes), Dior (which unveiled a new line of jewelry), LaCoste (which held a voting contest among avatars to choose a new clothing model), and Vodaphone (whose Second Life center does not sell items but instead provides free virtual goods and an opportunity to explore the brand). For many, involvement with Second Life may be more an exercise in branding, or an opportunity to get a head start on the learning curve that they believe will be necessitated by a future demand for immersive online retail experiences. Several companies report that the opportunity to chat live with Second Life users is providing them with invaluable market research (Whitehead., 2007).

Whether the ROI of a business model or application can be directly measured or whether the effect of running marketing and advertising campaigns is more indirect, there needs to be a yardstick against which models and applications can be evaluated. However, practical evaluative frameworks on virtual worlds are not yet available. In the following section we take first steps towards such a framework by presenting a simply typology that classifies exemplar ventures from Second Life.

Part 3: Typology of Immersive Business

The notion of immersive business is so new that practical frameworks have not yet been established for evaluating business ventures in virtual worlds. Here are some interesting and potentially successful business models and applications in Second Life:

- **Starwood Hotels:** Starwood Hotels developed a Second Life version of its new concept hotels, Aloft. Though these new hotels did not physically open until recently (2008), the Second Life version opened in 2006. Their aim was to test-market the design, including observing the spaces and furniture to which people gravitate and avoid and to receive feedback from visitors. There is a physical replica of the hotel in White Plains, New York, for which aesthetic and architectural details are completed with the help of feedback and observations received from Second Life (Jana, 2006).

- **UC Davis Medical Center:** University of California Davis used Second Life to develop simulations to train emergency response workers. In this case, workers simulated rapid setup of medical facilities in case of a national crisis (Linden, 2006).

- **American Apparel:** As one of the early adopters in Second Life, American Apparel opened a now defunct virtual store. In this store, consumers could purchase virtual clothing for his/her avatar (at a price of less than $1US). They could also click

through to American Apparel's traditional e-commerce website in order to purchase real-life clothing. However, the virtual clothes greatly outsold real clothes (Jana, 2007).

- **American Cancer Society:** In 2005 the American Cancer Society launched an annual fundraising event within Second Life with the creation of a virtual Relay for Life, in which avatars--individually and in teams--navigate a course created by volunteers in the Second Life community. In 2005, they raised $5,000, which grew to $41,000 in 2006 and to $115,000 in 2007. Participants are from all over the world (Strohm, 2007).

- **Cisco:** After creating a building in Second Life that essentially did little more than present pre-existing web content, Cisco found that no one was bothering to visit their Second Life site. They then re-created their Second Life space as a meeting place for employees and customers, where spontaneous encounters could generate interesting, rich dialogues. There are also opportunities for technical support, product training, and executive briefings. Cisco has reported that they are now more satisfied with the level of interaction from Second Life (Hillis, 2007).

When we analyzed these examples with knowledge of efforts at companies like IBM that are on the cutting edge of virtual worlds, we arrived at the following simple typology to classify immersive business models and applications.

1. **Immersive Prototyping**. Using an immersive environment such as Second Life to prototype product or service concepts can be an effective way to receive feedback on a new product or try out new ways of delivering a service in order to improve implementation and delivery in a real environment. An example of a business model or application involving immersive prototyping is Starwood Hotel's Aloft.

2. **Immersive Event Simulation**. Second Life can be used to simulate real world events in order to learn from people's reactions to them. A big part of the service is to embellish the Second Life environment with customized features—for example, forklifts to be used in dealing with a disaster—to make the simulation as realistic as practicable. An example of immersive event simulation is the UC Davis emergency simulation.

3. **Immersive Commerce**. The very nature of the Second Life economy provides opportunities for companies and individuals to engage in commerce in Second Life. In some cases, the goal is to exchange virtual goods for Linden dollars and, in other cases, the goal is to use the Second Life environment to increase commerce activity in real life. American Apparel, Cisco, and the American Cancer Society are examples of immersive commerce.

What are the relative strengths and weaknesses of these types of immersive ventures, and can this analysis be done using some means that is not ad hoc, but rather rooted in academic literature on management? In order to begin to develop an evaluative framework for immersive business models and applications that is grounded in management research, we present literature relevant to answer this question, identify two theories that we believe are very germane, and state propositions about immersive business based on the theories.

Part 4: Research Model and Propositions

Theories

It is reasonable to evaluate immersive business models and applications based on management research frameworks from the field of strategic management such as the Five Force Model (Porter & Millar, 1985) or Resource Based View (Barney, 1991), or from marketing, such as Mass Personalization (Friedman, 2005) or Services-Dominant Logic (Vargo & Lusch, 2004). We motivate our evaluative framework from yet another perspective: management research in Information Systems. We do this for the following reason. The rationale for many immersive business models is that the immersive experience is superior to both the traditional e-business and traditional physical experiences; that is, the "immersive" is better than the "clicks or bricks." It would seem natural then to apply frameworks that were used in the incipient days of e-business to show when and how "clicks" would be superior to "bricks and mortar." Many of these models and paradigms came out of the Information Systems field. In particular, we will explore two theories, Media Richness Theory and Task Closure Theory.

Media Richness Theory. Media Richness Theory (MRT) is a highly acknowledged theory for agents' media choices that focuses on the fit between the task and the medium. For reviews of other research that focuses on task and medium, see (Rice *et al.*, 1992; Sitkin *et al.*, 1992). MRT is founded on the assumption that individuals, groups, and organizations process information to reduce uncertainty and unequivocality (Davis, 2006; Galbraith, 1977). Uncertainty is "the difference between the amount of information required to perform the task and the amount of information already possessed," and equivocality is defined as the ambiguity inherent in the task caused by conflicting and inconsistent interpretations and expectations. When tasks entail processing highly equivocal information, as is required for example in collective bargaining, then the medium that supports communications and information processing must be rich. Therefore face-to-face meetings between participants may be necessary. Conversely if processing of unequivocal information such as filling out a standard form is the task then a less rich medium such as an e-mail may suffice (Daft & Lengel, 1986). A face-to-face meeting is "rich" because gestures, facial expressions, surrounding contexts, and other sensory cues provide rich supplementary information beyond spoken or written words.

Richness is characterized by the ability to provide feedback, multiplicity of cues, variety of languages usable, and ability to provide personal focus. Of course, the cost of having a meeting is much more than that of e-mail, which does not require synchronization or co-location. However, e-mail is devoid of much of what makes a face-to-face meeting "rich." In MRT, a hierarchy is presented from the richest media, which is face-to-face; to telephones; to written, addressed documents; and to the least rich media, unaddressed documents (Daft *et al.*, 1987). MRT has been applied to explain preferences between e-mail and voice mail (El-Shinnawy & Markus, 1997), and between different technologies for computer-supported workgroups (Burke *et al.*, 2001). More recently, there have been works that draw a relationship between the complexity of a product sold, bought, or exchanged over the Web, and the increasing richness in the media required for successful e-commerce (Jahng *et al.*, 2007; Jahng *et al.*, 2006).

Task Closure Theory. An alternative class of research focuses instead on the availability of communicators and social environments as determinants for media choice (Markus, 1987; Saunders & Jones, 1992). Important within this class is Task Closure Theory (TCT). This theory posits that the ability to effectively "close" or finish a task is a key driver for an individual's

media preference and adoption (Parrish, 2006; Straub & Karahanna, 1998). In particular, the availability of the recipient and the sense of social presence supported by the medium affect the perception that the task is closed. For instance, closure is achieved by clicking on the "send" button in e-mail. In contrast to MRT, face-to-face may not be a preferred mode of communication. If closure of a particular task is possible via e-mail or face-to-face, then the former is possible at the sole discretion of a single person, whereas the latter requires setting a meeting time such that closure cannot be achieved simply at the discretion of one person.

The basis of this theory is that enhanced ability to achieve closure will lead to lowered task fragmentation and job stress. The need for closure however may be moderated by the degree of social presence deemed required. For example, as much as it may be desirable to bring closure to an unpleasant task such as laying off an employee, it is not socially acceptable to do so via e-mail or voice mail. TCT has also been applied to explain preferences and adoption of e-mail (Karahanna & Moez, 2000) and groupware (Robertson *et al.*, 2001).

The Trade off between Media Richness and Task Closure. We can arguably generalize that physical commerce entails richness of media but at higher costs, whereas e-business facilitates task closure and drastically lowered costs but sacrifices media richness and social presence. The litmus test of an immersive experience is whether it leads to a more advantageous trade-off, for example, drastically lowered costs, with only a marginal decrease in perception of social presence. The graph in Figure 2 from 1997 illustrates an advantageous trade-off of e-commerce versus physical commerce. It denotes that sites like eBay and Amazon can reach significantly more customers than traditional merchants, but yet not greatly sacrifice richness of customization and interactivity (Evans & Wurster, 1997).

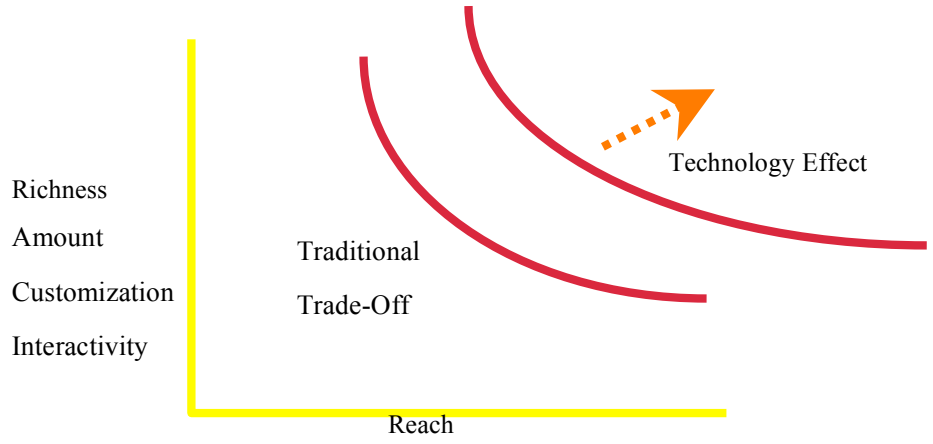

Figure 2: Reach/Richness Trade-Off of Traditional E-Commerce

By fusing elements from these two theories, we can distill the following factors that affect the success of business models and applications:

From MRT

- Feedback capability
- Multiplicity of cues
- Language variety
- Personal focus
- Cost

From TCT

- Recipient/participant availability
- Social presence

We can now evaluate the examples of Second Life business models and applications according to a lens rooted in Media Richness Theory and Task Closure Theory.

Propositions

Feedback capability. A physical site with attentive sales representatives will generally provide greater interactive feedback capability than a Website. Because of the expectation that feedback will be heard, customers will more readily provide feedback, as opposed to clicking on the "Contact Us" button on a Website, an exercise which many customers believe is futile (Walker & Johnson, 2006). However, one of the advantages of a Website is the completeness and efficiency of archiving and searching textual feedback from customers. In contrast, a comment made to a service representative may not be acted upon and never recorded.

A successful immersive business model or application would offer both types of advantages such as the immersive prototyping demonstrated by the Aloft project from Starwood Hotels. There is the opportunity to provide feedback when and while the user is actually experiencing the hotel. To some extent, this opportunity is actually better than, for example, real world surveys since in Second Life, unlike Websites, there is a natural fluidity in switching between locomotion and dialogue. It would be the immersive equivalent of walking around the physical hotel, making comments, and having all of the comments recorded for later perusal. Therefore we state the following proposition:

> **P1**: *The capability to provide and record feedback has a positive effect on the success of an immersive business model or application.*

Multiplicity of cues. Relative to virtual worlds, the physical world has many more cues and Websites have fewer. A successful immersive model or application should exploit the additional 3D cues possible over a Website. For example, evaluation of the aesthetics and functions of a hotel benefits greatly from immersing an avatar in a 3D hotel, as in the case of Starwood. For the American Cancer Society, the users experience a 3D race with their avatars, and enjoy the ability to use fantastical vehicles and creatures–like flying dragons–which are unique to virtual worlds. For UC Davis, the multiplicity of cues available in a 3D environment enhances the user's sense that they are in a real disaster. Therefore we state the following:

> **$P2_0$:** *The capability to provide more cues than a Website has a positive effect on the success of an immersive business model or application.*

However, for immersive business models in which the ultimate goal is the sale of real world items, a problem which arises from the multiplicity of cues is the potential to distract,

confuse, or frustrate customers away from concluding a sale. Therefore, one of the functions for immersive business design should be to steer the user towards actionable cues but away from distracting ones. The challenge in doing this is one of the reasons why buying at American Apparel's Second Life storefront was not compelling: "The user interface is not particularly intuitive. It took me a while to figure out how to buy something… We've all become accustomed to how an e-commerce site works, but on Second Life, those conventions haven't really been established" (Tedeschi, 2007). As a result, buyers are not sure how to approach a transaction. Until these issues are resolved, Second Life storefronts of large retailers may represent marketing and advertising opportunities, but not necessarily venues for direct monetization. Thus we modify our last proposition and state another as follows:

> **P2:** *The capability to provide more intuitive cues than a Website has a positive effect on the success of an immersive business model or application.*
>
> **P3:** *An overabundance of non-intuitive cues has a negative effect on the success of an immersive business model or application.*

Language variety. High language variety refers to the capability of a medium to support highly variable, expressive, and unstructured communications such as enabled by any natural language. Languages such as programming languages and database formats are of low language variety since they support minimal variability, and employ restrictive and structured grammar and vocabulary. Physical, e-business, and immersive models all support natural language communications to varying extents, and in fact immersive business and Websites offer the additional flexibility of use of structured data for automatable tasks. Therefore it is difficult to state that immersive models hold an advantage over physical commerce or e-business solely on this factor, and we state the following:

> **P4:** *Language variety does not have an effect on the success of an immersive business model or application.*

Personal focus. Innovations such as customer relationship management software, collaborative filtering, and even RSS feeds have helped establish the paradigm of mass personalization. Still, the most powerful way to convey personal focus is to actually have a company representative face-to-face, empathizing with and focused on a customer. An immersive application could use 3D cues to come close to face-to-face; that is, an interaction can be reasonably rich without requiring common physical presence, albeit the communication must be synchronous.

Cisco reports that it is now having rich dialogues with its customers in Second Life, populating its campus with employees who are available for discussions with visitors. However, the now-defunct American Apparel Second Life store was widely reported to be constantly empty, with often no employees available to assist those who did visit. Therefore we state the following:

> **P5**: *A personal focus has a positive effect on the success of an immersive business model or application.*

Cost. The ability to reduce costs is demonstrated by an immersive event simulation like the UC Davis Medical Center case. A real life simulation would be preferable but is likely to be substantially more expensive, for example, the cost of co-locating participants, and disruptive, for example, shutting down real city blocks to run a real world simulation of a terrorist attack. However, in order for an immersive simulation to be compelling, what can be learned from a simulation cannot be substantially less than a real world simulation. In the case of UC Davis Medical Center, the lesson learned is how emergency workers react to and interact with each other in simulated scenarios. The simulation is a closed system within which feedback and interactions are not dissipated, but rather observed and recorded.

However, compared to traditional e-commerce sites, immersive sites can be much more expensive to create. For example, in the case of American Apparel, the cost of rendering a virtual store was costly to build and operate. While the experience and the publicity from the venture may have been useful to the company, the ROI from monetization and traffic pales in comparison to that of their Website.

Either way, it appears that the ROI for an immersive experience can be direct, self-evident, and in-the-now, and models that are justified on future monetization potential may be problematic. That is, to a pundit who argues that Second Life is so novel that ventures in it are experimental and should not be cost justified, one can present the cases of UC Davis and the American Cancer Society as successful ventures that are showing results now. We therefore state the following:

> **P6**: *The inability to show direct and reasonable ROI has a negative effect on the success of an immersive business model or application.*

Task closure. This is a powerful concept that explains in part the success of American Apparel in selling virtual clothing in Second Life, but also the constraints it faces in trying to sell real clothing via their storefront. American Apparel did not start off trying to sell virtual clothing; their customers demanded it. Yet they acknowledge that the effect of their storefront on real clothing sales was rather paltry (Tedeschi, 2007). If a potential customer is tasked with buying clothing, then that task cannot currently be opened and closed within Second Life. Ideally, the customer would make the purchase at the virtual store and receive the shipped goods in a few days. However, since this is not yet possible in Second Life, the customer is routed to the American Apparel Website, where the goods may be bought and later shipped and received. The task then entails crossing between virtual, e-commerce, and physical worlds with many opportunities for the task not to be closed. However, in a scenario of purchasing a pair of shorts for a customer's avatar, this task can be opened and closed entirely within Second Life. The problem there of course is that the nominal price of these shorts is less than a $1US. This is not a viable monetization model unless the volumes are enormous, and it is unlikely that Second Life users will create such a critical mass in the near future.

Task closure also explains why Second Life event simulations are often compelling. The task of learning one lesson in setting up an emergency response clinic can be opened and closed within Second Life. Likewise, the American Cancer Society has experienced increasingly successful fundraising fun runs in Second Life, by providing an experience which can be started and finished entirely within Second Life with no requirement to run in the real world. We state the following proposition:

> **P7:** *The ability to start and finish tasks within the virtual world has a positive effect on the success of a business model or application.*

Recipient/participant availability. The task of communicating with a business can be started and finished within Second Life, creating a greater likelihood of visitors producing such communications. The presence of avatars who can receive message in Second Life heightens the experience of task closure for message senders, since one can observe the communication arriving to the recipient in a way that is not possible with e-mail or voice mail. The ability for visitors to meet and have discussions with Cisco employees is an important factor in why Cisco reports its satisfaction with its Second Life site. The following proposition addresses this point:

> **P8:** *The capability to make recipients/participants virtually available has a positive effect on the success of an immersive business model or application.*

Social presence. Social presence may be a requirement to complete a task in a virtual world. For example, in order to play a game of full-court basketball, either virtually or in the real world, an adequate number of players must be present. In the case of Starwood Hotels, the company was able to exploit the large audience in Second Life visiting their site to receive feedback from community members who were interested or even trained in such subjects as architecture, design, and hospitality, and were willing to–and enjoyed–the process of voluntarily collaborating on the design for a new concept for hotels. Our final proposition then states:

> **P9:** *The capability to leverage a social presence once a critical mass has been achieved has a positive effect on the success of an immersive business model or application.*

Part 5: Case Studies: Exploratory, Qualitative Investigation of Second Life Business Plans

So far we have presented two perspectives that support our propositions: (a), our application of existing theories—MRT and TCT—and, (b), our survey of noteworthy current business models and applications in Second Life. To further strengthen our propositions, we present case studies in the form of an exploratory qualitative investigation of business plans for proposed Second Life ventures. Effectively, this perspective allows us to triangulate our propositions—based on 1) theory, 2) survey of practice, and 3) empirical investigation—thus preparing them to be tested as hypotheses using larger scale qualitative studies in our future work.

Participants, design, and procedure. Eighty-eight third- or fourth-year students of an undergraduate management program in a large North American university, located in a large metropolitan city, took part in the study. In partial fulfillment for course credit, these students were organized into twenty-one groups, each of which developed a business plan for a Second Life venture. To develop these plans, students were instructed to create avatars that bore a reasonable resemblance to themselves and to immerse themselves into Second Life to research potential ventures. They were then instructed to produce a twenty-page comprehensive business plan.

The following are the ventures described in the students' business plans:

- Store for virtual pets (3)
- Collaborative gaming (2)
- Dating site (3)

- Cooking school (2)
- Site to interact with virtualized stars and movie scenes (2)
- Management consulting to virtual ventures
- Tutoring service
- Virtual hospice
- Theme park
- Virtual home/condo designer
- Travel agent for vacations to virtualized cities (for example, Paris)
- Security guards in virtual worlds
- Sports bar
- Virtual bank

We now analyze our propositions with respect to these business plans. Our proposition P4: *Language variety does not have an effect on the success of an immersive business model or application* was difficult to test vis-à-vis the plans because the plans did not address a variety of languages. In addition, since the students were asked to present a profitable business plan, they all projected profitability after at most a couple of years so we cannot evaluate our proposition P6: *The inability to show direct and reasonable ROI has a negative effect on the success of an immersive business model or application* against these business plans. The rest of the propositions are evaluated below:

P1: *The capability to provide and record feedback has a positive effect on the success of an immersive business model or application.*

> In the case studies, there are many models which aim to actively engage Second Life participants in providing and using feedback. Dating and tutoring sites, as well as those for collaborative gaming, interactive entertainment, and cooking schools, encompass feedback provision and display as important features. However, interestingly enough, none of the plans exploited the fact that touch-point opportunities for eliciting feedback occur more often than in a Website in an immersive environment. The examples below echo traditional Web capabilities.
>
> After a match has been made, our dating service will help design and arrange the couple's first date on Second Life… After each date, couples are welcome to provide feedback regarding dating logistics and their overall experience with their partner and our service.
>
> Customer comments about certain recipes will be displayed publicly so that other consumers will be able to read the comments. Providing professional advice from expert chefs and setting up an active feedback system will be essential for our service.

While the student-proposed plans did not take full advantage of the feedback capability in immersive businesses, many plans recognized the need to provide appropriate feedback mechanisms.

P2: *The capability to provide more <u>intuitive</u> cues than a Website has a positive effect on the success of an immersive business model or application.*

P3: *An overabundance of non-intuitive cues has a negative effect on the success of an immersive business model or application.*

The plans for gaming and design sites as well as interactive movie and celebrity sites present much richer three-dimensional and immersive visual experiences than traditional Websites. And Second Life also allows for complementary aural experiences. The business plans recognize the opportunities for providing intuitive cues and the pitfalls of providing non-intuitive cues when the quality of the experience is related to appropriate and intuitive utilization of spaces, and also evokes desirable emotions, thoughts, and memories through surrounding sights and sounds.

> The key to our cooking school is that its ambiance is a haven for all things food related. The idea is that the participants will be invited into a world of state of the art stainless steel appliances, redwood cabinets, granite countertops, and subzero refrigerators… As avatars navigate through the dream kitchen, they are able to click on appliances and food items.
>
> The focus of our park will be to transform all of the benefits of an actual theme park into a virtual one, thus encompassing world-class thrills, including a wide range of roller coasters and a water park, along with game booths and fast food vendors. It will be beautifully landscaped, with gardens, streams, waterfalls, and mountains.
>
> Avatars will be exposed to specific movie scenes in the movie that has been complemented by sounds, effects, characters, moving objects as well as complete movie-like environment… The main benefit/value to our customer would be our differentiated immersive environment that offers unique experiences where people can actually feel being inside their favorite movie.

P5*: A personal focus has a positive effect on the success of an immersive business model or application.*

Personally-focused customization is mentioned in many plans. It can be customization of an experience such as made possible by the interactive celebrity and movie sites and the travel agency. Even when the plan entails customization of what seems like a product—for example, customization of a virtual pet, potential date, or tutor—customization usually extends to the experience as well, thus supporting proposition P5.

> Along with regular pets (dogs, cats, hamsters, etc.), we will also offer more unique pets, like dragons and fairies and a customized multi-purpose experience… Along with allowing you to purchase or rent the pet of your dreams, the pet store will be part of a complex that will include an interaction area, a pet daycare, and a pet spa, where users can fulfill the needs of their pet(s).
>
> Our dating site's assortment of date packages allows each user to choose and customize their date experience. We will handle the location spotting, activity planning, and make all of the needed logistical arrangements for each package chosen by the user.

P7: *The ability to start and finish tasks within the virtual world has a positive effect on the success of a business model or application.*

There are many plans for which the experience or offering is exclusively in Second Life.

An example is matchmaking and going on dates all within Second Life. However the related notion of performance of tasks that cannot be done elsewhere is the most compelling:

> Our hospice is a clinic and park designed to offer a support and information community to the terminally ill, disabled, and those suffering from chronic diseases… The clinic will allow interested individuals to get information about the issue that affects them or a variety of other issues in the official library… The park will provide a beautiful setting for social interactions and allow guests to partake activities that they are not able to do in real life due to their conditions.

> Our venture will act as a "security force" offering security services to individuals and businesses in the Second Life community… There has been a recent trend in the need for security services as many events have gone interrupted. Our customer base will largely consist of businesses as these users require security services such as protection of real and personal property or surveillance of special events.

P8: *The capability to make recipients/participants virtually available has a positive effect on the success of an immersive business model or application.*

All sites allow participants to interact despite geographical separation. Of these, the dating sites offer an intriguing value-added of actually avoiding face-to-face encounter:

> The anxiety and apprehension associated with the first blind date (that typically takes place in-person) would be eliminated as avatars would interact with one another, as if on a real date. Communication can be facilitated by headsets worn by both parties, allowing for real time voice communication. All the motions, from the gift of flowers when they meet to the first kiss can be done on their virtual date.

P9: *The capability to leverage a social presence once a critical mass has been achieved has a positive effect on the success of an immersive business model or application.*

Collaborative gaming such as Paintball, hospice, sports bar, and virtual travel are all examples of the use of virtual worlds for conducting group social activities.

> By taking existing paintball technology within Second Life and improving and adapting upon the location and ease of use, paintball will become one of the newest and most exciting games to play with online friends… By creating groups to organize paintball tournaments, allowing individuals looking for a game to play immediately, or just have some target practice, as well as having instant games for guest groups who are ready to play, the ease and accessibility will increase dramatically.

> Many people dream about world travel but seldom have the resources or ability to do it… Customers have the ability to take one of the guided tours or build their own tours to enjoy with their online friends.

Though we need not dismiss our all propositions as a result of this exploratory study, the propositions about intuitive cues (P2 and P3), personal focus (P5), task closure (P7), virtual availability (P8), and critical mass of social presence (P9) seem to be the most promising for further investigation, as they can be used to describe the most compelling and potentially innovative aspects of the business plans. The proposition about feedback (P1) may also warrant further investigation because the plans frequently mention the use of feedback but generally in uses not different than in traditional Web use.

Part 6: Concluding Remarks and Future Work

We believe that virtual worlds and the 3D Internet will serve as enabling technologies for the next generation of Internet and Web based business models, applications, practices, and innovations. We call this phenomenon immersive business. The ultimate objective of our research is to develop theories of immersive business, from which practical guidelines will emanate. What is required to achieve this objective are some means to evaluate different immersive business models and applications; however, because of the novelty of immersive business, there is no apparent framework for this evaluation. We take the first steps to address this research opportunity in this paper.

Though there are many virtual worlds, an obvious test-bed for developing this framework is Second Life, which has a participant base of several million that includes many corporations who have created storefronts and presences. We believe that immersive business models and applications in Second Life can be typed as immersive prototyping, immersive event simulation, or immersive commerce.

We explore Media Richness Theory and Task Closure Theory from the Information Systems field to take steps towards a more theoretically-grounded evaluation framework. We evaluate high profile exemplar Second Life ventures based on characteristics of different media—face-to-face, Website, and virtual, for instance, are different forms of media—that the theories posit are important which are: capability to provide feedback, multiplicity of cues, language variety, personal focus, costs, task closure, and social presence.

By applying these theories to the exemplar cases and analyzing proposed Second Life business plans, we develop propositions from which the initial and basic questions of our evaluation framework emerge:

- *Does the immersive business model or application provide the capability for customers and users to give, receive, and record feedback* (based on P1)*?*
- *Does the immersive business model or application provide more intuitive cues than a Website* (based on P2)*?*
- *Does the immersive business model or application avoid an overabundance of non-intuitive cues* (based on P3)*?*
- *Does the immersive business model or application provide a superior customer focus* (based on P5)*?*
- *Does the immersive business model or application provide the ability to start and finish tasks within the virtual world* (based on P7)*?*
- *Does the immersive business model or application make recipients and participants of communications virtually available even if they are not co-located* (based on P8)*?*

- *Does the immersive business model or application require achieving a critical mass, and does it then truly leverage this critical mass* (based on P9)*?*

In using this framework, 'yes' answers to most or all of these questions may bode well for the success of an immersive business model or application. Therefore, the following initial design principles may help organizations to formulate their immersive business strategies since organizations currently have very little else to guide their endeavors.

1. *Immersive business models and applications that create a closed system within which feedback and interactions are not dissipated have the potential to be successful.* This is because such models combine the rich opportunity to elicit feedback and support interactions, a positive feature of physical commerce, with the enhanced opportunity to record feedback and interactions, a positive feature of Websites.

2. *Immersive models and applications that productively support task closure have the potential to be innovative.* In a closed system, those who can perform a task within the system stay and those who must leave to perform the task do not come back. Therefore there is an advantage to ensuring that tasks can be both opened and closed within the system. It must also be ensured that that task is worth supporting. For instance both UC Davis' emergency response simulation and American Apparel's storefront support tasks that can be opened and closed in Second Life. Yet, solely from the perspective of direct monetization (and not for its marketing benefits), selling of virtual clothing for a buck or less is not compelling.

3. *Immersive business models and applications that exploit the need for virtual social presence have the potential to be innovative.* Another aspect that is common to Starwood Hotel and UC Davis cases is that they are able to build and exploit critical mass. The hotel prototype is limited in value unless large numbers of the desirable demographic group provide feedback. The task simulated should involve many people and create an environment which fosters complex, unanticipated interactions and effects between them.

Future work includes translating our propositions into hypotheses and empirically testing them to develop an evaluative framework, and exploring other theories that can enrich the framework. Eventually, we expect to be able to propose a theory of immersive business, and translate it into practitioner guidelines.

As for exploring other theories, one interesting direction is toward theories of social capital (Coleman, 1988; Lin, 2001)). In the case of the American Cancer Society, the organization was able to successfully leverage the large community available in Second Life for their annual virtual fun run. The 2300% growth they have experienced in the three years they have been offering this fundraiser clearly demonstrates the existence of strong social networks in Second Life. It is reasonable to assume that this growth is driven not only by the increasing numbers of participants in Second Life, but also by the excitement driven by strong word of mouth recommendations permeating social networks in Second Life. How social networking in virtual worlds compares to social networking in the real world and the Web (for example, Facebook and MySpace) is worth deeper exploration.

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