

2010

## Users' understandings of the virtual economy in social virtual worlds: consumption and entrepreneurship of virtual goods

Yoonhyuk Jung

*Louisiana State University and Agricultural and Mechanical College*

Follow this and additional works at: [https://digitalcommons.lsu.edu/gradschool\\_dissertations](https://digitalcommons.lsu.edu/gradschool_dissertations)



Part of the [Business Commons](#)

---

### Recommended Citation

Jung, Yoonhyuk, "Users' understandings of the virtual economy in social virtual worlds: consumption and entrepreneurship of virtual goods" (2010). *LSU Doctoral Dissertations*. 1017.

[https://digitalcommons.lsu.edu/gradschool\\_dissertations/1017](https://digitalcommons.lsu.edu/gradschool_dissertations/1017)

This Dissertation is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Doctoral Dissertations by an authorized graduate school editor of LSU Digital Commons. For more information, please contact [gradetd@lsu.edu](mailto:gradetd@lsu.edu).

**USERS' UNDERSTANDINGS OF THE VIRTUAL ECONOMY IN SOCIAL  
VIRTUAL WORLDS: CONSUMPTION AND ENTREPRENEURSHIP  
OF VIRTUAL GOODS**

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
In partial fulfillment of the  
Requirements for the degree of  
Doctor of Philosophy

in

The Interdepartmental Program in Business Administration  
(Information Systems and Decision Sciences)

by  
Yoonhyuk Jung  
B.A. Sogang University, 1997  
M.A. Information and Communications University, 2004  
May, 2010

## **ACKNOWLEDGEMENTS**

I stand on the shoulders of many people. First of all, I would gratefully like to acknowledge the contributions of Dr. Suzanne Pawlowski. She has always provided thoughtful advice and plenty of good cheers for me to go forward. In this long and challenging journey, I would not have been successful without her guidance and generous support. I would also like to thank Dr. Rudy Hirschheim. I have learned much about 'Information Systems' from him, which is an invaluable resource allowing me to be an information systems scholar. I express deep gratitude to Dr. James Van Scotter and Dr. Sonja Wiley-Patton. Dr. Van Scotter has been willing to offer insightful comments on my research and Dr. Wiley-Patton has been so supportive of me through the doctoral program. Thank Dr. Lance Porter, and Dr. Brygg Ullmer for serving on my dissertation committee. Dr. Young Chun is another person who I would express my sincere appreciation. I would appreciate his wisdom of research and life. He has been a great mentor to me in my life in Baton Rouge. Finally, I gladly dedicate this dissertation to my loved parents, Euna and Hanna.

# TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	ii
LIST OF TABLES.....	v
LIST OF FIGURES.....	vi
ABSTRACT.....	vii
INTRODUCTION.....	1
MOTIVATION AND RESEARCH OBJECTIVES.....	1
SOCIAL VIRTUAL WORLDS.....	5
Overview of Virtual Worlds.....	5
Advent of Social Virtual Worlds.....	6
VIRTUAL ECONOMY.....	7
Virtual Property.....	7
Virtual Currency.....	9
Virtual Market.....	9
Participants.....	10
SOCIAL REPRESENTATIONS THEORY.....	11
INTRODUCTION TO SOCIAL REPRESENTATIONS THEORY.....	11
ANCHORING AND OBJECTIFICATION.....	13
CORE-PERIPHERY STRUCTURE OF SOCIAL REPRESENTATIONS.....	14
APPLICATIONS OF SOCIAL REPRESENTATIONS THEORY IN THE IS FIELD.....	15
ONTOTOGIAL AND METHODOLOGICAL APSECTS OF SOCIAL REPRESENTATIONS THEORY.....	17
ESSAY I: CONSUMING BITS: USERS' UNDERSTANDINGS OF AND GOALS FOR VIRTUAL CONSUMPTION.....	20
INTRODUCTION TO VIRTUAL CONSUMPTION STUDY.....	20
VIRTUAL CONSUMPTION STUDY I: THE COLLECTIVE MEANINGS OF VIRTUAL CONSUMPTION.....	21
Procedure of Core-Periphery Analysis.....	21
Discussion.....	31
Implications.....	36
Limitations.....	39
VIRTUAL CONSUMPTION STUDY II: USER GOALS FOR VIRTUAL CONSUMPTION.....	40
Means-End Chain Analysis (MECA).....	40
Discussion.....	50
Implications.....	54
Limitations.....	56
CONCLUSION.....	57
Integration of the Two Virtual Consumption Studies.....	57
Concluding Remarks.....	58

ESSAY II: THE REFLECTION OF A COLLECTIVE VIRTUAL WORLDVIEW IN THE MEANINGS OF VIRTUAL ENTREPRENEURSHIP .....	60
INTRODUCTION TO VIRTUAL ENTREPRENEURSHIP STUDY .....	60
THEORETICAL BACKGROUND.....	63
Translation of Generic Meaning Systems into Local Meaning Systems .....	63
Social Representations Theory – Structural View Applied to Translation .....	65
Eliciting the Generic Meaning System of Social Virtual Worlds .....	67
Eliciting Local Meaning System of Virtual Entrepreneurship.....	72
Discussion .....	76
CONCLUSION .....	84
CONCLUSION OF DISSERTATION .....	87
REFERENCES .....	91
APPENDIX A: A BRIEF CHRONICLE OF VIRTUAL WORLDS .....	102
APPENDIX B: INTER-ATTRIBUTE SIMILARITY (IAS) MATRIX FOR VIRTUAL CONSUMPTION STUDY I.....	105
APPENDIX C: INTER-ATTRIBUTE SIMILARITY (IAS) MATRIX FOR VIRTUAL ENTREPRENEURSHIP STUDY (ANALYSIS OF SVWS).....	106
APPENDIX D: INTER-ATTRIBUTE SIMILARITY (IAS) MATRIX FOR VIRTUAL ENTREPRENEURSHIP STUDY (ANALYSIS OF VIRTUAL ENTREPRENEURSHIP).....	107
VITA .....	108

## LIST OF TABLES

Table 1: Comparison of Gaming Virtual Worlds and Social Virtual Worlds.....	6
Table 2: Research Strategy .....	19
Table 3: Demographics of Participants for the Core-Periphery Analysis.....	22
Table 4: Cumulative Number of New Codes by Time-ordered Groups.....	25
Table 5: Topics (Super-codes) – Elements of the Social Representation of Virtual Consumption.....	26
Table 6: Core and Periphery Membership – Social Representation Elements .....	29
Table 7: Demographics of Participants of the Means-End Chain Analysis.....	43
Table 8: Topics (Super-codes) – MECA Laddering Interviews .....	44
Table 9: MECA Analysis - Cumulative Number of New Codes by Time-ordered Groups .....	45
Table 10: Implication Matrix .....	48
Table 11: Statistics for Determining a Cutoff Level for Inclusion in the Hierarchical Goal Map	48
Table 12: Topics (Super-codes) of Social Representations of SVWs .....	69
Table 13: Core and Periphery Membership of Social Representation of SVWs.....	71
Table 14: Demographics of Participants for Virtual Entrepreneurship Study.....	73
Table 15: Topics (Super-codes) of Social Representation of Virtual Entrepreneurship .....	74
Table 16: Core and Periphery Membership of Social Representations of Virtual Entrepreneurship.....	75

## LIST OF FIGURES

Figure 1: Examples of Virtual Property .....	8
Figure 2: Connection of the Subject, Others, and the Object through Social Representations ....	12
Figure 3: Cumulative Number of New Codes .....	25
Figure 4: The Map of the Social Representation of Virtual Consumption .....	30
Figure 5: Editing Avatar Appearance .....	33
Figure 6: Screenshot of Interview Setting .....	43
Figure 7: MECA Analysis - Cumulative Number of New Codes .....	45
Figure 8: Hierarchical Goal Map for Virtual Consumption.....	48
Figure 9: Conceptual Model of Translation.....	66
Figure 10: The Meaning System of Virtual Entrepreneurship.....	76
Figure 11: Translation of the Myths of SVWs in Meanings of Virtual Entrepreneurship .....	79

## ABSTRACT

Social virtual worlds (SVWs) such as *Second Life* have gained immense popularity during the last decade. Their popularity is reflected in the explosive growth of the in-world economy, which is mainly supported by users' consumption of virtual goods and entrepreneurial behavior. Users' economic behavior has increased the size of the virtual economy to reach over \$1B in the United States in 2009 (Nicholson 2009). Given that virtual consumption and entrepreneurship have become an important part of everyday virtual life in SVWs, understanding these two types of economic activities is an essential aspect to understanding user behavior in SVWs. This research aims at investigating the meanings of virtual consumption and entrepreneurship for users.

The research consists of two independent essays. In the first essay about virtual consumption, I examine users' understandings of virtual consumption through core-periphery analysis of its social representation. 154 *Second Life* users participated in the web-based survey for this study. I also identify user goals for virtual consumption by using means-end chain analysis, based on interviews with 93 *Second Life* users. The second essay on the topic of virtual entrepreneurship examines the collective meanings of virtual entrepreneurship and their relationship with the collective meanings of SVWs. To understand the meanings of virtual entrepreneurship, the core-periphery structure of social representations of virtual entrepreneurship is analyzed, based on interviews with 24 *Second Life* entrepreneurs. The meanings of virtual entrepreneurship are explained and compared with the central meanings of SVWs, identified from 101 newspaper articles on SVWs from 2005 to 2009.

The results show that virtual consumption penetrates extensively into the virtual life of users and make their virtual experience in SVWs much richer; that virtual entrepreneurship is



institutionalized in SVWs, and the key meanings of SVWs are well translated into the meanings of virtual entrepreneurship. This research contributes in providing fundamental knowledge about virtual consumption and entrepreneurship and further suggests potential theoretical frameworks for future research. Implications for SVW service providers and producers and sellers of virtual goods are also identified. Another contribution of the research is to demonstrate alternative qualitative research approaches combined with quantitative analyses.

# INTRODUCTION

## MOTIVATION AND RESEARCH OBJECTIVES

Over the last decade, social networking services have been a magnet to attract users on the Web. Now these services have evolved beyond flat and static Web pages into the traversable 3-dimensional cyberspaces of virtual worlds (Itzkoff 2008). Recently a new type of virtual world, stressing social interactions and the empowerment of users, has burgeoned. These environments are called *social virtual worlds* (SVWs); for example, *Second Life*, *Entropia Universe*, *There*. Their potential as a marketing channel and a new tool for collaboration and education has attracted the attention of corporations, educational institutions, government organizations, and so on. For example, *Starwood Hotels* created its virtual hotel, or a replica of the real hotel building, in *Second Life* enabling customers to have a virtual experience of rooms, and *Princeton University* has used *Second Life* to conduct a project managed by dispersed teams (Kamath 2008). Some companies, such as IBM, have their own virtual island in *Second Life* for training and collaboration (IBM Press 2007). Perhaps most importantly, the significance of SVWs extends beyond these instrumental merits. *3D virtual environments* are regarded as the future Internet surfing platform (Argote and Ingram 2000; MacMillan 2006), and the *Web-as-participation-platform* is considered a core concept in the Web 2.0 age (Decrem 2006). Because SVWs have both of these attributes, we predict that SVWs will become the dominant future cyberspace. The high number of registered users today reflects the popularity and potential of SVWs. Approximately 760 thousand users repeatedly visited *Second Life*, the largest SVW, during December 2009, an increase of 15% from December 2008 (Linden Lab 2010a).

In contrast to gaming virtual worlds (GVWs), such as *World of Warcraft*, where users' activities are based on pre-defined themes produced by game designers, SVWs endow users with

the ability to create the worlds, and this autonomous environment enables users to have diverse virtual experiences (Juul 2005). Specifically, SVW users can produce virtual objects, have property rights, and sell these objects. Users have generated a flood of creative virtual goods, such as a medieval princess dress or a Caribbean pirate ship, which has stimulated consumption and ultimately has led to the exponential growth of a ‘virtual economy’. The US market of virtual goods is estimated at \$1B in 2009 (Nicholson 2009), and more than \$567M was spent in user-to-user trading of virtual goods in *Second Life* in 2009 (Linden Lab 2010a). It is also reported that over half of *Second Life* users have intentions to buy virtual goods, and 41 percent have intentions to make money in *Second Life* (Fetscherin and Lattemann 2007). The virtual life of SVW users, then, is intimately involved in a virtual economy. This virtual economy has led to an influx of real money into SVWs. Consequently, this has increased the complexity of VWs in terms of technological factors (e.g., security) and governmental intervention (e.g., taxation) (Bray and Konsynski 2007; MacInnes 2004), which may ultimately play a key role in transforming SVWs in the future. The virtual economy, therefore, is an important component in understanding SVWs.

Major participants in the virtual economy include SVW operators, governmental agencies, and users. SVW operators provide an environment for a particular virtual economy. They regulate virtual businesses (e.g., *Second Life* restrictions of gambling and sexual services, sanction of virtual currency) and try to provide secure systems for safe transactions. They also play the role of providers of virtual objects. For example, in the SVW *Habbo Hotel* the service operator makes a profit by producing virtual objects and selling them. Governmental agencies also affect SVW operators’ decision-making regarding policies. For example, the European Union has decided to tax user-to-user real money transactions of virtual objects and this decision

is reflected in SVW operators' policies (Reuters Second Life 2007). For instance, Linden Lab collects and remits value added tax, or VAT, from residents who live in the member countries of the European Union (Linden Lab 2010b). While SVW operators and governmental agencies are involved in supporting and influencing the environment of the virtual economy, users are the subject of the virtual economy. Users are the most important participants in SVWs in that SVWs are principally user-oriented cyberspaces and the user base is a requisite for the survival of a social virtual world. From an economic point of view, users as producers as well as consumers contribute greatly to the growth of a virtual economy. They not only produce diverse virtual goods (e.g., a Hawaiian beach island) which have filled virtual markets, but also stimulate the virtual economy through their enormous purchasing power. A recent commentary in *The New York Times Magazine* (Walker 2009), reflects the way that this type of consumption is becoming more of a mainstream economic activity, observing that "With more of life lived online, spending on things that don't exist seems more normal...Consuming things made of bits might sound weird, but actually it offers a lot of the same attractions that make people consume things made of atoms." (p. 28)

The current body of research on the virtual economy focuses largely on legal aspects and economic analysis. One issue engaging researchers in this area is the discussion of whether user-to-user real-money trading should be regarded as real transactions in the legal sense in SVWs (Lastowka and Hunter 2004). Other researchers have performed analyses of the virtual economy using economic concepts such as demand curves, price flexibility, or macroeconomic indicators (Castronova 2004; Nash and Schneyer 2004). While legal and economic research is valuable in understanding the overall environment of the virtual economy, it underestimates the perspective of the economic subject, that is, users' understandings of the virtual economy. Since SVWs are

essentially *social*, their success or failure depends on their ability to retain active users (Platoni 2008). Accordingly, it is important and meaningful to investigate the virtual economy from the users' standpoint, as much as from legal and macroeconomic perspectives. There is currently a void in user-perspective research related to this new economic realm. The purpose of this research is to begin to answer fundamental questions, as described in the two independent essays in this dissertation. The first essay (Virtual Consumption Study) investigates two research questions: 1) *What are the collective meanings of virtual consumption?*, and 2) *Why do users consume virtual goods?*. The second essay (Virtual Entrepreneurship Study) examines the following two questions: 1) *What are the collective meanings of virtual entrepreneurship?*, and 2) *How is the collective virtual worldview reflected in the collective meanings of virtual entrepreneurship?* The rationale for choosing virtual consumption and virtual entrepreneurship as the central topics is that these are the two main types of activities representing the involvement of users in a virtual economy.

In SVWs, users' economic activities, such as buying, selling, and owning, have become social reality in the sense that they are a reproduction of real-world social practices (Brey 2003). Social facts or activities become social reality through the collective imposition of a meaning on them (Searle 1995). Therefore, the exploration of the collective meanings of the users' economic activities can be valuable in understanding them. The current study, then, explores SVW users' economic practices, specifically consumption and entrepreneurship, from the collective standpoint. The theoretical framework used for the study is social representations theory which provides concepts and methods to investigate sensemaking and commonsense knowledge shared by members of a community (Lorenzi-Cioldi and Clemence 2001). The theory is particularly

suitable to investigate SVW users' collective knowledge of their social practices because it focuses on the social processes of meaning construction of social objects (Moscovici 1984).

## **SOCIAL VIRTUAL WORLDS**

In this section, I will provide overview of virtual worlds and then conceptualize a new type of virtual world, or social virtual worlds, by comparing them with gaming virtual worlds, another dominant type of virtual world.

### **Overview of Virtual Worlds**

Despite its diverse definitions, the term virtual world (VW) has commonly been used to indicate a computer-simulated persistent spatial environment supporting real-time communication among multiple users (Bartle 2003; Holmström and Jakobsson 2001; Jakobsson 2006). The most important attribute of VWs is a spatial metaphor. VWs offer space where users walk, explore, and meet others. In particular, an iconic symbol (e.g., avatar) which represents a user facilitates spatial exploration. Even though some VWs such as *Habbo Hotel* provide a 2D interface, a 3D interface can better realize a spatial metaphor. The second attribute is persistency. When a user leaves the VW, it will not be reset but will be sustained; that is, changes in the VW are accumulated. Thus, one kind of online game (e.g., *Quake*) which is sustained only during the gaming session is excluded from the sphere of VWs. The third attribute is real-time communication. VWs provide an environment that allows users to synchronously communicate and interact with one another. Accordingly, these attributes of spatial metaphor and real-time communication exclude blog-style (e.g., *MySpace*) or videoclip-style (e.g., *YouTube*) cyberspaces from the category of VWs. The last attribute of VWs is the interaction of multiple users. This attribute stresses human-to-human interaction and rules out computer games based on user-to-computer interaction from the concept of VWs.

Multi-User Dungeons (MUDs), considered the first VW, emerged in the late 1970s (Burtle 2003). Because they are a text-based VW, users are required to read descriptions and type commands in order to control their character and play games. In 1985, *Habitat* provided a 2D graphic environment and employed an avatar, a humanoid graphic representing the user in the world. The avatar-based interaction setting of *Habitat* became a convention of VWs that followed (Castronova 2002). *Meridian 59*, which appeared in 1996, offered an advanced 3D interface VW. Also, while users played in the third-person perspective in prior VWs, they could play in the first-person perspective in *Meridian 59* (Castronova 2002). *Ultima Online*, which offers a 3D interface fantasy setting, was released in 1997. It led to the first commercial boom of VWs (Lehdonvirta 2005). A brief chronicle of VWs is summarized in Appendix A.

**Table 1: Comparison of Gaming Virtual Worlds and Social Virtual Worlds**

	Gaming Virtual Worlds	Social Virtual Worlds
Characteristics	<ul style="list-style-type: none"> <li>• Pre-defined theme and plot</li> <li>• Aiming at a quest or level-ups</li> <li>• The internal virtual market for the operator-to-user transaction &amp; the external virtual market</li> <li>• Users' involvement in <i>buying &amp; selling</i> virtual property</li> </ul>	<ul style="list-style-type: none"> <li>• Personalize their virtual experience which induces a variety of social interactions</li> <li>• Engaging diverse social interactions including economic activities</li> <li>• The internal virtual market for user-to-user trading sanctioned by the operator</li> <li>• Users' involvement in <i>buying, producing &amp; selling</i> virtual property</li> </ul>
Examples	<i>World of Warcraft, Everquest, Lineage</i>	<i>Second Life, Entropia Universe, There</i>

### Advent of Social Virtual Worlds

The above definition of virtual worlds is similar to the notion of MMORPGs or Massive Multiplayer Online Role-Playing Games, such as *Everquest* and *World of Warcraft*. MMORPGs, however, have mainly been used to specify one type of VW, or gaming virtual world (GVW), which has a pre-defined theme and plot and clarifies users' performances (e.g., level-ups). Even though GVWs still occupy the majority of VWs, the other distinctive VWs, where users create their experiences for themselves and have diverse social interactions, have increased

dramatically. This study labels these types of VW *social virtual worlds* (SVWs), such as *Second Life*, *Entropia Universe*, and *There*, and differentiates them from GVWs.

On the other hand, SVWs endow users with the ability to personalize their virtual experiences which induce various social interactions in the worlds. Furthermore, as some SVWs support transactional systems (i.e., virtual currency, internal virtual markets) and allow users to create and own virtual objects, users' activities are extended to economic activities, that is, production and real-money trading of virtual goods. This laissez-faire quality of SVWs is the most distinctive characteristic differentiating them from GVWs.

In practice, the differentiation between GVWs and SVWs is not totally clear-cut, and these types of VWs are not mutually exclusive. For instance, users may aim at making friends in a GVW. They can also enjoy games under a fantasy setting in a SVW. The intention of differentiating the two, as shown in Table 1, is to emphasize that the new type of VWs (i.e., SVWs) encompasses a richer diversity of users' virtual experiences than gaming environments.

## **VIRTUAL ECONOMY**

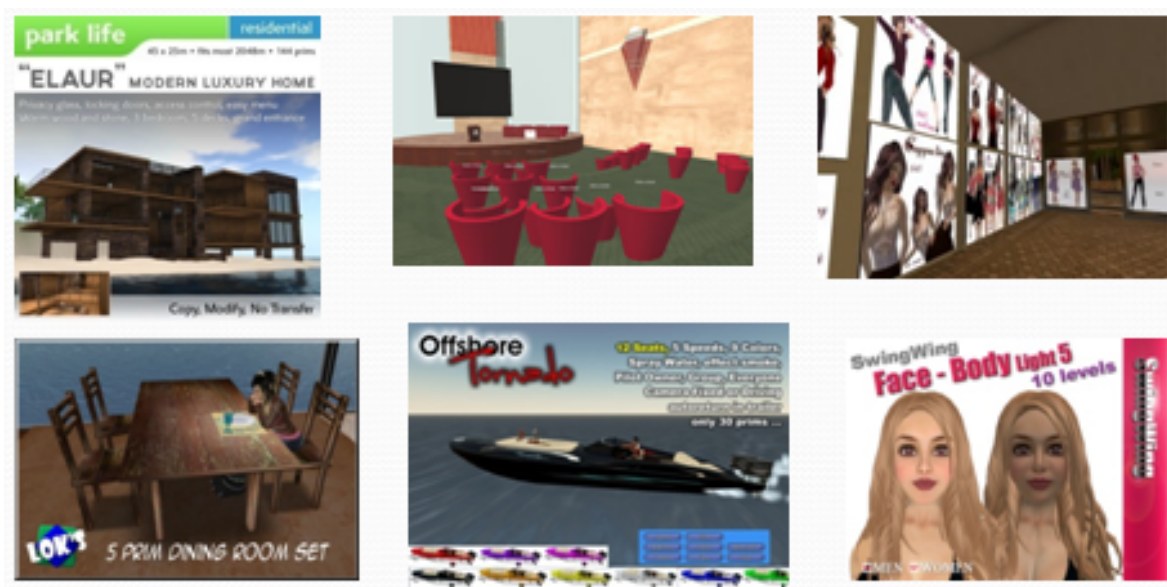
SVWs typically have an economy-like system which simulates aspects of a real-world economy. This internal economic system of a SVW is called a *virtual economy*. Similar to a real-world economy, a virtual economy consists primarily of virtual property, virtual currency, a virtual market, and participants (Lehtiniemi 2008). SVW providers or users produce virtual property and trade with other users using virtual currency, which can be exchanged with real money. There are also a few types of markets where trading is performed. This section outlines these essential components of a virtual economy.

### **Virtual Property**

The spatial-metaphorical characteristics of virtual worlds offer a setting for users to accept virtual property (e.g., land, houses, clothes, cars) as intended objects rather than the



underlying programming codes or scripts themselves. Virtual property are *rivalrous* indicating that owners of virtual property have exclusive control of their property (Fairfield 2005). Also, virtual property are *persistent* once created and are *interconnected* with other users (Fairfield 2005). For example, if a user owns a house in a SVW, that user can modify or decorate the house which persists as long as the SVW operator considers him or her a valid user. The house can be a medium to interconnect users' interaction, such as a place for a party or the object of a deal.



**Figure 1: Examples of Virtual Property**

There have been extensive debates on whether virtual property should be treated as real-world property from a legal perspective (Lastowka and Hunter 2004; Grimmelmann 2004). Fairfield's (2005) conceptualization of virtual property is important from a legal standpoint because virtual property is treated as real-world property in the concept, and thus notions of property rights and taxation can be applied to virtual property. From an economic standpoint, when virtual property is considered equivalent to real-world property this means that users can consider virtual property an object of economic activities (Lehtiniemi 2008).

## **Virtual Currency**

Virtual currency indicates a means of payment in the SVW which is sanctioned by the operator. Virtual currency may have a visual form such as coins, or it may be represented by points or numbers. Even though virtual currency is only dedicated to the specific SVW, these currencies are traded with real money outside the SVW, e.g., in eBay or virtual property trading markets. Some types of virtual currency can be officially exchanged with real money in SVWs, for example, *Linden dollars* in *Second Life*. As virtual currency is converted to real money, the virtual economy/real-world economy boundary becomes blurred and the virtual economy becomes more like a real-world like economy. Thus, virtual currency not only plays the role of a facilitator of transactions in VWs but also as a link to connect the virtual economy to the real-world economy (Shin 2008).

## **Virtual Market**

A virtual market is defined as a place where users exchange virtual property and services. Virtual markets are classified into two types: 1) external virtual markets which exist outside the VW and are usually unsanctioned by the VW operator (particularly, case of GVWs), and 2) internal virtual markets which exist inside the VW and are sanctioned by the VW operator (particularly, case of SVWs). Because the GVW operator provides virtual property to the users and does not allow user-to-user real-money trades of virtual property in the interior virtual market, some users trade virtual property in the exterior virtual market, or ‘black’ virtual markets, so to speak, such as *eBay* or other websites which are dedicated to the trading of virtual property (Castronova 2001). For example, *Ultima Online* users began user-to-user real-money trading of virtual property on *eBay* in the late 1990s (Lehdonvirta 2005). Some SVWs such as *Second Life*, *Entropia Universe*, and *There* have both the role of virtual property and also support user-to-user

real-money trading of virtual property in the interior virtual market. Such internalization of virtual markets has spurred the rapid rise of the virtual economy.

### **Participants**

Major participants in the virtual economy include SVW operators, governmental agencies, and users. SVW operators offer and regulate an environment for a particular virtual economy, and governmental agencies influence SVW operators' policy decisions. While SVW operators and governmental agencies are involved in supporting and influencing the environment of the virtual economy, users are the subject of the virtual economy. Users are the essential component of SVWs, because those worlds are a user-created universe and users are producers as well as consumers from the economic perspective.

## **SOCIAL REPRESENTATIONS THEORY**

In this section, I will introduce social representations theory, which is the overarching theoretical framework for the dissertation. The section begins with introduction to the theory and then explains anchoring and objectification, which are essential processes of social representation. Next, ontological and methodological aspects of the theory are explicated, and some examples of information systems research employing the theory are introduced.

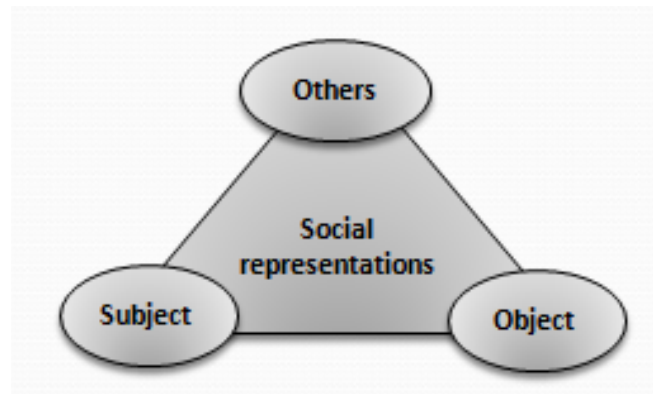
### **INTRODUCTION TO SOCIAL REPRESENTATIONS THEORY**

Social representations theory (SRT) is a branch of social psychology, emphasizing a *social* focus. While theories of social psychology typically assume the atomistic notion of the individual, the starting point of SRT is that the individual is a social being rooted in a collectivity (Augoustinos and Walker 1995). SRT, therefore, seeks to understand collective knowledge that guides the social practices and relationships between community members (Moscovici 1984).

SRT has its root in Durkheim's (1965) concept of collective representations (Moscovici 1984). Collective representations were used to describe thought widely shared by individuals in a society, differentiated from individual thought. Moscovici (1984, 1988) argues that while Durkheim's collective representations are regarded as a rather static concept as neglecting changing nature of representations, social representations encompass the plasticity of representations. Moscovici (1984) contends that social representations are "the contemporary version of common sense" (Moscovici 1981, p. 181), which is continuously reconstituted through social communication and interaction among individuals. In this sense, SRT can be said to include the dynamic nature of representations.

Social representations are the stock of common knowledge and information which people share in the form of common-sense theories about the social world (Augoustinos and

Walker 1995). Social representations provide “a framework of references that facilitates our interpretations of reality and guides our relations to the world around us” (Philogène and Deaux 2001, p. 5). Thus, SRT is an approach that links macro-level social discourse with individual social behavior, cognition, affect and symbolic understanding (Wagner et al. 1996).



**Figure 2: Connection of the Subject, Others, and the Object through Social Representations**

Social representations theory has been used to study collective sensemaking on a wide range of topics, e.g., health and illness (Herzlich 1973), human rights (Doise 2001), entrepreneurs (Radu and Redien-Collot 2008), “African American” (Philogene 1999). The theory has also been fruitfully applied to investigate how a novel or unfamiliar social object or phenomenon is collectively anchored by community members and has become a concrete form: for example, biotechnology (Wagner et al. 2002), digital economy (Alexandra 2001). SRT, then, is an appropriate theoretical lens to study the new social phenomena of virtual consumption and virtual entrepreneurship. Furthermore, in terms of virtual consumption, because SRT is a social cognition approach, it can be an especially appropriate framework in that consumption practices can be better understood under the assumption that individuals are perceived as products of the community (Venkatesh 1995). SRT is also suitable to investigate the virtual economy from the perspective of virtual entrepreneurs. An investigation of common sense understandings about the virtual economy shared by virtual entrepreneurs can not only provide valuable knowledge about

their underpinning beliefs about the virtual economy but can also offer a vivid and revealing account beyond current macro economic analyses of the virtual economy.

## **ANCHORING AND OBJECTIFICATION**

This section describes two processes that are regarded as a key tenet of social representations theory: anchoring and objectification. Studying anchoring and objectification elucidates the socially shared interpretive system that influences social actors' thoughts and actions (Philogène and Deaux 2001).

Humans categorize new information for smooth information processing. The process of categorization is inevitably influenced by pre-existing knowledge which is rooted in the community (Tajfel 1981). This process is described as *anchoring* in SRT. Social representations arise through the efforts of groups to 'cope' symbolically with unfamiliar ideas and practices (Wagner et al. 2002). It is during the anchoring process that unfamiliar objects are classified and named by comparing them with familiar categories (Moscovici 1984). Also, it is during the process of anchoring that new information is placed into a network of significance, molding it in a way that appears consistent with existing ideas (Moscovici 1984). Anchoring is thus prescriptive in nature, since supporting and conflicting information is anchored and re-presented in a way that is compatible with a group's consensual universe (Augustinos and Walker 1995). For example, in studying the social representations of IS security in a hospital, Vaast (2007) found that health professionals anchored the representations of IS security to their familiar work practices with patients, that is, the disclosure of patient information, whether or not it is based on IT. In contrast, the representations of IS security by the IT staff were anchored to their professional practices, that is, IS security *per se*.

*Objectification* indicates the process by which unfamiliar and abstract ideas achieve a concrete form, such as rules, conventions, attributes, or components (Harré 1998), that is, ‘materialization of an abstraction’ (Moscovici 1984, p. 38). Through objectification, the *invisible* becomes *perceptual* and is ultimately integrated into social reality (Farr and Moscovici 1984). For instance, when Vaast (2007) examined the social representations of IS security in a hospital, and she found that hospital employees’ understandings of IS security were commonly concretized as responsibility and accountability which are manifested in the Health Insurance Portability and Accountability Act (HIPAA).

Anchoring and objectification, then, reveal an essential property of social representations (Jodelet 1984). Both are dialectically related rather than mutually exclusive and contribute to the emergence, reproduction, and transformation of social representations over time (Orfali 2002).

## **CORE-PERIPHERY STRUCTURE OF SOCIAL REPRESENTATIONS**

A critical aspect of social representations is their structure, which is seen as consisting of a central core and peripheral elements (Abric 1976). The central core, or attitudinal component, provides a *generating function* through which the other elements acquire meaning and value (Abric 2001). For example, a ‘company’ must make a profit (Flament 1994a), and equality and friendship are seen as essential elements of an ‘ideal group’ (Flament 1984). Central core theory posits that the core is non-negotiable and stable, unaffected by variations in context - “It constitutes the most stable element of the representation, the one that ensures the perennial nature of the representation in moving and evolving contexts” (Abric 2001, p. 44).

Peripheral elements, organized around the central core, are the area of adaptation based on new information or transformation of the environment. One of the functions of peripheral elements is to act as a defense system, or ‘shock absorber,’ because they may change without

disturbing the nucleus or central core (Flament 1994b). Peripheral elements are more malleable and integrate inter-individual variations such as personal experiences into the representation and adapt it to the reality of the moment (Guimelli 1998; Moliner 1995). Ultimately, the postulate of a core-periphery structure of social representations allows SRT to contain contradictory characteristics of social representations; that is, rigid and flexible, consensual and inter-individual differences (Abric 1993).

In the IS field, one example of the core-periphery analysis of social representations is Jung et al.'s (2009) study of emergent social representations of electronic health records (EHRs). It shows that the core elements (e.g., Easy/convenient, Privacy, Technology) play a central role in organizing other elements around the aspects of benefit, risk, and descriptive elements of EHRs.

## **APPLICATIONS OF SOCIAL REPRESENTATIONS THEORY IN THE IS FIELD**

Despite its relative unfamiliarity in the IS field, there have been a few recent studies using SRT in various contexts. The concept of social representations was first introduced to the IS field by Vaast and Walsham (2005). In their study, social representations was used as a conceptual lens to understand how work practices change with IT use. More specifically, the perspective adopted for this work was to relate what agents do to the way they represent their actions and context. A valuable contribution of Vaast and Walsham's paper is their delineation of the notion of representations with other concepts that may be more familiar to IS researchers such as attitudes, beliefs, and technological frames. Vaast and Walsham posit that while attitudes or beliefs focus on the individual agent, the notion of representations regards individuals as social agents by placing them in their collective milieu. They also differentiate representations from *technological frame* (Orlikowski and Gash 1994). Although technological frame is similar



with the notion of representations because both assume social agents, its application is limited to the way agents frame the technology. The concept of representations, on the other hand, is a more comprehensive theoretical lens in that it encompasses all aspects of agents' experience and engagement in their community. A paper by Gal and Berente (2008) also proposes social representations theory as an alternative to technological frame for IS research. They argue that social representation theory can be broadly used to examine collective knowledge beyond knowledge about how groups interpret technology that the technology frame focuses on. Their additional argument is that while technological frame gives little attention to a broader social-historical context; social representations theory considers "how groups couch the technology in the context of their history and identity, and anchor it into existing images and traditions." (p. 140).

Another empirical study conducted by Vaast (2007) examined the social representations of IS security of different occupational communities working in a healthcare organization (e.g., physicians, nurses, IS professionals). The study found that staffs have different understandings of IS security according to their occupational communities. For example, while healthcare professionals (physicians and nurses) think of IS security as the disclosure of patients' information, which is related to their daily work practices; IS professionals understand IS security as threats to computer systems and networks from hackers or viruses, which is relevant in their professional practices. Vaast therefore contends that members of occupational communities in a hospital understand IS security differently with reference to their familiar concepts or practices.

One more example of an IS study using SRT is an investigation by Pawlowski et al. (2007) to understand how IT professionals make sense of and assign meaning to 'burnout' in the

context of their work. Pawlowski et al. investigated IT professionals' understanding of burnout as focusing on a core-periphery structure of the representation. Particularly, authors created a social representations 'map' of the core-periphery structure of the representation based on quantitative methods. Results were interpreted to develop an occupation-specific research agenda on burnout in the IT profession focused on highly salient issues and specific work contexts warranting priority in future investigations, as reflected in the core-periphery structure of the representation.

In addition to these research articles, researchers in the field are also beginning to identify IS research domains where a social representations approach may be of particular benefit. A paper by Vaast et al. (2006) elaborates on a panel discussion and presentations at the International Conference on Information Systems (ICIS) 2005 on the topic of how social representations theory could be applied to the research and practice of knowledge management. The discussion included not only the compatibility and complementarity of the notion of social representations with key theoretical frameworks in IS research (e.g., organizing vision (Swanson and Ramiller 1997), technological frame (Orlikowski and Gash 1994)), but also covered empirical methods of the theory, such as capturing and analyzing a core-periphery structure of social representations.

## **ONTOLOGICAL AND METHODOLOGICAL ASPECTS OF SOCIAL REPRESENTATIONS THEORY**

As stated previously, the current research work consists of two independent studies: the study of *virtual consumption* and the study of *virtual entrepreneurship*. Although each study has a different research strategy, both depend on methodologies related to SRT. Social representations have been studied by diverse methodological strategies that connect theory and empirical applications (Philogène and Deaux 2001). It is important to note that research relying

on social representations theory is based on an interpretivist stance and the belief that reality is socially constructed (Berger and Luckman 1989). The research strategies and suite of methods employed by researchers relying on social representations theory, however, extends beyond those typically associated with social constructionist research. Although studies adopting a social representations approach stand on an interpretive epistemology, they use diverse approaches to collect and analyze data (Philogène and Deaux 2001; Vaast 2007; see also Breakwell and Canter 1993, and Doise et al. 1993 for examples), including the use of quantitative methods more characteristically employed in positivist research. Different types of data-analysis methods including quantitative approaches can be used in order to capture social representations from a vast range of raw materials consisting of individual opinions, attitudes or prejudices (Doise et al. 1993). This is consistent with the view of Denzin and Lincoln (2005), namely that interpretive research may adopt diverse statistical techniques for supporting their interpretations. To grasp the multidimensional quality of social representations, researchers have borrowed innovative methods which have combined various empirical approaches. It is the rich methodological heritage of social representations studies that has made the theory so effective in tracing a social reality (Philogène and Deaux 2001).

One of the advantages of using SRT is the diversity of methodological approaches that have been developed for these studies, including multi-methodological approaches. Multi-methodological approaches are particularly useful in these investigations because of: 1) the multifold nature of the construct of social representations, involving ideas, beliefs, values, practices, feelings, images, attitudes, knowledge, understandings and explanations, 2) the additional complexity that needs to be taken into account because social representations acquire meaning, structure and image through verbal expression and communication, and 3) the different

questions that can be pursued by studying social representations (how they function, how they are created, etc.) (Sotirakopoulou and Breakwell 1992). For many of these investigations, no single tool is adequate, and social psychologists have given special priority to the development of mixed method approaches.

The following first essay illustrates the collective meanings of and user goals for virtual consumption through a core-periphery analysis of social representations and means-end chain analysis. Next, in the essay of virtual entrepreneurship, the core-periphery structure of representations of virtual entrepreneurship is analyzed through the same methodological procedure as used in the first essay, and the representations are explained from the perspective of the meanings of a SVW (see Table 2).

**Table 2: Research Strategy**

	Research questions	Theoretical framework	Samples/Analysis
Essay I: Virtual Consumption	1) What are the collective meanings of virtual consumption? (Virtual Consumption Study I)	Social representations theory	<ul style="list-style-type: none"> <li>• Subjects: <i>Second Life</i> users</li> <li>• Web-based survey, based on a free-word association technique</li> <li>• Core-periphery analysis</li> </ul>
	2) Why do users consume virtual goods? (Virtual Consumption Study II)		<ul style="list-style-type: none"> <li>• Subjects: <i>Second Life</i> users</li> <li>• Laddering interview</li> <li>• Means-end chain analysis</li> </ul>
Essay II: Virtual Entrepreneurship	1) What are the collective meanings of virtual entrepreneurship?	Social representations theory Translation of Institutional theory	<ul style="list-style-type: none"> <li>• Subjects: <i>Second Life</i> entrepreneurs</li> <li>• Semi-structured interview</li> <li>• Core-periphery analysis</li> </ul>
	2) How are the collective virtual worldview reflected in the collective meanings of virtual entrepreneurship?		<ul style="list-style-type: none"> <li>• Identify central meanings of SVWs <ul style="list-style-type: none"> <li>- Source data: Major US newspapers</li> <li>- Core-periphery analysis</li> </ul> </li> <li>• Comparing them with the meanings of virtual entrepreneurship</li> </ul>

# ESSAY I: CONSUMING BITS: USERS' UNDERSTANDINGS OF AND GOALS FOR VIRTUAL CONSUMPTION

## INTRODUCTION TO VIRTUAL CONSUMPTION STUDY

Virtual consumption, or the in-world consumption (i.e., purchasing) of virtual goods, is supported mainly by two elements of SVWs: *user empowerment* and *in-world real-money trading* (RMT). SVW users can create virtual property, have property rights, and can buy and sell property. This type of environment has generated a flood of creative virtual goods which have stimulated the exponential growth of virtual consumption seen recently. RMT of virtual goods is not new. Some GVW players began putting their virtual property on *eBay* in 1999 (Lehdonvirta 2005). However, while earlier forms of RMT were not supported by GVW operators and were performed outside of VWs, newer forms of RMT are supported by the operators of these worlds and the trading is conducted inside of SVWs. Owing to the user-friendly economic systems of SVWs, users' consumption of virtual goods has become a routine activity in SVWs.

As mentioned in the introduction, prior research on the virtual economy, including virtual consumption, has dealt with the overall environment of the virtual economy, such as legal and macroeconomic aspects; this research neglects the perspective of the economic subject, or users' understanding of the virtual economy. This essay is an exploration of users' perspectives on virtual consumption, focusing specifically on these two questions: 1) *What are the collective meanings of virtual consumption?*, and 2) *Why do users consume virtual goods?*. While the first question will be explored through the core-periphery analysis of social representations, the second question will be investigated through means-end chain analysis.

## **VIRTUAL CONSUMPTION STUDY I: THE COLLECTIVE MEANINGS OF VIRTUAL CONSUMPTION**

The first essay of virtual consumption consists of two studies: *Virtual Consumption Study I* for exploring the collective meanings of virtual consumption and *Virtual Consumption Study II* for understanding user goals for virtual consumption. In this section, the description of Virtual Consumption Study I begins with an introduction to the core-periphery analysis of social representations that is its methodological approach.

### **Procedure of Core-Periphery Analysis**

SRT core-periphery analysis is similar to a grounded theoretical approach, consisting of four steps: 1) Eliciting social representations, 2) Coding, 3) Analysis of the structure of the representation, and 4) Figurative description of the representation. For the first step, we used a free word association technique in which the subject is asked to respond to the stimulus word or phrase. Next, elicited words/phrases are coded and then analyzed using analysis of similarity (Flament 1986) and core-periphery model analysis (Borgatti and Everett 1999). Finally, a core-periphery structure of social representations is produced and is described in a figurative form such as the maximum tree (Flament 1986) which can be generated by pair-wise similarity indexes.

### **Eliciting Social Representations – Free-Word Association**

The target SVW for this study was *Second Life*. Its users have their own avatar representing themselves. Users may also elaborate a personal avatar's face, hair, and body and clothe it. They can also create 3D objects (e.g., chair, building, waterfall) using basic shapes (e.g., squares, triangles, cubes) and chunks of code called script; additionally, they can perform virtual tasks with these objects or sell them to other members. Via personal avatars, users can enjoy synchronous chatting at the park or on the beach, dancing at night clubs, or taking a class.

**Table 3: Demographics of Participants for the Core-Periphery Analysis**

		Frequency	Percent			Frequency	Percent
Age	18-24	32	20.8	Tenure as a <i>SL</i> user	1 month or less	18	11.7
	25-34	48	31.2		2 to 6 months	34	22.1
	35-44	40	26.0		7 to 12 months	25	16.2
	45-54	18	11.7		1 year to 2 years	39	25.3
	55 or older	10	6.4		Longer than 2 years	37	24.0
	No answer	6	3.9		No answer	1	0.6
Gender	Male	64	41.6	Login frequency	Once a month	1	0.6
	Female	85	55.2		Once a week	5	3.2
	No answer	5	3.2		Several times a week	32	20.8
Education	High school	44	28.4		Almost daily	115	74.7
	Community college	26	16.9	<i>SL</i> purchase frequency	No answer	1	0.6
	Undergraduate	33	21.4		Never	11	7.1
	Graduate	45	25.3		Once a month	33	21.4
	No answer	6	3.9		Once a week	41	26.6
Type of account	Free	119	77.3		Several times a week	68	44.2
	Premium	35	22.7		No answer	1	0.6
	No answer	0	0.0				

Three approaches were used to recruit participants for the study. First, we sent emails to group leaders of a wide diversity of groups requesting them to distribute our message to their members soliciting participation in the study. To participate, subjects made appointments with us by email or *Second Life* IM (Instant Message). Second, we directly recruited logged-in group members by *Second Life* IM. Lastly, we visited various *Second Life* locations (e.g., beaches, parks, sandboxes) and directly solicited *Second Life* users who were in those places. One hundred-fifty-four *Second Life* users participated in the survey and each participant received \$5 rewards in the form of *Linden dollars* or *PayPal*, depending on their preference. The participants were heterogeneous in demographics (see Table 3). Approximately the half of the participants were older than 34 years and had undergraduate or graduate degrees, indicating that *Second Life* is used by people of all ages and educational backgrounds. Over 20 percent of the participants had a premium membership which allows the members to have virtual territory in *Second Life*. The majority of the participants can be regarded as highly-attached users in that about 74 percent of the participants logged into *Second Life* almost daily and over 70 percent of the participants purchased virtual goods at least once a week.

A free-word association technique was employed to elicit the users' social representations of virtual consumption. In a free-word association test, the respondent is required to reply immediately with the first word(s) that come to mind upon being given the stimulus word. Words which illustrate an object can provide useful information in order to define the semantic universe of social representations of the object (Doise et al. 1993), and the technique allows researchers to elicit words representing the object from respondents. The free-word association technique has been popularly adopted in exploring this semantic space (Di Giacomo 1980; Lorenzi-Cioldi 1996; Wagner et al. 1996). On the Web-questionnaire, respondents were instructed to write down three words or phrases which came to mind when hearing the term "virtual consumption (consumption of virtual goods/property)."

One of the primary advantages of this technique is the ease of data collection in terms of effort by researchers and subjects. Participation in a study may also be broader in terms of number of participants/social groups because of the minimal time required by subjects as well as the ability to collect the data online. Elapsed time for data collection can also be shorter in contrast to other methods, such as interviews. Free-word association responses captured online do not require this extra step.

For some social representations studies, free-word association would not be the optimal data elicitation strategy. The major drawback is the lack of elaboration that free-association responses (typically single words and short phrases) provide. In cases where the researchers are unfamiliar with relevant elements of the context or specialized terminology used within the social group, there is a risk that the researchers will miss or misinterpret meanings underlying the responses of the subjects. In these situations, other elicitation techniques such as in-depth interviews or focus groups may be necessary. Approaches can also be combined to address this



issue, for example, conducting a pilot study involving a limited number of interviews or a period of observation/immersion in a context, followed by a survey with broader participation using free-word association to gather data.

### Coding

The first part of the data analysis was detailed coding of each word/phrase elicited from the participants and identification of key topics (concepts). For this study, I first coded the data using an open coding procedure in which codes were not predetermined, but rather emerged from the data. This resulted in 54 detail codes present in the data (*C5 Amusement/Fun/Feel positive*, *C33 New*, *C42 Scam/Risky*, etc.). For example, “friendship,” “meeting new people” and “networking” were assigned to code *C47 Socialization*. In cases where the data contained more than one subject, multiple codes were assigned. For example, “I buy things that don't really exist.” was assigned two codes – *C4 Purchase* and *C34 Unreal/Virtual/Cyber/Online*. (See Table 5 for more of the detailed codes identified during this step.) A second coder, another researcher, independently re-coded the data using the set of codes identified during the initial coding. The two raters were in agreement on 452 of the 507 codes assigned (Consistency rate = 0.892, Cohen’s Kappa = 0.890), indicating a high level of inter-rater reliability (Fleiss 1981). Inter-rater disagreements were then reconciled through discussion and consensus.

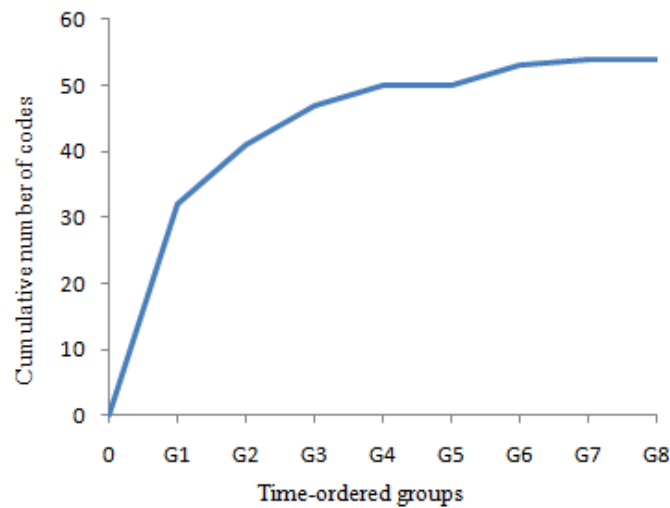
In order to confirm theoretical saturation indicating that no more new codes appear during data collection (Strauss and Corbin 1998), we checked whether the number of new codes increased with the passage of time. Theoretical saturation assumes that the more data are collected, the less new codes emerge and finally no new code emerge; that is, saturation. Thus, the cumulative number of new codes with the passage of time should not rise at a saturated point. Our data confirmed this (Figure 3); therefore, we did not collect additional data.

Finally, related codes were grouped into 32 topics (super-codes), as shown in Table 5.

For example, Topic 17 *Price perception* is a grouping of three detail codes – C7 *Cheap*, C11 *Price/Cost*, and C19 *Expensive*.

**Table 4: Cumulative Number of New Codes by Time-ordered Groups**

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
	First 20 samples	Next 20 samples	Next 20 samples	Next 20 samples	Next 20 samples	Next 20 samples	Next 20 samples	Last 14 samples
Number of new codes	32	9	6	3	0	3	1	0
Cumulative	32	41	47	50	50	53	54	54



**Figure 3: Cumulative Number of New Codes**

### Analysis of the Structure of the Representation

The next stage of the analysis involved identification of the emergent core and periphery structure of the social representation. The three criteria for the core elements of a social representation identified by Abric (2001) are: symbolic value, expressive value, and associative value. Symbolic value is based on the generating function of the core and the concept that central elements cannot be questioned without affecting the signification, or meaning, of the entire representation. Expressive value springs from the assumption that central elements will be more frequently present in the discourse concerning the object than the peripheral elements.

**Table 5: Topics (Super-codes) – Elements of the Social Representation of Virtual Consumption**

Topic		Examples
T1	Aesthetic	Aesthetic, Creating, Decorating, Fashion
T2	Amusement	Amusement, Fun, Feel positive, Game
T3	Avatar	Avatar
T4	Business activity	Advertising, Marketing, Make money, Commercial, Business, Sale, Trade
T5	Complex	Complex, Detailed
T6	Compulsive/ Impulsive	Addiction, Impulsive, Intuitive
T7	Consumer activity	Consumer, Purchase, Use up, Shopping
T8	Creativity	Creativity, Variety
T9	Daily	Daily, Daily online routines
T10	Easy	Easy
T11	Economy	Economy, Capitalism, XStreetSL (External virtual market)
T12	Exploring	Adventure, Exploration
T13	Fantasy	Fantasy, Our dream comes true, Imaginary
T14	Interactive	Interactive, Interactions
T15	Novel	Future, New
T16	Possession	Possession, IP right
T17	Price perception	Price, Cost, Cheap, Expensive
T18	Quality	Quality
T19	Realistic	Real, Realistic
T20	Real life	Real life, Real world
T21	Real money	Conversion, Real money
T22	Relaxing	Pastime, Relaxing
T23	Role-playing	Role-playing, Sim
T24	Scam	Scam, Risky
T25	Self-expression	Self-expression, Personality, Image consciousness
T26	Silly/Wasteful	Silly, Wasteful, Vanity
T27	Skill	Knowledge, Learning
T28	Socialization	Social relations, Friendship, Networking
T29	Technology	Computer, Technology, Software, Download, Graphic
T30	Temporary	Instant, Temporary
T31	Virtuality	Unreal, Virtual, Cyber, Online, Simulation, Virtual life, Virtual world, Intangible
T32	Virtual money	Virtual money, Linden

Finally, associative value is established on the tenet that central elements must be associated with a larger number of elements than the periphery ones. Within the scope of the current study, we were able to assess expressive and associative value of the elicited concepts, but not symbolic value. It should be noted that these two criteria are considered ‘soft’ conditions – necessary, but not sufficient for coreness. Symbolic value is the only criterion that is both necessary and sufficient. Because assessing symbolic value requires additional research settings (e.g., longitudinal research, vignette method), it is beyond our research design. Our analysis,

then, indicates the preliminary structure of the representations of virtual consumption. We believe that elements which satisfy the other criteria (expressive value and associative value) may also meet the symbolic value criterion.

Expressive value was assessed by the parameter salience, which was measured by computing frequencies of appearance of elements (topics) in the responses (Abric 2001; Nicolini 1999). Associative value was assessed via sum of similarity. Sum of similarity is produced by analysis of similarity which was introduced by Flament (1986) and has been widely used to clarify relationships among the elements of social representations (see, e.g., Nicolini 1999; Pawlowski et al. 2007). The fundamental component of the analysis is an inter-attribute similarity (IAS) matrix in which each cell contains a Jaccard's similarity coefficient, indicating the degree of co-occurrence (proximity) for a given pair of attributes (Hammond 1993). Sum of similarity is calculated as a sum of the similarities of each element (topic) to all others in the IAS matrix shown in Appendix B. In analysis of similarity, the higher sum of similarity that the element (topic) has, the closer association the element has with the others.

In order to simultaneously consider two parameters (i.e., sum of similarity and salience), we conducted a hierarchical cluster analysis using the parameter values of the topics. The results suggested that there are the two groups: one group which has high values of salience and sum of similarity (i.e., the core); and the others (i.e., the periphery). To confirm the results of the membership, we used Borgatti and Everett's (1999) core/periphery model. This procedure was developed to detect a core and periphery structure in network data consisting of values representing strengths of relationships among items. Coreness is considered a function of the closeness (either correlation or Euclidean distance) of an element to the center, and in this way is similar to factor analysis where the correlations among a set of variables are assumed to be a

function of the correlation of each variable to the latent factor, that is, the strength of the relationship between any two elements depends completely on the extent to which each is associated with the center (Borgatti and Everett 1999). Borgatti and his colleagues developed an algorithm for detecting a core and periphery structure and developed the computer package UCINET, which estimates the coreness value of each element and classifies elements into the core or the periphery.<sup>1</sup> We used the co-occurrence matrix as the data matrix for this part of the analysis. UCINET generated the membership of topics based on their coreness, and its result was exactly same as the membership results produced by a hierarchical cluster analysis. Sum of similarity, salience and coreness of each topic are shown in Table 6. Three topics were classified into the core of the social representation (T2, T7, and T31) and the remaining twenty-nine into the periphery.

#### Maximum Tree

The maximum tree (Flament 1986), which originates in graph theory, seeks to single out relationships among all nodes within a map (tree) that maximize the overall similarity within the representation of the map (Doise et al. 1993). Accordingly, there is only one link between any two nodes. The maximum tree was constructed by the nearest neighbor algorithm which was run on the IAS matrix. The nearest neighbor algorithm used four parameters in the analysis: (1) the pair-wise topic similarity from the IAS matrix, (2) salience (frequency), (3) sum similarity, and (4) coreness. The process was started with all the topics (X) that were generated by the coding procedure.

---

<sup>1</sup> We used statistical software UCINET 6.0 in order to generate coreness and the membership of elements (i.e., core or periphery). In the core-periphery analysis of UCINET 6.0, the program creates the pattern matrix which is defined as  $\delta_{ij} = c_i c_j$ , where  $c$  is a vector specifying the degree of coreness of each node. The program finds a set of  $c$  values so that the matrix correlation between the pattern matrix and the data matrix is maximized, and classifies elements into core or periphery based on the pattern matrix chosen. The following website can be consulted for details of UCINET 6.0: <http://www.analytictech.com/ucinet/ucinet.htm> (current February 1, 2010).

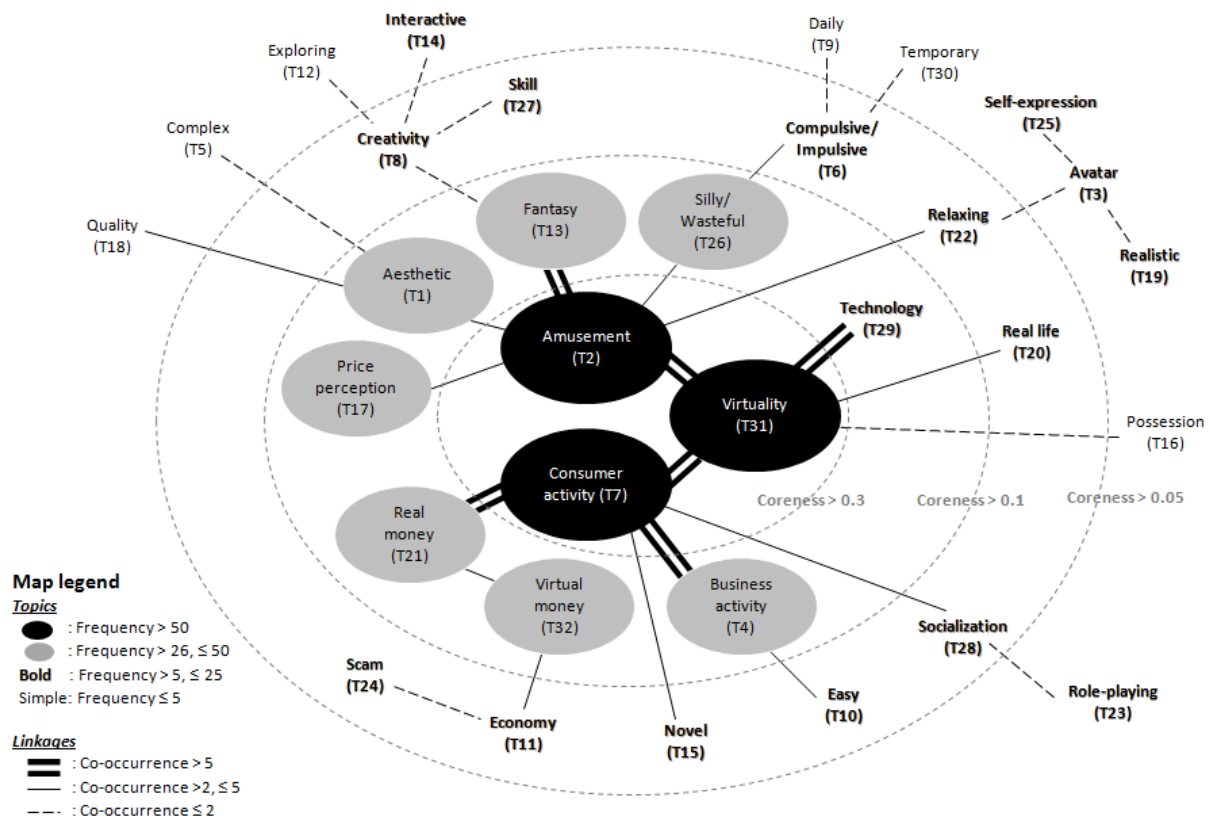
**Table 6: Core and Periphery Membership – Social Representation Elements**

Topic#	Topic	Salience (Frequency)	Sum of similarity	Coreness	Membership
<b>T31</b>	<b>Virtuality</b>	<b>78</b>	<b>0.727</b>	<b>0.547</b>	<b>CORE</b>
<b>T7</b>	<b>Consumer activity</b>	<b>73</b>	<b>0.713</b>	<b>0.484</b>	
<b>T2</b>	<b>Amusement</b>	<b>70</b>	<b>0.738</b>	<b>0.394</b>	
T4	Business activity	45	0.614	0.263	PERIPHERY
T21	Real money	34	0.520	0.218	
T32	Virtual money	28	0.490	0.154	
T17	Price perception	26	0.547	0.105	
T1	Aesthetic	26	0.535	0.126	
T26	Silly/Wasteful	26	0.474	0.128	
T13	Fantasy	26	0.465	0.163	
T29	Technology	25	0.417	0.181	
T6	Compulsive/Impulsive	19	0.456	0.082	
T8	Creativity	17	0.455	0.071	
T15	Novel	17	0.400	0.096	
T10	Easy	16	0.409	0.073	
T11	Economy	15	0.364	0.079	
T28	Socialization	13	0.338	0.084	
T27	Skill	12	0.319	0.062	
T20	Real life	12	0.310	0.071	
T25	Self-expression	10	0.289	0.047	
T24	Scam	10	0.264	0.050	
T22	Relaxing	10	0.263	0.068	
T3	Avatar	9	0.353	0.023	
T19	Realistic	9	0.260	0.040	
T23	Role-playing	7	0.199	0.033	
T14	Interactive	7	0.173	0.048	
T30	Temporary	5	0.211	0.038	
T18	Quality	5	0.183	0.013	
T5	Complex	5	0.182	0.019	
T9	Daily	4	0.200	0.024	
T12	Exploring	4	0.136	0.017	
T16	Possession	4	0.063	0.040	

- 1) From the set of X topics, the one with the highest salience value was selected and included it in the map.
- 2) From the set of (X-1) topics, the one with the highest relationship or similarity in the IAS matrix to the topic already in the map was included in the map.
- 3) Whenever there were multiple topics with the same similarity, the one with the highest salience value was picked (Kruskal 1956). If the salience value was also the same for the topics, then their sum of similarity was compared and this was used to break the tie.

- 4) Next, from the set of (X-2) topics, the one with the highest similarity to the topics in the map was used; again salience value and sum similarity was used to break ties.
- 5) This iterative method was continued until all the topics were moved to the map.
- 6) Lastly, all the topics were located into one of circular layers of coreness, based on their coreness, and then one-to-one linkages, which were determined in the prior procedure, were drawn.

It is important to mention that according to graph theory convention, the map does not reflect the actual locations of the concepts. Rather, it simply serves to illustrate the pattern of relationships among the topics (Pawlowski et al. 2007).



**Figure 4: The Map of the Social Representation of Virtual Consumption**

## Discussion

The empirical investigation revealed components consisting of the social representation of virtual consumption and the structure of the representation. The findings showed that thirty-two concepts formed the representation of virtual consumption, with three core elements: *Amusement*, *Virtuality*, and *Consumer activity*. Each core element depicts important aspects of virtual consumption. *Amusement* can be considered a principal purpose for virtual consumption; *Virtuality* implies an ontological stance of virtual consumption; and *Consumer activity* suggests that virtual consumption is similar to real-world consumption activity. Also, the maximum tree described the generic nature of the core elements well by showing that the core elements enable the other elements to acquire meanings. For example, *Amusement* is widely connected to the other concepts, such as *Aesthetic*, *Fantasy*, *Silly/Wasteful*, *Price perception*, and *Relaxing*, and can be considered an overarching purpose. A more specific discussion follows.

### Hedonic Aspects of Virtual Consumption

Marketing literature has posited that consumption of even ordinary goods may involve the pursuit of pleasure and thus consumer hedonism can be a compelling motivation for consumption (Campbell 1992; Hirschman and Holbrook 1982). For example, consumer hedonism has been widely used to explain consumption of fashion, movies, and music (Hirschman and Holbrook 1982). Our findings are in line with the hedonic consumption standpoint. First of all, *Amusement* is one of the three core elements of the representation of virtual consumption. The other intrinsic motivational factors (*Aesthetic*, *Fantasy*, and *Creativity*) are also present in the social representation of virtual consumption. Those intrinsic motivational factors expose a hedonic aspect of virtual consumption in that they have direct or indirect association with *Amusement*. Literature also confirms that those intrinsic factors are parts of



hedonic stimulus for consumption (Campbell 1992; Hirschman 1983a). As a result, the findings suggest that virtual consumption is motivated mainly by users' hedonic wants.

In the social representations map of virtual consumption (Figure 4), *Aesthetic*, designating users' pursuit of beauty, has associations with *Quality* and *Complex*. These results may be interpreted that aesthetic evaluation of virtual goods may be an important criterion for assessing their quality, and detailed virtual goods may arouse users' aesthetic sense. In addition, the map revealed that *Fantasy* has relationship with *Creativity* which is subsequently related to *Skill*, *Interactive*, and *Exploring*. The relation of *Fantasy* and *Creativity* is straightforward because users' creativity may be a resource for their fantasy experience which indicates that imagination comes true (at least virtually). For example, users can accomplish their dream of having a Caribbean pirate ship, which they cannot have in the real world, by building one based on their own creativity or buying one in which a builder's creativity is described. Users may also think that the production or acquisition of creative virtual goods requires design skills (i.e., Linden Script Language (LSL) skills) or involves the search for creative sellers (i.e., stores which sell creative goods) (*Exploring*). The association of *Creativity* and *Interactive* suggests that an interactive characteristic of virtual objects can stimulate users' creativity. The link confirms the argument that an interactive interface of a technology enhances users' creativity by fostering their locus of control to the technology (Candy and Edmonds 2000). For instance, *Second Life* users can exert their creativity in creating their avatars' appearance by using animated or editable dresses or controlling the Edit Appearance menu as shown Figure 5.

*Amusement* is connected to *Avatar* as mediated by *Relaxing*. This suggests that users may empathize with their avatars and feel relaxation, which ultimately leads to amusement, through their avatars' activity. For example, in an open question of our survey, a few participants

mentioned that they experience amusement and relaxation through enabling their avatars to dance in comfortable circumstance (e.g., make avatars dance in their own houses). On the other hand, *Avatars* are associated with *Self-expression* and *Realistic*. This finding implies that an avatar is a main medium through which users express themselves (i.e., virtual self) and users are apt to create human-like avatars. The finding can also mean that expressing the self through their avatars and making avatars realistic are included in their relaxation behavior.



**Figure 5: Editing Avatar Appearance**

Finally, *Amusement* is also linked to *Price perception*. This relationship may be based on the thought that users' sensitivity to price of virtual goods depends on the degree to which users feel pleasure from consuming the property. Again, this relationship reminds us of the importance of a hedonic nature of virtual consumption.

### Negative Feelings about Virtual Consumption

Interestingly, *Amusement* is connected to a negative feeling, *Silly/Wasteful*, which is associated with *Compulsive/Impulsive* consumption. This finding suggests that sometimes users act compulsively and impulsively consume virtual goods for pleasure, and that this behavior can be considered as useless or undesirable. The finding also suggests that there is a sense of ambivalence towards virtual consumption; that is, both a positive perception of virtual consumption (*Amusement*) and negative perception (*Silly/Wasteful*). A sense of ambivalence towards social objects is found in the prior social representations literature. In the study exploring the social representations of mobile commerce services, Penz (2006) found a similar ambivalent aspect of social representations (time saving, quick vs. annoying, total surveillance), and Jung et al.'s (2009) study investigating the social representations of electronic health records (EHRs) also confirms the ambivalent attribute that can be present in social representations (accessibility, convenience vs. concerns about security, privacy).

### Ontological Stance of Virtual Consumption

*Virtuality*, one of the three core elements, indicates the ontological stance of virtual consumption. The word *virtual* may be regarded as *not real*, that is, the antonym to real. Actually, some of the study participants provided *not real* or *unreal* as their answers, which were included in the topic *Virtuality*. However, the word *virtual* is primarily used to differentiate the environment from *physical environments* rather than indicate not real *per se* (Jakobsson 2006). A virtual good does not exist physically; it exists socially as having a certain function which has a social meaning in a SVW, particularly the meaning equivalent to its counterpart real-world object (Brey 2003). For example, users wear elegant *virtual clothes* when attending a party in

*Second Life* as people have a gorgeous *dress* for a party in the real world. Therefore, *Virtuality* ontologically indicates *social reality* in SVWs.

The strong relationship of *Virtuality* and *Technology* makes sense in that technologies are a fundamental means to generate virtual environments. Also, because the real world can be considered the other side of SVWs, *Virtuality* is connected to *Real life*. Lastly, the connection of *Virtuality* and *Possession* simply indicates that users possess virtual goods virtually.

#### Economic Aspects of Virtual Consumption

The findings show that users' understandings of virtual consumption also reflect economic aspects of real-world consumption. Although some users feel the novelty of virtual consumption (i.e., the connection of *Consumer activity* and *Novel*), in many respects virtual consumption is considered to correspond closely to real-world consumption. Several concepts related to the real-world economy, including consumer and business activity, currency, market, and even scams, appeared in the representation of virtual consumption. These findings suggest that virtual consumption is anchored in real-world practices. The strong association of *Consumer activity* and *Real money* implies that real money is involved in the consuming activity in a SVW. Our findings reveal that although a large amount of free items, called freebies, exist in a SVW, users largely acquire virtual goods largely via real-money transactions. Moreover, the relationship of *Real money* and *Virtual money* mirrors users' perceptions that virtual currency has real value. Another interesting point is that several users mentioned *Scam* in virtual markets. For example, even though a user pays money for an elegant virtual dress, she may get a different inferior dress or nothing from a seller.

The strong relationship between *Consumer activity* (e.g., buying) and *Business activity* (e.g., selling) is because each activity is one side of the same coin. Also, some users think that

*Business activity* is *Easy* in a SVW. There may be three plausible reasons. First, virtual goods can be copied unlimitedly by the producer, and thus the production cost theoretically approaches zero. Second, by modifying the scripts of existing goods, the producer can create a diverse set of other goods. Third, transactions are conducted via the trading systems of a SVW without sellers' intervention.

*Consumer activity* is associated with *Socialization* which is related to *Role-playing*. This means that consuming behavior supports users' social purposes. For example, users purchase virtual clothes to attend parties in a SVW or consume virtual items, such as costumes, weapons, and horses, to participate in group activities in role-playing communities. This finding indicates that *Socialization* can trigger consumption of virtual goods in a SVW.

## **Implications**

This study has several theoretical and practical implications. The most important theoretical contribution of the study is its informative merits. Because of its newness, virtual consumption has not been well conceptualized. In the study, we investigated users' shared meanings of virtual consumption through exploring the structure of its social representation. The structure of the representation of virtual consumption tells us its concrete form by identifying individual conceptual components of virtual consumption and their relations. The study also shows how virtual consumption is anchored by demonstrating that it is rooted in concepts drawn from concepts and understandings of real-world consumption. Also importantly, the study suggests potential theoretical frameworks for future research on virtual consumption (e.g., theories of hedonic consumption (Campbell 1992), virtual social practices (Brey 2003)). Accordingly, our study accomplishes its mission to provide preliminary knowledge about virtual consumption for future research.

The second implication is that the study fills the empirical void in research on virtual consumption, and even SVWs. Despite the increased number of publications on SVWs, there is still little empirical research on SVWs and virtual consumption in particular. Moreover, unlike prior research, this study reflects the perspective of the economic subject, or users, who are consumers, producers, and sellers. Our research offers a new avenue of user-oriented research on the virtual economy in that it explores users' understandings of virtual consumption beyond the current macro-focused perspectives.

Third, the study serves as a reminder to IS researchers about the importance of the topic by confirming that virtual consumption is widely associated with diverse activities and values in SVWs. Researchers attempting to understand the behavior of SVW users should bear in mind that virtual consumption is an important component of their virtual life. Underestimation of virtual consumption as merely habitual activities could leave an important element missing in explaining user behavior.

Lastly, our core-periphery analysis of social representations can be a methodological alternative to IS research which explores users' understandings or perception of information technologies. Most of this type of research has been carried out using quantitative research methods. One of the major risks in using this approach is operationalization, where a concept comes to be defined by its methodology rather than reflecting the understandings of the relevant users (Gigerenzer 1991). Our methodological strategy that combines a grounded theoretical approach and quantitative analysis can compensate for this potential weakness and offer another methodological option.

The study findings also have practical implications by providing valuable knowledge for SVW service providers and even other cyberspace providers who want to create a better

environment for virtual consumption and businesses. The first specific implication for SVW service providers is that the findings remind service providers of the importance of security. Although the intention of service providers is to follow the principle of laissez-faire in SVWs, the study highlights the importance of ongoing efforts to develop and maintain secure systems for user-to-user transactions and ownership of virtual property. As virtual consumption has become deeply associated with the majority of the activities in SVWs, user-to-user transactions have increased and users' possession of virtual property has become universal. As a result, risk from hacking and scams has increased and service providers' interventions have been required to maintain a peaceful virtual market. If safe transactions and possession of goods are not guaranteed, then users will be reluctant to engage in economic activities (i.e., little user demand and production), with a steep downslide of the virtual economy. Moreover, users' distrust towards a secure virtual life may increase their ontological vulnerability and ultimately weaken their attachment to the world.

An additional implication of the study for service providers is the need to raise the clarity of different aspects of the SVW marketplace. For example, several users pointed out scams and the ambiguity of prices. One extreme case is the situation where some users sell virtual property which they got for free elsewhere and the buyer could also have acquired for no cost. This type of information asymmetry may distort the virtual market and create a distrustful virtual society, which is a barrier to user retention. To enhance market clarity, service providers might add price comparison systems and user review systems on sellers, an approach that has been demonstrated workable in B2C e-commerce.

The findings also provide creators of virtual goods with some valuable information. Most importantly, by highlighting that virtual consumption is significantly associated with amusement,

the findings suggest that the creators need to produce virtual goods which can arouse amusement. In particular, considering that amusement is deeply connected with fantasy in the map (Figure 4), the creator may need to focus on generating virtual goods that appeal to users' fantasy desire. However, given that virtual consumption is simultaneously related to replication of real-world entities (i.e., social reality in a SVW), fantasy virtual goods that are extremely remote from the real world (e.g., angels' wings) can be less popular than fantasy ones reflecting the real-world (e.g., a dress imitating one that a popular actress wears in a movie). Accordingly, the findings suggest that creators consider producing virtual goods that blend fantasy and real-world entities.

### **Limitations**

There are three limitations of the study. First, the core-periphery analysis does not fully examine Abric's (2001) conditions for core elements of social presentations, symbolic value. Thus, our analysis offers only a preliminary core-periphery structure of the social representation of virtual consumption. For a more advanced structural approach on social representations, future research needs to utilize additional methods such as longitudinal or vignette approaches in order to expressively examine the conditions for core elements of social representations.

Second, the study's samples may be biased towards highly-motivated users because the participants voluntarily responded to the survey. Accordingly, the study has a limitation in fully generalizing the findings. Moreover, the study deals with only one SVW. Thus, in future research the findings of the study should be re-examined on other SVWs, which have different environments. Furthermore, in order for further understanding, future research needs to compare the study findings to virtual consumption in other cyberspaces, such as gaming virtual worlds, conventional virtual communities, social networking services, or weblogs.



Finally, this study did not control for variance caused by culture, which may function as an important variable in fully understanding SVW users' goals for virtual consumption. *Second Life* is a worldwide cyberspace and the users come from various countries. Cultural considerations can thus be a prominent aspect in future research on virtual consumption in cyberspaces. To avoid the impact of cultural variance, future research may limit participants who live in the same real-world country or consider SVWs dominated by one culture, such as *HiPiHi*, which is a prominent Chinese SVW.

## **VIRTUAL CONSUMPTION STUDY II: USER GOALS FOR VIRTUAL CONSUMPTION**

This section describes the component of the research to explore users' understandings of virtual consumption by looking at user goals for virtual consumption in a SVW. Means-end chain analysis, the methodology of this study, is first introduced.

### **Means-End Chain Analysis (MECA)**

A goal is a desired outcome of an action (Locke and Latham 1990). Many researchers take the view that goals exist within a hierarchical system where a goal is located between its superordinate and subordinate goals, and furthermore, that each goal is a means to achieve its superordinate goal (Kruglanski et al. 2002; Newell and Simon 1972; Pervin 1989). A means-end chain analysis (MECA) approach stems from the idea of this type of a hierarchical goal system. MECA posits that product or service attributes represent the means by which consumers achieve benefits and important personal values (i.e., ends) (Gutman 1982; Olson and Reynolds 1983). In other words, MECA is an approach for discovering the important meanings that consumers ascribe to a product or service's attributes (Voss et al. 2007). The analysis assumes that consumer knowledge is hierarchically organized by levels of abstraction (Reynolds et al. 1995), and focuses on a product or service's meanings at three levels of abstraction: attributes,

consequences, and values. Attributes refer to a product or service's physical or observable properties; consequences are the benefits attained by the attributes; and values imply highly abstract motivation that guides usage behavior (Klenosky 2002). An attribute-consequence-value chain is usually expressed by a hierarchical map, which consists of nodes (i.e., attributes, consequences, and values) and relationships among them. For example, a 3-dimensional avatar environment of SVWs (attribute) attracts users because this environment can facilitate social interaction (consequence), which can subsequently lead to amusement (value) (Jung and Kang 2010).

An alternative methodology for the traditional MECA approach involves calculation of the level of abstractness. Employing network theory (see Scott 1991), some studies calculate the abstractness of each element (concept) and use it to determine the position of the element in a hierarchical map instead of a strict specification of three levels of abstraction (i.e., attributes, consequences, and values) (Bagozzi and Dabholkar 1994; Pieters et al. 1995; Capozza et al. 2003). This revised method allows researchers to identify the relationships of elements without having to conduct additional work to classify elements into three levels. One critique of MECA is that an answer frequently does not correspond to the question (e.g., a consequence or value answer to the attribute question). Studies that employ network theory reduce this limitation because each element has a level according to its abstractness without any label (e.g., attribute). The current study uses this modified laddering technique based on level of abstractness.

MECA typically depends on a laddering interview technique. Laddering interviews have been used extensively in consumer research to understand consumers' preferences toward products or services (e.g., Klenosky 2002; Reynolds and Rochon 2001), and in organization research to elucidate an organization's strategic values and decision-making structures (e.g.,

Peppers et al. 2003; van Rekom et al. 2006). To help respondents elicit lower or higher levels of abstraction for the concepts, the technique aims to understand the way in which the respondent sees the world (Reynolds and Gutman 1988). A laddering procedure typically includes three questions: the attribute question (What attribute makes the product (or service) attractive to you?), the consequence question (Why is the attribute important or desirable to you?), and the value question (Why is your response important?). In the first phase, the respondent is asked to supply the attributes of a product that affect his or her consumption decision. The respondent is then asked to explain what benefits he or she attains owing to the attributes. Finally, the respondent is asked to offer the reason why those benefits are important to him or her, namely, a justification stage. All responses are coded, and then a hierarchical map is finally produced by level of abstraction, that is, attributes → consequences → values.

The MECA approach elucidates the objectification process of social representations. Objectification indicates the transformation of abstract concept into concrete experiences, that is, ‘materialization of an abstraction’ (Moscovici 1984, p. 38). MECA makes an abstract idea (virtual consumption in this study) a perceptible concept through illuminating which goals are achieved by objects or behavior of using them and how those goals are associated.

#### Participants and Laddering Interviews

Among the total 154 subjects who participated in the survey to elicit the components and structure of the social representation of virtual consumption, 93 users also participated in laddering interviews to investigate users’ goals for virtual consumption. The participants were heterogeneous in demographics (see Table 7). All interviews were performed in a comfortable place in *Second Life* where other avatars would not disturb the interview (see Figure 6). The participants were first asked to complete a web survey including demographic and supplemental

questions, and then started the interview which was conducted by text chatting and took about 20 minutes on average. The interview consisted of three questions for a laddering analysis. Based on prior laddering research, we asked three open questions to probe *Second Life* users' goals for virtual consumption: (1) *What kinds of virtual goods or property did you buy in Second Life? Could you give me three examples?*; (2) ( first probing question) *Why did you buy this item/items? or Why do you use this item/items in Second Life?*; (3) (second probing question) *Why is this reason/reasons important to you?*. Because this was a text-chat interview, we could capture and save the interview content.

**Table 7: Demographics of Participants of the Means-End Chain Analysis**

		Frequency	Percent			Frequency	Percent
Age	18-24	20	21.5	Tenure as a <i>Second Life</i> user	1 month or less	10	10.8
	25-34	26	28.0		2 to 6 months	20	21.5
	35-44	22	23.7		7 to 12 months	15	16.1
	45-54	17	18.3		1 year to 2 years	24	25.8
	55 or older	7	7.5		Longer than 2 years	23	24.7
	No answer	1	1.1		No answer	1	1.1
Gender	Male	39	41.9	Login frequency	Once a month	0	0.0
	Female	52	55.9		Once a week	2	2.2
	No answer	2	2.2		Several times a week	17	18.3
Education	High school	33	35.5		Almost daily	74	79.6
	Community college	15	16.1		No answer	0	0.0
	Undergraduate	17	18.3	SL purchase frequency	Never	3	3.2
	Graduate	26	27.9		Once a month	22	23.7
Type of account	No answer	2	2.2		Once a week	27	29.0
	Free	64	68.8		Several times a week	40	43.0
	Premium	29	31.2		No answer	1	1.1
	No answer	0	0.0				



**Figure 6: Screenshot of Interview Setting**

**Table 8: Topics (Super-codes) – MECA Laddering Interviews**

	Topics	Example Quotes
T1	Amusement	“It just enhances my enjoyment of the SL experience” “I get pleasure out of looking at them and some have inspired me”
T2	Better avatar appearance	“To present a professional appearance” ”I thought most of the human avatars looked really terrible; I could be a squirrel here...I thought it would be cute and better than other humans”
T3	Business	“Manage and resell land in smaller pieces to other residents” “The building is a place for me to sell my goods”
T4	Creativity	“Building stuff is the creative aspect of SL” “This is a virtual world where the imaginative part is the most important one”
T5	Escapism	“I forget about my real life issues” • When I am in SL, I let go of real life and truly get into the experience.
T6	Exploring (removed)	“I sometimes take friends on tours of Second Life on the ship” “I can just hop on a motorcycle and drive around”
T7	Fantasy	“I can be pretty in SL in a way I can’t in real life” “I live in an isolated area... I was a city person... it gives me a cultural /educational / fun experience and I miss that about the city....fills a void in a way”
T8	Knowledge acquisition	“It is useful for practicing skills like building” “Our sim members share common interests and they are very helpful. Advice on SL problems (like how to do something, or where to go to find something, or where a party is going to be, or where a contest is)”
T9	Like shopping	“I like to shop” “I love walking into a store and everything fits”
T10	My own place	”Just space and a bit of privacy” “I got tired of hanging out in clubs and public places and wanted a place to go and be able to do what I wanted and think and to have a place for me”
T11	Projection of real-world convention/activity	“In real life, we wear clothing. We treat SL similar to real life on many levels” “It is a spot that I and my real-world boyfriend can meet virtually”
T12	Decorative activity	“I enjoy beauty, I like to create avatars” “Enjoy interior decorating”
T13	Realistic experience	“The clothes here seem very realistic” “To me SL is not a game and it really is a life. It gives me a sense of being settled down”
T14	Relaxing	“Sense of peace” “A place to hang out and relax... some of my friends and I used to get together and watch movies here”
T15	Role-playing	“I need them to fight when I roleplay” “Since I lived in <i>Caledon</i> (a sim), I needed nice Victorian/steam punk style clothes”
T16	Self-esteem	“It does give you more attention” “Someone asks me where I got my hair, and then It just makes me feel good and I get complimented”
T17	Self-expression	“I've spent a lot of time customizing it” “This is an inner look to my inner personality what I want to look like”
T18	Socialization	“Spend time with friends and make parties” “People tend not to interact as quickly with someone who wears default clothing which linden supplied”
T19	Uniqueness	“Makes it more personal, unique” “It makes me stand out amid an ocean of other avatars”

### Coding

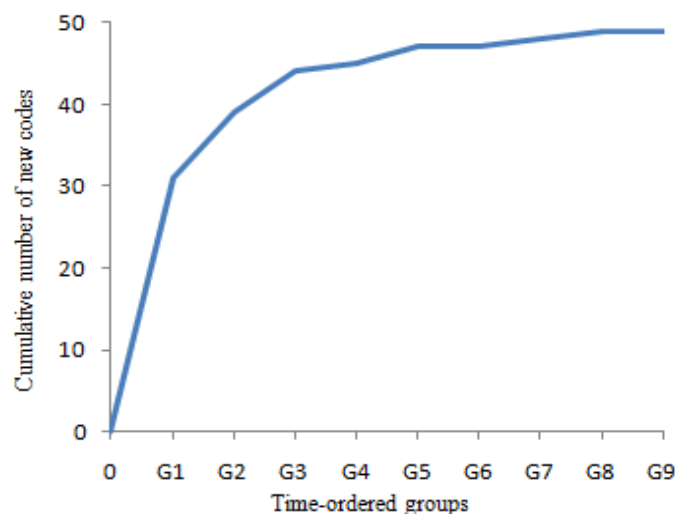
For analysis, the responses to the three questions were coded. In the first step, I researcher coded the data using an open coding procedure in which codes were not predetermined but rather emerged from the data. This resulted in 49 detailed codes present in the

data. In cases where the data contained more than one topic, multiple codes were assigned. For example, “A house is for changing my avatar’s clothing and for having parties with friends” was assigned two codes – Privacy and Socialization. A second coder, another researcher, independently re-coded the data using the set of codes identified by the first coder. The two raters were in agreement on 469 of the 545 codes assigned (Cohen’s Kappa = 0.83), indicating an acceptable level of inter-rater reliability (Fleiss 1981). Inter-rater disagreements were then reconciled through discussion. Finally, associated codes were grouped into 19 topics (super-codes), as shown in Table 8.

Theoretical saturation (Strauss and Corbin 1998) was checked through the same way as used in Virtual Consumption Study I. The data confirmed theoretical saturation (Figure 7); therefore, we did not collect additional data.

**Table 9: MECA Analysis - Cumulative Number of New Codes by Time-ordered Groups**

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
	First 10 samples	Next 10 samples	Next 10 samples	Next 10 samples	Next 10 samples	Next 10 samples	Next 10 samples	Next 10 samples	The rest 13 samples
Number of new codes	31	8	5	1	2	0	1	1	0
Cumulative	31	39	44	45	47	47	48	49	49



**Figure 7: MECA Analysis - Cumulative Number of New Codes**

### Generating the Goal Structure

Responses to the three questions generated a means-end chain, or a ladder of meanings; that is, answers to the first question asking about what virtual property was purchased in *Second Life* became a starting point, and answers to the next probing question correspond to the means for answers to the last probing question. For example, if an interviewee responds Clothing to the first question; Uniqueness to the next question; and Self-expression to the last question, then a hierarchical chain is created: Clothing → Uniqueness → Self-expression. All relations were summarized in an implication matrix which depicts the number of times each topic (code) leads to each other topic in the responses (Klenosky 2002). As can be seen in Table 10, the matrix shows how each topic leads to other topics shown in the columns. For instance, T15 (Role-playing) led to T1 (Amusement) 9 times and T5 (Escapism) 5 times.

As stated previously, the current study employed an alternative method in analyzing laddering interviews, proposed by Bagozzi and Dabholkar (1994) and Pieters et al. (1995). Instead of classifying responses into three labels, this approach, which is based on network analysis (Scott 1991), produces a hierarchical structure by comparing the number of times each topic is mentioned as the means versus the end. The approach uses out-degrees and in-degrees in order to estimate the level of abstractness of each element. Out-degrees of a particular topic refers to the number of times the topic serves as the source or origin (means) of linkages with other topics (i.e., the row sum of the elements in an implication matrix), whereas in-degrees of the topic indicate the number of times the topic serves as the object or end of linkages with others (i.e., the column sum of the elements in an implication matrix) (Pieters et al. 1995). Abstractness of an element is the ratio of in-degrees over in-degrees plus out-degrees of the element, and ranges from 0 to 1 (Pieters et al. 1995). Elements with high abstractness scores are

regarded mainly as ends, while ones with low abstractness scores are thought of primarily as means. Based on this alternative approach, we calculated the abstractness measure for each topic, as shown in the implication matrix (Table 10). Additionally, in order for informative analysis, the centrality of each element was also calculated, which represents the degree to which the element has a central role in the structure (Knoke and Burt 1982). Centrality is calculated by dividing the ratio of in-degree plus out-degree of a particular element by the sum of all active cells in the implication matrix (sum=281 in the current study).

The next step was to generate a hierarchical goal map according to the information in the implication matrix. In this stage, the important point was to determine what linkages were to be included in the hierarchical goal map. Because inclusion of all linkages could decrease a map's usefulness and informativeness, we did not embrace all linkages and decided to employ a cutoff level (Reynolds and Gutman 1988). Following Bagozzi and Dabholkar's (1994) method, we built Table 11 to choose a cutoff level and finally selected a cutoff of four, indicating that the included relations are counted at least four times. This cutoff level represented 23.9 % of the active cells, and 51.2 % of the active linkages, which corresponds to a measure of variance (Gengler and Reynolds 1995). According to this cutoff, T6 (Exploring) was excluded because it had no linkage to satisfy the cutoff criterion.

The hierarchical goal map in Figure 8 offers a graphical summary of the means-end structure pertinent to virtual consumption in a SVW. In the map, the topics are placed relative to their abstractness scores. Accordingly, the more abstract a topic, the higher it is located in the map. To avoid complexity of the map, linkages between virtual property and goals are shown separately in the lower part of Figure 8.



**Table 10: Implication Matrix**

Topics	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	Out-degrees
P1. Avatar clothing/accessories/animation	5	48					9		8		4	18	9	1	17	14	34	13	20	200
P2. Building tools/materials	2		2					1				19					1			25
P3. Gadgets/vehicles/musical tools	1		3			5	2			1		2	4			1	1	3		23
P4. Virtual real estate/furniture	3		6	2			3	1		14	2	25	3	8	1	3	5	16		92
P5. Weapons															4			1		5
T1. Amusement							2										2	1		5
T2. Better avatar appearance	3		2				5	1	2		1	1	1		2	8	4	3	1	34
T3. Business	2							1			2							1		6
T4. Creativity																				0
T5. Escapism																				0
T6. Exploring	3																			3
T7. Fantasy	2			1	3						2			2			2	1		13
T8. Knowledge acquisition			1																	1
T9. Liking shopping	4																	1		5
T10. My own place	2		1		2		3				2	1	2	5				5		23
T11. Projection of RL conventions/activity			1										1							2
T12. Decorative activity	9		6	5			6	2			4		1	2		1	13	3		52
T13. Realistic experience	4	2					2				1			5	1		2	1	1	19
T14. Relaxing	1				2		1	1							1		1	4		11
T15. Role-playing	9			3	5		4	4			2						1	4		32
T16. Self-esteem	1			1	1		3					1		1			2	4		14
T17. Self-expression	6	1			2		1	1				1	3	4		2		2	4	27
T18. Socialization	6	1					1	1		3	2	1	2	3		2				22
T19. Uniqueness													2				7	3		12
<b>In-degrees</b>	52	4	11	10	15	0	28	11	2	3	16	5	12	22	4	13	34	33	6	281
<b>Abstractness</b>	0.91	0.11	0.65	1.00	1.00	0.00	0.68	0.92	0.29	0.12	0.89	0.09	0.39	0.67	0.11	0.48	0.56	0.60	0.33	
<b>Centrality</b>	0.20	0.14	0.06	0.04	0.05	0.01	0.15	0.04	0.02	0.09	0.06	0.21	0.11	0.12	0.13	0.10	0.22	0.21	0.06	
* Out-degree: the number of times the topic serves as the source or origin (means) of linkages with other topics * In-degree: the number of times the topic serves as the object or end of linkages with other topics * Abstractness = (In-degrees) / (In-degrees + Out-degrees) * Centrality = (In-degree + Out-degree) / the sum of all active cells * We regard all virtual property as initial origins; thus, virtual property has no in-degree value																				

**Table 11: Statistics for Determining a Cutoff Level for Inclusion in the Hierarchical Goal Map**

Number of active cells in the implication matrix	Percentage of active cells at or above the cutoff level (%)	Number of active linkages in the implication matrix	Percentage of active linkages at or above the cutoff level (%)
109	100.0	281	100.0
68	62.3	240	85.4
38	34.9	180	64.1
<b>26</b>	<b>23.9</b>	<b>144</b>	<b>51.2</b>
15	13.8	100	35.6



## Discussion

Means-end chain analysis was an effective approach to clarify users' goal structure for virtual consumption in SVWs. The analysis is summarized in the hierarchical goal map, which provides an easy-to-read but rich understanding of users' goal structure for virtual consumption. MECA changed the abstract concept of virtual consumption into the concrete manifestation by generating the goal structure. The results show that *Amusement*, *Decorative activity*, *Self-expression*, and *Socialization* are the predominant goals for virtual consumption in this SVW in terms of centrality of the topics. Also, these four goals correspond to 49.3 percent of all linkages in the implication matrix (Table 10). *Avatar clothing/accessories/animation* and *Virtual estate/furniture* jointly correspond to 85 percent of the virtual property shown in the implication matrix. They are also important means, connected to 17 goals of 19. The key findings are summarized below:

*Decorative activity*, which is supported by three categories of virtual property (*Building tools/materials*, *Avatar clothing/accessories/animation*, and *Virtual estate/furniture*), leads to many of the upper-level goals. First, *Decorative activity* is a crucial means to achieve two central goals for virtual consumption: *Amusement* and *Self-expression*. The strong association with *Amusement* implies that decorating or creating virtual objects is highly intrinsically motivated. In other words, intrinsic motivation, or *Amusement*, promotes users' *Decorative activity* which requires virtual property such as building tools or avatar accessories. Our finding is in line with hedonic consumption approach (Campbell 1992, Hirschman 1983a) which posits that consumption may involve the pursuit of pleasure. Particularly considering an entertainment aspect of SVWs, the theory may be a compelling framework for understanding virtual consumption in SVWs (Lin 2008).

*Decorative activity* may aim at *Self-expression* which subsequently leads to *Amusement*. Humans make things a part of self through creating or altering them (Belk 1988). In SVWs, decorating virtual real estate or avatars (*Decorative activity*) enables users to present themselves, and thus, virtual consumption serves to generate a self through the images and styles conveyed by virtual property. In terms of virtual property, *Self-expression* is accomplished mainly by *Avatar clothing/accessories/animation* and *Virtual real estate/furniture*. Avatars themselves can be the extended form of a self because the user's avatar is regarded as the manifested virtual self in SVWs. Avatar-related virtual property can therefore be common resources for self-expression in SVWs. In addition, users exploit virtual houses and furniture, which is used to decorate virtual houses, in order to express a self. This implies that virtual houses acquire a second skin status in SVW as do houses in the real world (Jager 1983). *Self-expression* is also an upper-level goal of *Uniqueness*. Real-world consumption is sometimes motivated by the human desire to make an individual distinctive from the crowd (Veblen 1899). Similarly, to others, an avatar may be just one of them in the absence of distinctive clothing or accessories in SVWs, and users therefore consume diverse kinds of virtual property to attain their uniqueness and originality. Considering that virtual consumption leads to *Decorative activity* and *Uniqueness* and finally enables users to achieve the goal *Self-expression*, ultimately virtual consumption can be regarded as a way of 'self extension' (Belk 1988).

*Decorative activity* reflects real-world conventions or activities (*Projection of real-world convention/activity*). Many users explicitly commented that a SVW is a separate world from their real life; however, sometimes real-world conventions or relationships are reflected in virtual life and this projection induces virtual consumption. For example, one user said that because an empty virtual house depresses people as does an undecorated real house in the real world she

decorates her house with furniture or sculptures in a SVW; and another user mentioned that she dresses up to meet her real-world boy friend who is remote from where she resides in the real world. Accordingly, virtual consumption may be anchored in the real world to a degree. On the other hand, some users build virtual objects for sale and also decorate their stores to better attract users who are would-be consumers (*Business*). Users' decorative activities also stimulate their *Creativity* and enact *Fantasy* experiences. Users' input of their creativity is critical to evolution of SVWs because they are cyberspaces imagined and created by their users (Bonsu and Darmody 2008). Our finding implies that virtual consumption is a way by which users unleash creativity in SVWs.

*Role-playing*, indicating creation of a persona with a background story and interaction with others (Yee 2006), is not only another stimulus for consumption of virtual property, particularly *Weapons* and *Avatar clothing/accessories/animations*, but is also used for various consumption ends including *Socialization*, *Knowledge acquisition*, *Amusement*, *Fantasy*, and *Escapism*. *Role-playing* provides users with opportunities for meeting different sorts of people (*Socialization*), and role-playing community members can be informants who provide other members with useful information in their virtual life (*Knowledge acquisition*). *Role-playing*, in particular, has an essential role in users' hedonic consumption of virtual property. In addition to enjoyment, hedonic consumption can be driven by role projection, fantasy, and escapism (Hirschman 1983b). Following the rules of a role-playing community provides users with challenging assignments which may eventually produce enjoyment. Role-playing also enables users' imaginings to 'come true' (*Fantasy*), and temporarily takes them away from real-world problems (*Escapism*). Therefore, the significant connection between *Role-playing* and the other

hedonic goals indicates that *Role-playing* not only plays a critical role for users' hedonic consumption but also reveals the hedonic aspect of virtual consumption.

Users may accomplish some consumption ends, such as *Self-esteem*, *Self-expression*, and *Fantasy*, through the feeling of a *Better avatar appearance*. When users feel that their avatars look nice, they have confidence in the self that ultimately has an encouraging role in social interaction or *Socialization*. Also, several interview participants stated that they recognize newbies (i.e., newcomers) in SVWs based on avatar appearance, and avoid interaction with newbies. This implies that *Better avatar appearance* may function as a ritual, which separates us from them (Tajfel and Turner 1986), and eventually becomes a means for social inclusion, which situates the self within the world (Rook 1985). *Better avatar appearance* can also be a means for expressing the self. Virtual consumption helps users to generate a unique and desired self through their avatar's appearance. As a result, *Better avatar appearance* enables users to achieve two goals simultaneously: social inclusion (*Socialization*) and *Self-expression*. While users strive to be socially included through socially acceptable avatar appearance or a *rite of passage*, indicating events that symbolically signify users' social status changes (Rook 1985), they make their personal identity salient through desired self images. This finding is consistent with the argument that a person regulates the self between social identity and personal identity (Reicher 1987). In other words, a person defines himself between how he expresses himself as an individual entity and how he connects to others in affiliative relationships (Kleine et al. 1995). Virtual consumption reflects this dynamic nature of self-regulation. In SVWs, virtual property, particularly *Avatar clothing/accessories/animations*, for *Better avatar appearance* is used to portray users' simultaneous desire for a part of the world (social identity) and independence

(personal identity). Finally, *Better avatar appearance* makes dreams come true, for example to resemble a famous movie star.

*Virtual real estate* offers *My own place* which an owner can control for *Socialization* and *Relaxing*. Popular places where lots of avatars come together not only have usually a lag problem such as slow-motion avatars, but may also include hooligans. Having *Virtual real estate* under their control can be an alternative to solve these problems and may be a place where users have social events such as parties. Additionally, users can make own virtual real estate a comfortable place for *Relaxing*. In many cases, because users relax with their friends in virtual real estate, *Relaxing* has an association with *Socialization*.

Finally, virtual consumption carries the feeling of a *Realistic experience* which induces *Amusement*. Delicately imitated virtual clothes or vehicles give users real-like feelings and further arouse a sense of the virtual world (e.g., as one user declared “To me, *Second Life* is not a game, and it really is a life. It gives me a sense of being settled down”). Finally, virtual consumption meets a need for virtual shopping (Like shopping) which leads to *Amusement*, implying that some users enjoy shopping itself for *Amusement* as do some people in the real world.

## **Implications**

This study has several implications for theory and practice. The most important theoretical contribution of the study is its informative merits. As the first motivational investigation of virtual consumption, the study provides fundamental knowledge about virtual consumption. Because of its newness, virtual consumption has not been well conceptualized, and even basic questions such as users’ reasons for virtual consumption are unanswered. The study begins to provide this kind of foundational knowledge through an initial understanding of why

users consume virtual property. It also suggests potential theoretical frameworks for future research on virtual consumption (e.g., theories of hedonic consumption (Campbell 1992), theories of social identity (Tajfel and Turner 1986), theories of the extended self (Belk 1988), and an ontological argument of virtual social practices (Brey 2003).

Second, the study serves as a reminder to IS researchers about the importance of the topic by confirming that virtual consumption is widely associated with diverse activities and values in SVWs. Researchers attempting to understand the behavior of SVW users should bear in mind that virtual consumption is an important component of their virtual life. Underestimation of virtual consumption as merely habitual activities could leave an important element missing in understanding user behavior.

Finally, the study makes a contribution by introducing means-end chain analysis which can be fruitful in developing richer understandings of users' goals for social cyberspaces. In prior studies that examined users' goals for social cyberspaces, such as virtual communities (Ridings and Gefen 2004) and gaming virtual worlds (Yee 2006), goals are identified, but without any explanation of relations among them. The means-end chain analysis used in this study offers a richer explanation of user goals by presenting the hierarchical goal map, which consists of separate goals and their relations.

The study also has implications for SVW service providers. First, the findings remind service providers of the importance of security. Although the intention of service providers is to follow the principle of *laissez-faire* in SVWs, the study highlights the importance of ongoing efforts to develop and maintain secure systems for user-to-user transactions and ownership of virtual property. As virtual consumption has become deeply associated with the majority of the activities in SVWs, user-to-user transactions have increased and users' possession of virtual



property has become universal. As a result, risk from hacking and scams has increased and service providers' interventions have been required to maintain a peaceful virtual market. If safe transactions and possession of goods are not guaranteed, then users will be reluctant to engage in economic activities (i.e., little user demand and production), with a steep downside of the virtual economy. Moreover, users' distrust towards a secure virtual life may increase their ontological vulnerability and ultimately weaken their attachment to the world.

Another implication of the study for service providers is the need to raise the clarity of different aspects of the SVW marketplace. For example, several users pointed out the ambiguity of prices. One extreme case is the situation where some users sell virtual property which they got for free elsewhere and the buyer could also have acquired for no cost. This type of information asymmetry may distort the virtual market and create a distrustful virtual society, which is a barrier to user retention. To enhance market clarity, service providers might add price comparison systems and user review systems on sellers, an approach that has been demonstrated workable in B2C e-commerce.

Next, the goal structure analysis shows the importance of avatar clothing, accessories and animation in satisfying many of the users' higher level goals. Service providers, then, might collaborate with fashion brands and provide branded fashion to enhance the attractiveness of the application and user experience.

### **Limitations**

This study has the following three limitations. First, the study's samples may be biased in that we recruited participants during three weeks, and so, the majority of the participants were users who frequently log into *Second Life*. However, because over 80 percent of users drop out within two months of registering (Platoni 2008), practically it was difficult to include those

transient users in our samples. The other potential bias with our data is that because the participants voluntarily responded to the survey our results may be based towards highly-motivated users. Accordingly, the study has a limitation in fully generalizing the findings.

Second, the study deals with only one SVW. Thus, the findings of the study should be re-examined on other SVWs, which have different environments, in future research. Furthermore, in order for further understanding, future research needs to compare the findings to virtual consumption in other cyberspaces, such as gaming virtual worlds, conventional virtual communities, social networking services, or weblogs.

Finally, this study did not control variance caused by culture, which may function as a crucial variable in fully understanding SVW users' goals for virtual consumption. *Second Life* is a worldwide cyberspace and the users come from various countries. Cultural considerations can thus be a prominent aspect in future research on virtual consumption in cyberspaces.

## **CONCLUSION**

### **Integration of the Two Virtual Consumption Studies**

In order to investigate users' understanding of virtual consumption, *Essay I* explored the collective meaning of virtual consumption and user goals for virtual consumption in a SVW through two studies (core-periphery analysis and means-end chain analysis). What we learned from these two studies is that virtual consumption is comprehensively involved in virtual life in a SVW, just as consumption is vital in the real world. Findings from the two studies suggest that users think of virtual consumption as a social practice, which involves a variety of values acquired in a SVW, such as socialization, aesthetic desire, or self-expression. Most significantly, the findings showed that users consider amusement the most important value in consuming virtual goods. Amusement is not only one of the three core elements identified in the core-

periphery analysis, but is also the top goal in the means-end chain analysis. These repeated findings strongly reveal the hedonic nature of virtual consumption.

When comparing the two figurative descriptions (i.e., maps), the core-periphery map of the representation is more comprehensive for understanding virtual consumption than the hierarchical goal map in that the former includes users' goals, which are identified in the latter, as well as non-goal elements (e.g., Virtual money, Interactive) and even embraces negative aspects of virtual consumption (e.g., Silly/Wasteful, Compulsive/Impulsive). On the other hand, a researcher may need to input more effort in interpreting the connection between two elements in the core-periphery map, because the connection is solely based on co-occurrence; interpretation of the connection between elements in the hierarchical goal map requires the researcher to exert less energy because elements in the hierarchical goal map have a clear relation, or a means-end relation. In summary, while the core-periphery map can be better than the hierarchical goal map in terms of comprehensive explanation power, the hierarchical goal map can be better than the core-periphery map in terms of ease of interpretation.

Lastly, in the core-periphery map of the representation, about 35 % of elements corresponded to goals for virtual consumption, which are included in the hierarchical goal map. This implies that IT users' goals are a component of their understanding (i.e., representations) of the IT and thus the means-end chain approach can be a useful tool in exploring social representations of IT.

### **Concluding Remarks**

As the world heads toward virtual cyberspaces, the way humans interact will be radically changed. SVWs have led this revolution. SVWs have successfully attracted people through enabling them to create their own virtual life and to have diverse activities. A critical lubricant

for their virtual life is virtual goods. Virtual goods make their virtual life rich and varied as do real goods in the real world. Thus, the consumption of virtual goods can be thought of as an indispensable component of virtual life. *Essay I* confirmed this. We believe that this exploratory study of virtual consumption is a stepping stone towards understanding current virtual consumption and perhaps a basis to predict its future.

## **ESSAY II: THE REFLECTION OF A COLLECTIVE VIRTUAL WORLDVIEW IN THE MEANINGS OF VIRTUAL ENTREPRENEURSHIP**

*Wealth is no longer vested in physical capital but rather in human imagination and creativity.*

Jeremy Rifkin (2000), *The Age of Access*

### **INTRODUCTION TO VIRTUAL ENTREPRENEURSHIP STUDY**

In social virtual worlds, the virtual economy has evolved through users' collective input or involvement in creation of virtual objects, as well as their consumption of virtual property. To promote user contributions, SVW providers endow users with intellectual-property (IP) rights over their creations. The financial reward from their creative labor, which is based on IP rights, has led to an overwhelming array of diverse goods which have filled virtual markets and been the fundamental prerequisite for the virtual economy. Some users have successfully generated financial profits, sometimes substantial profits, by utilizing their IP rights (e.g., Anshe Chung, who is regarded as the first millionaire in *Second Life* (Sloan 2005)). In addition to users' IP rights, other formal aspects of the environment, such as SVW providers' support for in-world markets, many entrepreneur centers and education programs, and technological support for transactions, have also stimulated users' entrepreneurial behavior in SVWs. It is reported that 30 percent of the users are doing business in *Second Life* (Market Truths 2007), and user-to-user trading of virtual goods reached \$567M in 2009 (Linden Lab 2010a). Current business users, who initiate business activities in the emerging economic systems of SVWs, can be regarded as entrepreneurs, in the same way as entrepreneurs in the real world. These individuals, for example, have the same entrepreneurial characteristics which are mentioned in entrepreneurial literature. They are willing to take risk from the emerging nature of the virtual economy, they try to offer creative and innovative virtual goods or services, and they seize business opportunities ahead of

non-business users and non-users. Those characteristics (i.e., risk-taking, innovativeness, searching for business opportunities) have been used to describe entrepreneurs (e.g., Schumpeter 1968), and thus we call users who initiate and engage in business activities in the emerging economic systems of SVWs *virtual entrepreneurs*. Virtual entrepreneurs are a vital component of these worlds in that they are not only investors in the emerging economy but also have a role as major content creators.

Despite the establishment of the formal settings for virtual entrepreneurs and the burgeoning virtual economy (Lehdonvirta 2005; Sivan 2008), virtual entrepreneurs still act under high uncertainty because of the emerging nature of the virtual economy. Uncertainty in the virtual economy is caused by factors such as unclear demand, blurred price systems, changeable policies of SVW providers, anonymous transactions, or risks to technological security. Increasing entrepreneurial practice under the emerging and highly uncertain economic condition may be analogous to the information technology bubble in the 1990s. In the dotcom bubble age, many companies jumped into information technology businesses without clear business plans, feasible operating models, or profits. Whether investment professionals or laypersons, many people had a rosy dream of the dotcom industry. It has been pointed that collective meaning systems, which were common understandings of information technology industry shared by people, led to decisions and behavior in the dotcom age (Cooper et al. 2001). In SVWs, although the in-world economy is just emerging and characterized by high uncertainty, a large number of users have rushed to build economic nests in these worlds. Whether the virtual economy will continue to grow and be viable economic in the long-term is an open question. Our inquiry into virtual entrepreneurship begins with the premise that the collective meanings of virtual entrepreneurship (i.e., symbolic aspects of virtual entrepreneurship) can be a spur for entrepreneurs' decision

making and behavior, just as the collective meaning systems were in the dotcom age. An investigation of the collective meanings of virtual entrepreneurship, therefore, can be a key requirement for understanding virtual entrepreneurs and further our overall understandings of virtual economy. The primary research purpose of this study, then, is to *explore the collective meaning systems associated with virtual entrepreneurship*.

To accomplish this research objective, we utilize a translation lens. Specifically, the collective meaning systems<sup>2</sup> of virtual entrepreneurship can be significantly affected by the collective understandings of SVWs, because specific meaning systems emerge from broader meaning systems (Meyer and Rowan 1977) (in this case, collective views on SVWs). This contention can be supported by recent institutional and entrepreneurial literature.

Institutionalized processes are associated with generic or broader social meaning systems, generally community culture (Zilber 2006). Recent literature on entrepreneurship has also attended to generic meaning systems that affect entrepreneurial activity (Brandl and Bullinger 2009; Lounsbury and Glynn 2001). Generic or social meaning systems intervene in the symbolic dimension of entrepreneurship or a local meaning systems by a translation process in which individuals interpret generic meaning systems to account for entrepreneurial decisions and behavior (Creed et al. 2002). In our study, the meanings associated with virtual entrepreneurship may be rooted in generic meaning systems associated with SVWs or a collective *virtual worldview* which translate the symbolic dimension of virtual entrepreneurship. The second research purpose of the study is to look at this translation; that is, to examine *how the collective*

---

<sup>2</sup> *Meaning Systems* are defined as cognitive and normative frameworks underlying the various contexts of contemporary social life (Scott 1994; Zilber 2006). *Meaning systems* and *social representations* can be considered exchangeable concepts in that both not only represent shared meanings and understandings related to social objects or the whole community but also provide a framework of reference for the social practices and relationships between community members.

*virtual worldview is related to the shared meanings of virtual entrepreneurship.* The second research purpose is important for two reasons. On the one hand, we can offer a deeper understanding of virtual entrepreneurship by incorporating the origins of the thoughts concerning virtual entrepreneurship in our analysis. On the other hand, we can contribute to elaboration of institutional theories. In institutional literature, there has been little empirical effort to explore the impact of generic meaning systems on local meaning systems or translation of generic meaning systems into local meaning systems (Zilber 2006). The research strategy used to fill the void of empirical research and elaborate institutional theories is through analysis of the core-periphery structure of social representations (Abric 1993, 2001; Jung et al. 2009; Pawlowski et al. 2007).

In the following section, we first introduce institutional and entrepreneurial literature stressing the link between generic meaning systems and local meaning systems. Drawing from social representations theory, we then describe the core-periphery structural view of social representations. In the next section, we describe the methodology to elicit data for the study produce the core-periphery structures of the social representations of SVWs and virtual entrepreneurship. Lastly, we discuss the findings and contributions of the study.

## **THEORETICAL BACKGROUND**

### **Translation of Generic Meaning Systems into Local Meaning Systems**

Institutions have two broad dimensions: *formal* and *informal* (North 1990). While formal institutions, including laws, regulations, and supporting organizations (e.g., enforcement agencies), establish the institutional mechanisms and the boundary of institutional activities (Suchman et al. 2001); informal institutions, representing specified meaning systems consisting of norms, values, and beliefs, contribute their legitimation. In particular, informal institutions may be rooted in generic or social meaning systems (Zilber 2006), or a *collective virtual worldview* in this study. Whereas informal or symbolic dimensions of institutions have been



explored and explained, the broader social, symbolic, and cultural origins of institutions are relegated to the background or totally ignored (Zilber 2006). That is, those factors have been considered exogenous variables and neglected as reified to ‘reality’, ‘society’, or ‘environment’ (Hasselbladh and Kallinikos 2000). Despite standing aside from the mainstream of institutional and entrepreneurial research, social meaning systems are assumed to be influential in establishing informal institutions. For example, in the classic work *The Protestant Ethic and the Sprit of Capitalism*, Weber (1904) found an impact of the social atmosphere on individuals’ economic behavior. He illustrated how religious doctrine, which was considered the main social meaning system at that time, provided the legitimation for individuals’ pursuit of wealth in the 17<sup>th</sup> century. Weber posited that Calvinism and other ascetic Christianities had a role in shifting a hostile attitude towards commerce to a more accommodating attitude and fostered the growth of capitalism (Hwang and Powell 2005).

In spite of the importance of social meaning systems, entrepreneurial literature has underestimated their influence on entrepreneurship, just as institutional literature has had little interest (Brandl and Bullinger 2009). In modern societies, entrepreneurship can be considered an institution, and this indicates that entrepreneurial behavior is legitimated and regarded as appropriate and desirable actions in societies (Meyer and Rowan 1977). Institutionalization of entrepreneurship needs to be understood from a broader social perspective, because institutions encompass not only the material environment but also the symbolic aspects which are rooted in social meaning and belief systems (Scott 1995).

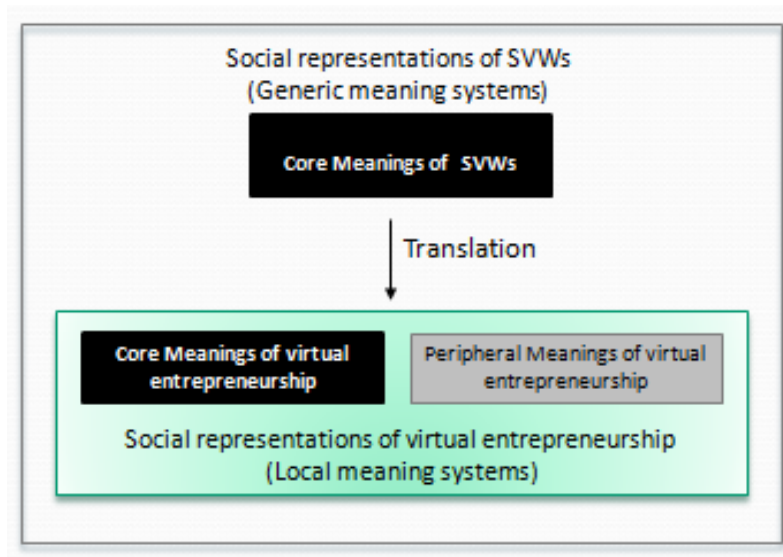
To depict the influence of social meaning systems on institutionalized processes, researchers have developed a *translation* perspective on institutional processes instead of a *diffusion* perspective (Creed et al. 2002; Czarniawska and Joerges 1996; Zilber 2006). While the

diffusion perspective on institutional processes focused on how agents transmit *ready-made* generic meaning systems to a local meaning system; the translation perspective portrays how agents interpret and adapt generic meaning systems in explaining a local setting (Creed et al. 2002). The translation perspective has been considered a better theoretical vehicle than the diffusion perspective for understanding institutional processes in that a new idea or practice (the institutionalized) can accept, reject, or rearrange social meanings systems rather than simply accommodating them (Czarniawska and Joerges 1996). In institutional research, the translation model has been used to explain how ideas travel within an organization (Doorwewaard and van Bijsterveld 2001), within a society (Creed et al. 2006), and across national borders (Frenkel 2005). A recent example is Zilber's (2006) work exploring the translation of generic meaning systems in Israel into high-tech rational myths (a local meaning system). Stressing the cultural origins of an institutionalization process, she examined how Israeli generic meaning systems (e.g., Jewish national-religious myths) are translated into high-tech rational myths (e.g., Nationalistic). Despite recent interest in understanding the influence of generic meaning systems on local meaning systems, the empirical work on this topic is still scarce (Scott 1995; Zilber 2006). One of the challenges in conducting this type of research is to identify appropriate methodologies for empirical work in this area. The current study proposes and demonstrates one alternative approach to examine the translation of generic meaning systems into local meaning systems by using the structural view (core-periphery) of social representations. We introduce social representation theory in the next section.

### **Social Representations Theory – Structural View Applied to Translation**

Social representations theory (SRT) is a social psychological perspective to understand collective knowledge of social objects (Moscovici 1984). Social representations are the stock of

common knowledge about the social world shared by community members (Augoustinos and Walker 1995). As discussed early in this dissertation, one tenet of the theory is that social representations have their structure consisting of a central core and peripheral elements (Abric 1976). The core provides a generating function through which the other elements acquire meaning and value, and peripheral elements, organized around the central core, are the area of adaptation based on new information or transformation of the environment (Abric 2001).



**Figure 9: Conceptual Model of Translation**

By employing the notion of a core-periphery structure of social representations, we try to explore the translation process. Prior research dealing with the translation examines the relationship between generic meaning systems and local meaning systems of a specific social practice (e.g., Zilber 2006). As presented in Figure 9, by probing how the central meanings of SVWs are related to elements in the conceptual cores and peripheries of the social representation of virtual entrepreneurship, we can offer a more elaborate explanation about the translation process in this study.

## Eliciting the Generic Meaning System of Social Virtual Worlds

### Data Collection

The first methodological work was to elicit the generic meaning systems of SVWs. To grasp the generic meaning systems of SVWs, we drew from the public discourses about SVWs appearing in the mass media. Because a specific real-world society has its own peculiar generic meaning systems, we needed to focus on a specific society and limited our data to media in the US. Specifically, the data depended on news articles from the *New York Times*, *Washington Post*, and *USA Today*. The three newspapers were selected because: the *New York Times* is not only an influential newspaper but also includes the largest number of articles regarding SVWs in the US from 2005-2009; the *Washington Post* is a major source of information on contemporary social phenomena and public affairs; *USA Today* is the daily newspaper which is most widely read in the USA.

We searched for news articles from the three media sources in the *Lexis Nexus* database by using keywords ‘virtual world’ and ‘second life’. The reason for using the term ‘second life’ as that our study dealt with SVWs different from GVWs and *Second Life* is representative of SVWs. During the 5 year period from 2005-2009, 132 articles regarding SVWs were released from the three newspapers. Among them, we excluded 20 articles because they just simply mentioned the term ‘virtual world’ and ‘second life’ or focused on gaming virtual worlds rather than disclosing any meaning about SVWs. For example, one article excluded simply cites ‘virtual world’ and ‘second life’ as one of current popular web services without detail description, and another one dropped out introduces gaming virtual worlds as just mentioning *Second Life* as one example of a gaming virtual world. In total, 101 usable articles formed the dataset for analyzed to identify the generic meaning systems of SVWs.

## Coding

The first part of the data analysis is detailed coding of each segment of text from the newspaper articles and identification of key topics (concepts). For this study, I coded the data using an open coding procedure in which codes were not predetermined, but rather emerged from the data. This resulted in 37 detail codes present in the data. For example, “friendship,” “meeting new people” and “networking” were assigned to the code *Socialization*. In cases where the data contained more than one subject, multiple codes were assigned. For example, “Scope Cleaver, who declines to reveal any information about his real-world life (including his real name), earns up to \$75 an hour designing offices, stores, homes and conference centers.” was assigned two codes – *Anonymity* and *Economic systems/activities*. A second coder, another researcher, independently re-coded 15 percent of the data, using the set of codes identified during the initial coding. The two raters were in agreement on 58 of the 76 codes assigned (Consistency rate = 0.763, Cohen’s Kappa = 0.750), indicating an acceptable level of inter-rater reliability (Fleiss 1981). Finally, related codes were grouped into 19 topics (super-codes), as shown in Table 12. For example, Topic 11 *Replicas of real entities/practices/economic activities* is a grouping of two detail codes – *Real world-like economic systems/activities* and *Replicas of real goods (practices)/ Reflecting the real world convention*.

## Analysis of the Structure of the Generic Meaning System

This analysis follows the procedure as *Virtual Consumption Study I* in which the core-periphery structure of virtual consumption was generated. Sum of similarity, salience and coreness of each topic are shown in Table 13. Seven topics were classified into the core of the social representation and the remaining twelve into the periphery.

**Table 12: Topics (Super-codes) of Social Representations of SVWs**

Topics		Example Quotes
T1	Anonymous universe	“One idea is hosting a job fair in the virtual world.....The anonymity of avatars could be very useful for those who wish to job hunt discreetly” “.....males posing as female avatars and vice versa are not uncommon”
T2	Creative universe	“She came upon the site early last year and was excited by its imaginative and transformative potential” “It [Second Life] is really cool.....creative than just putting a MySpace page up”
T3	Experimental simulation	“.....virtual environment may be another platform to study physical social interaction” “The project is intended to solicit neighborhood input on how the park should be improved (through the virtual park)”
T4	Growing SVWs/virtual economy	“The value of virtual goods is expected to surpass \$ 1 billion in the United States this year” “.....it [Second Life] could mark a next great leap in the New’ accessibility”
T5	Hedonism	“I felt higher than Mount Everest after fulfilling my lifetime dream of flying” “Coming to Second Life was a nice way to get away from the stress of real life”
T6	Immersive; Realistic universe	“Interactions with other people via avatars emotionally arresting quality that text-based interactions lack. These applications make the idea that there is a real cyberspace quite tangible” “Because the full-color, multifaceted nature of the experience offers so much more “emotional bandwidth” ..... users say the experience can feel astonishingly real”
T7	Need of how-to-use knowledge	“The first week you’re confused, you go buy some clothing and instead of putting on a jacket you put on the box the jacket comes in. It’s very embarrassing” “Some in Second Life choose to build homes and furniture from scratch, but it can be frustrating: users must spend hours practicing, and often take Second Life classes to master the skills”
T8	Need of technological advances; Security risk; Log time; System crash	“Second Life.....remains highly flawed. Lag times can be significant, servers crash regularly” “Last night, I had to download version 1.03.....The next morning I had to download and install version 1.04”
T9	Not serious place	“People think what they do in a virtual world is OK, because it’s not real” “In Second Life, participants create fake persons and spend endless hours.....with few tangible results to show for it”
T10	Organizational adoption	“Virtual worlds promote collaboration that could eventually change the way local governments manage touchy issues” “Corporations and government agencies have opened animated virtual offices, and a growing number of organizations hold meetings where avatars gather and converse in newly minted conference centers”
T11	Shadow universe	“There’s a lot of mirroring in the virtual space of what we’ve already seen in the real world” “Residents buy virtual property, go to virtual work, deal with virtual family members and do all of the other things in real life”
T12	Self-accomplishment	“People don’t take jobs just for the money.....They do it to feel important and be rewarded” “Seems like what most people want it to look beautiful and skinny.....Second Life’s success is based on this wish-fulfillment thing

(Table continued)

T13	Self-expression; Creating virtual identity	<p>“I then tried to live a life completely different from my real one (in Second Life)”</p> <p>“New identities in a conjured world allow people to develop ideal selves exactly as they wish to be seen in the real world”</p>
T14	Autonomous community	<p>“Many virtual universes leave the law in the hands of their users, allowing each world to develop its own moral code”</p> <p>“But many members, Kingdon says, are supporting themselves from sales on Second Life”</p>
T15	Service providers’ strategy; In-word regulation	<p>“Some sites are free and rely on advertising to make money; other are advertising and subscription hybrids”</p> <p>“If convicted of exchange of hostile messages, a user may endure the ultimate punishment – permanent exile”</p>
T16	Skepticism regarding SVWs	<p>“Second Life has an up-and-down economy, mortgage payment, risky investment, land barons, evictions, designer rip-offs, scams and squatters”</p> <p>“The lawmakers covered the potential downside of virtual worlds (recruiting for terrorists, child pornography, human isolation)”</p>
T17	Socialization	<p>“Second Life allows us to talk to various people from a lot of different countries”</p> <p>“John, who has a form of autism that makes it hard to read social cues, learned how to talk with people more easily by using his computer-generated alter ego to practice with other cyber-personas”</p>
T18	Wild West environment; Bullying; Virtual crimes; Uncontrolled behavior	<p>“There have been numerous instances of fraud, harassment and other virtual crimes. Some computer users have their avatars to destroy virtual buildings”</p> <p>“People, through their animated alter egos, or avatars, can act out fantasies of violence and nudity”</p>
T19	Insufficient actual users; Social absence (Loneliness)	<p>“My earliest explorations were like starring in my own personal version of ‘I Am Legend.’ The streets were mostly empty.....the clubs themselves were utterly devoid of concertgoers or bartenders”</p> <p>“Second Life claims over 2 million registered users, but probably only 10% regularly participate”</p>

**Table 13: Core and Periphery Membership of Social Representation of SVWs**

	Topics	Salience (Frequency)	Sum of similarity	Coreness	Membership
<b>T11</b>	<b>Shadow universe</b>	<b>187</b>	<b>0.673</b>	<b>0.436</b>	<b>CORE</b>
<b>T4</b>	<b>Growing SVWs/virtual economy</b>	<b>180</b>	<b>0.639</b>	<b>0.373</b>	
<b>T10</b>	<b>Organizational adoption</b>	<b>153</b>	<b>0.611</b>	<b>0.342</b>	
<b>T5</b>	<b>Hedonism</b>	<b>146</b>	<b>0.599</b>	<b>0.332</b>	
<b>T14</b>	<b>Autonomy</b>	<b>136</b>	<b>0.576</b>	<b>0.323</b>	
<b>T13</b>	<b>Virtual identity</b>	<b>124</b>	<b>0.571</b>	<b>0.250</b>	
<b>T17</b>	<b>Socialization</b>	<b>114</b>	<b>0.533</b>	<b>0.260</b>	
T6	Immersive; Realistic universe	99	0.504	0.214	PERIPHERY
T2	Creative universe	88	0.468	0.191	
T16	Skepticism regarding SVWs	81	0.458	0.168	
T18	Wild West environment; Bullying; Virtual crimes; Uncontrolled behavior	71	0.414	0.151	
T8	Need of technological advances; Security risk; Log time; System crash	64	0.384	0.138	
T15	Service providers' strategy; In-word regulation	64	0.363	0.147	
T1	Anonymous universe	59	0.368	0.123	
T12	Self-accomplishment	33	0.245	0.067	
T19	Insufficient actual users; Social absence (Loneliness)	32	0.239	0.070	
T9	Not serious place	32	0.213	0.075	
T3	Experimental simulation	27	0.188	0.055	
T7	Need of how-to-use knowledge	21	0.181	0.044	



## **Eliciting Local Meaning System of Virtual Entrepreneurship**

### Data Collection

Next, to extract the local meaning systems of virtual entrepreneurship, we conducted semi-structured interviews with virtual entrepreneurs who run businesses in *Second Life*. We recruited participants in three ways. First, we sent leaders of groups relevant to virtual entrepreneurs and businesses email which requested them to distribute our message soliciting participation in the study to their members. Second, we sent soliciting emails to virtual entrepreneurs who advertise their goods in *XStreetSL* which is the marketplace website for trading of *Second Life* virtual goods. Lastly, we visited various business places (e.g., stores, malls) in *Second Life* and directly solicited participants who run a business in those places. To be consistent with the data based on the US newspapers, we limited our participants to US users by checking their answers to the nationality question and IP addresses.

All interviews were performed in a comfortable place in *Second Life* where other avatars would not disturb the interview. The participants were first asked to complete a web survey including demographic and supplemental questions, and then they began the semi-structured interview which was conducted by text chatting and took about 40 minutes on average. Interview questions included: *What inspired you to start your business in Second Life?*, *What are the difficulties in doing business in Second Life?*, *What do you, personally, get from your Second Life business?*, *What are your predictions about the future of Second Life and the Second Life economy?*, etc. Twenty-four virtual entrepreneurs participated in our semi-structured interviews. Because this was a text-chat interview, we could capture and save the interview content. Each participant received US\$ 5 rewards in the forms of Linden dollars, the virtual currency used in *Second Life*.

**Table 14: Demographics of Participants for Virtual Entrepreneurship Study**

		Frequency	Percent			Frequency	Percent
Age	18-24	0	0.0	Tenure as a <i>Second Life</i> user	1 month or less	1	4.2
	25-34	3	12.5		2 to 6 months	1	4.2
	35-44	4	16.7		7 to 12 months	0	0.0
	45-54	7	29.3		1 year to 2 years	8	33.3
	55 or older	10	41.5		Longer than 2 years	14	58.3
Education	High school	4	16.7	Working hours in business activities (Weekly)	Less than 10 hours	5	20.8
	Community college	7	29.2		10 hours≤, <20 hours	4	16.7
	Undergraduate	6	25.0		20 hours≤, <40 hours	9	37.5
	Graduate	7	29.1		More than or 40 hours	6	25.0
Gender	Male	12	50.0				
	Female	12	50.0				

### Coding

We coded the data from interviews with virtual entrepreneurs using the same coding procedure by which we coded the data from newspaper articles. A second coder, another researcher, independently re-coded 20 percent of the data using the set of codes identified during the initial coding. The two raters were in agreement on 40 of the 44 codes assigned (Consistency rate = 0.909, Cohen's Kappa = 0.905), indicating a high level of inter-rater reliability (Fleiss 1981). Finally, related codes were grouped into 15 topics (super-codes), as shown in Table 15.

### Analysis of the Structure of Meaning System of Virtual Entrepreneurship

The procedure to extract meaning systems of virtual entrepreneurship is the same as the method of *Virtual Consumption Study I*. A hierarchical cluster analysis and Borgatti and Everett's (1999) core-periphery analysis showed that three topics were classified into the core of the social representation and the remaining twelve into the periphery (Table 16). To fully investigate the meaning system of virtual entrepreneurship, we generated a figurative depiction or a maximum tree (Figure 10), which was introduced in *Virtual Consumption Study I*.

**Table 15: Topics (Super-codes) of Social Representation of Virtual Entrepreneurship**

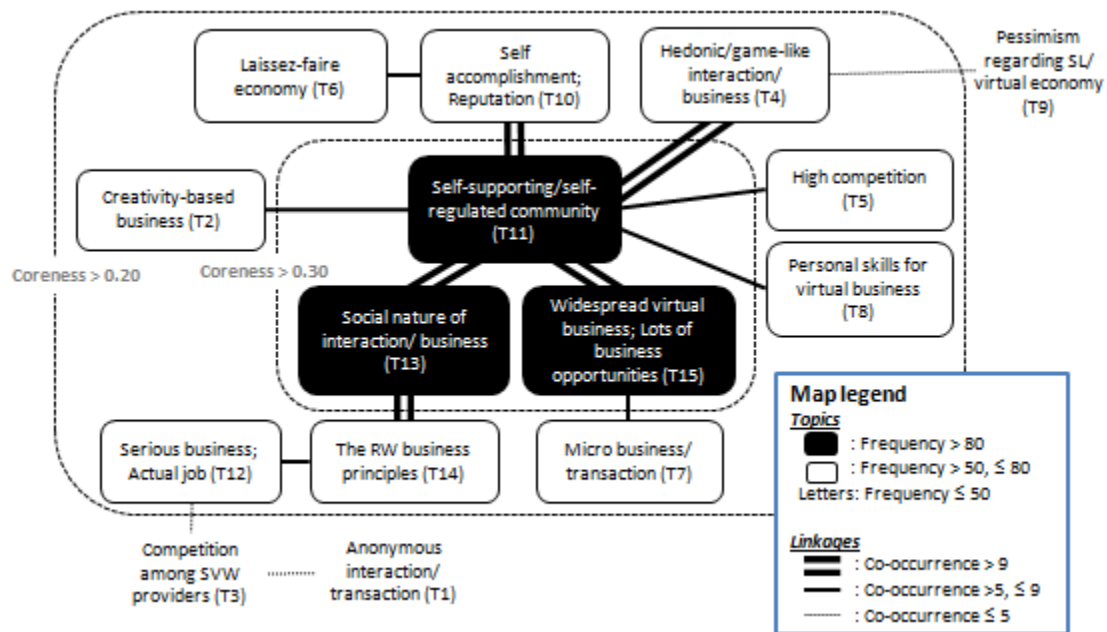
Topics		Example Quotes
T1	Anonymous interaction/transaction	“I have no idea if the person is an alt, or who they really are” “It is difficult to see the true person here because we are pixels.....in rl [ the real world] you can judge a person when you see them”
T2	Creativity-based business	“.....be creative in the things you offer to the public” “The most important skill I think is.....a good eye for flair and creativity”
T3	Competition among SVW service providers	“..... virtual worlds aren’t constricted to SL. There are others that have superior graphic capabilities and a chance to attract users and business persons” “SL [Second Life] economy will continue expanding until there is a viable competitor who offers better tools for content management and enforcement”
T4	Hedonic/game-like interaction/business	“The pleasure of doing things that I cannot do in First Life [the real world], like own a nine story apartment building that I can design or having an art gallery that offers art that I want to sell” “You can sell a coffin to some vampires.....you can’t do that in rl [the real world]”
T5	High competition	“You cannot rely on enforced monopoly in here [Second Life]. You have to constantly improve the value your offerings, or be overtaken by the competition” “I can resell a single item an unlimited number of times. I have found it harder to earn money here than in First Life [the real world]”
T6	Laissez-faire economy	“SL [Second Life] is one of the few places left for an American to be able to honestly build their own business independently” “.....there is more freedom here [Second Life], but that means more freedom for the ‘bad elements’ too”
T7	Micro business/transaction; Low investment cost	“.....it doesn’t cost anymore than a few Lindens [Second Life currency] for renting a store” “SL [Second Life] is a great place to start for the budding entrepreneur with little resources”
T8	Personal skills for virtual entrepreneurs	“I’m a graphic designer and an illustrator in RL [the real world], and I started to understand my knowhow could be applied to SL [ Second Life]” “you would need to have a bit of programming skills...for scripting”
T9	Pessimism regarding SL or virtual economy; Lagging virtual economy	“I see it staying rather flat.....far too many people get “ripped off” here [Second Life] and leave in frustration” “I have known people to lose hundreds of dollars in SL [Second Life] trying to make a business work”
T10	Self-accomplishment; Reputation	“.....satisfaction is possibly the most, when I make a sale it is quite thrilling” “.....personal satisfaction, and a little pay at this point, but personal satisfaction is the number one thing I get from it”
T11	Self-supporting/self-regulated community	“.....what I spend in here [Second Life] need to come from here [Second Life]” “I have a night club and offer live entertainment.....so the sl [Second Life] income helps to pay for the artist and the staff”
T12	Serious business; Actual job	“Don’t let yourself get drawn into the ‘world’ and remember you do have a job to do” “I make linden [Second Life currency] which can be transferred into real life money”

(Table continued)

T13	Social nature of interaction/business	<p>“.....communication with customers is number one.....without that you cannot have business in sl [Second Life]”</p> <p>“My club, I know, is not going to make me rich but the contacts and friends I have made offset that”</p>
T14	The real-world business principles	<p>“I would say sl [Second Life] is really not different from rl [the real world] when it comes to businesses”</p> <p>“.....it [virtual business] requires a lot of the same skills (as the real-world ones)”</p>
T15	Widespread virtual business; Lots of business opportunities	<p>“I saw others owning clubs, doing other ventures, clothing, etc (in Second Life). I wanted to get something going also”</p> <p>“I think that sl [ Second Life] will always be a place to make money and generate money if you have the time, patience and tools to work it”</p>

**Table 16: Core and Periphery Membership of Social Representations of Virtual Entrepreneurship**

	Topics	Saliency (Frequency)	Sum of similarity	Coreness	Membership
<b>T11</b>	<b>Self-supporting/self-regulated community</b>	<b>106</b>	<b>0.236</b>	<b>0.453</b>	<b>CORE</b>
<b>T13</b>	<b>Social nature of interaction/business</b>	<b>94</b>	<b>0.459</b>	<b>0.393</b>	
<b>T15</b>	<b>Widespread virtual business; Lots of business opportunities</b>	<b>83</b>	<b>0.406</b>	<b>0.348</b>	
T10	Self-accomplishment; Reputation	68	0.459	0.274	<b>PERIPHERY</b>
T14	The real-world business principles	64	0.491	0.262	
T12	Serious business; Actual job	62	0.479	0.241	
T8	Personal skills for virtual entrepreneurs	60	0.446	0.243	
T5	High competition	57	0.495	0.22	
T4	Hedonic/game-like interaction/business	53	0.309	0.221	
T2	Creativity-based business	53	0.536	0.218	
T6	Laissez-faire economy	53	0.668	0.2	
T7	Micro business/transaction; Low investment cost	51	0.506	0.202	
T3	Competition among SVW service providers	39	0.628	0.141	
T9	Pessimism regarding SL or virtual economy; Lagging virtual economy	26	0.502	0.096	
T1	Anonymous interaction/transaction	18	0.572	0.063	



**Figure 10: The Meaning System of Virtual Entrepreneurship**

## Discussion

In the following sections, we first discuss the central meanings of SVWs, which were identified from the core-periphery analysis of the representation of SVWs, and then illustrate the meanings of virtual entrepreneurship by comparing them with the central meanings of SVWs.

### Generic Meaning System of SVWs

We extracted 7 core elements (the components stable and unaffected by variations in context) in the representation of SVWs from public discourse: *Shadow universe*, *Socialization*, *Hedonism*, *Virtual identity*, *Autonomy*, *Organizational adoption*, and *Growing SVWs/virtual economy*.

The core topic *Shadow universe* implicates that as the real world casts a shadow into SVWs, the worlds include virtual replicas of things found in the real world. Further, virtual entities and practices bring social meanings of things that they replicate into SVWs. Thus, the

*Shadow universe* implies social reality existing in the non-physical or virtual universe beyond just saying

The three core concepts, including *Socialization*, *Hedonism* and *Virtual identity*, indicate users' main goals in SVWs. The ideas *Socialization* and *Hedonism* suggest that SVWs are used for socialization and entertainment, which are found as the best magnet to attract users in social cyberspaces by prior literature (e.g., Jung and Kang 2010; Ridings and Gefen 2004). Also, SVWs are cyberspace for expressing a self and creating *Virtual identity*. An avatar, or a virtual persona, can be the extended form of a self because the user's avatar is regarded as the manifested virtual self in SVWs. In addition, users use other virtual objects, such as houses, in order to express a self. SVWs, therefore, are good cyberspaces for expressing a self or creating a virtual identity.

Another generic meaning of SVWs is that the worlds are an *autonomous* cyberspace. This can be a unique characteristic different from GVWs, in which service providers offer game rules or generate virtual items. SVW users have discretion, which allows user to develop their own moral codes and regulations. SVWs are also a self-supporting universe in that users produce necessary virtual objects and share or trade of them in the worlds. The meaning *Autonomy* is conflicted with intervention from service providers and government agencies (e.g., taxation on user-to-user trading of virtual objects).

The last two core topics, *Organizational adoption* and *Growing SVWs/virtual economy*, mean that SVWs are becoming more prevalent cyberspaces in our societies. Many educational organizations have already been using SVWs as a new educational tool, and corporations are training new employees in organizational culture and work processes, holding distant meetings, and operating customer service centers in SVWs (Hobson 2007). In addition to stories about

organizational adoption of SVWs, the explosive popularity of SVWs and the rapid growth of the virtual economy occupy a prominent part of discourse about SVWs. As a result, the idea of the promise of cyberspace becomes a key building block in the meaning systems of SVWs.

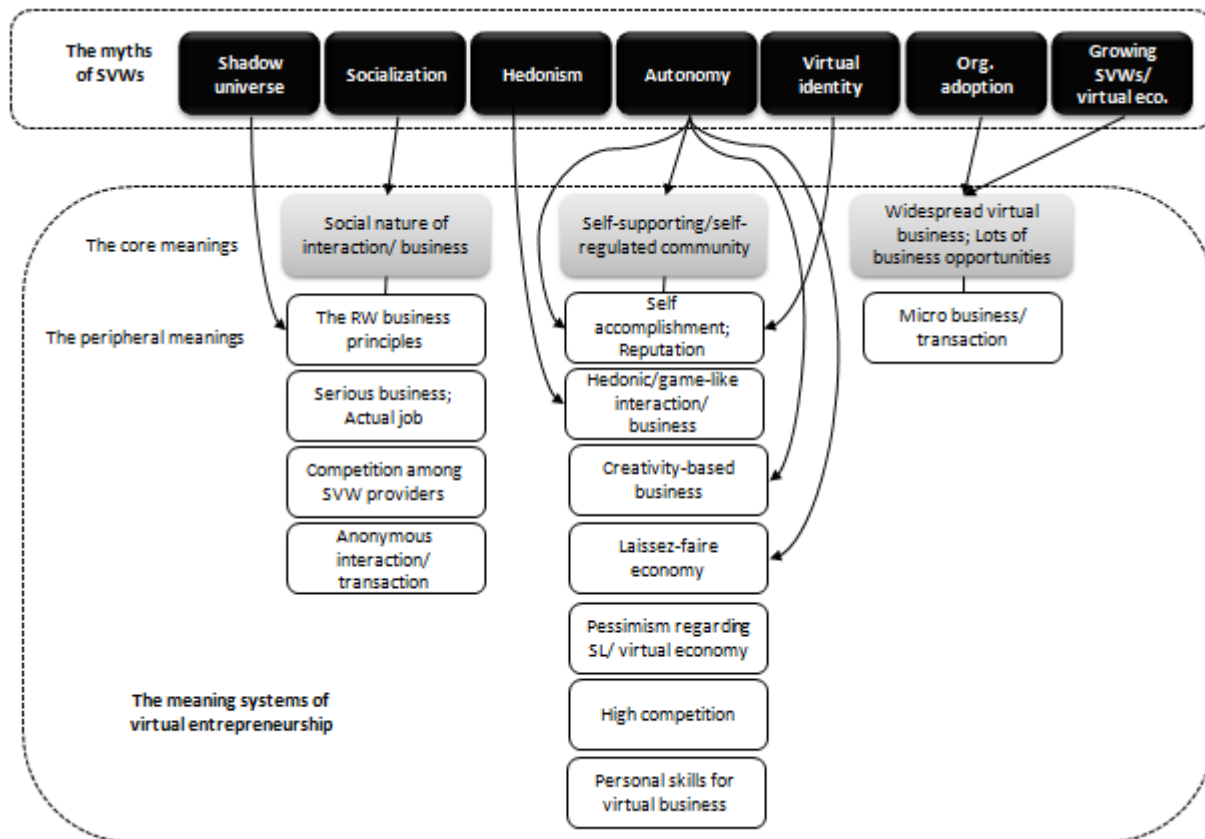
The remaining 12 topics are peripheral elements of the meaning systems of SVWs. Because it is complicated to analyze relations of all of core and peripheral meanings of SVWs with meaning systems of virtual entrepreneurship, we exclude peripheral elements in our analysis. Also, we call these core elements the *rational myths* (Meyer and Rowan 1977; Zilber 2006), or shortly *myths* in this study, of SVWs in that the core elements reflect the social beliefs shared by the members of the community. Thus, we explore a translation of 7 myths into meaning systems of virtual entrepreneurship.

In the next section, we discuss how the myths of SVWs are translated into the meanings of virtual entrepreneurship. Figure 10 summarizes how the myths of SVWs are translated into the meanings of virtual entrepreneurship. As shown in Figure 10, the myths of SVWs are translated into the core ideas of virtual entrepreneurship. The core ideas of virtual entrepreneurship have a generating function through which the peripheral ideas acquire meanings and values. Hence, the myths are reflected in the peripheral ideas of virtual entrepreneurship through the generic function of the core ideas. In some cases, the myths are directly reflected into the peripheral ideas of virtual entrepreneurship.

#### Translation of the Myths of Social Virtual Worlds into Meanings of Virtual Entrepreneurship

The map of the meaning system of virtual entrepreneurship shows that sixteen concepts form the meaning system, with three core elements: 1) *Self-supporting/self-regulated community*, 2) *Social nature of interaction/business*, and 3) *Widespread virtual business; Lots of business opportunities*. This result informs us that the central understanding of virtual entrepreneurship

includes entrepreneurs' goals (self-support), the social nature of their entrepreneurial practice, and their beliefs about the business environment (optimism and community self-regulation).



**Figure 11: Translation of the Myths of SVWs in Meanings of Virtual Entrepreneurship**

In what ways are elements of the meaning system of SVWs reflected in the meaning system of virtual entrepreneurship? One strong connection between these systems is the *Autonomy* myth of SVWs, which is seen very strongly in the meaning systems of virtual entrepreneurship. In the context of virtual entrepreneurship, the *Autonomy* myth of SVWs, including independence, self-governance and freedom, is associated with the core meaning of virtual entrepreneurship *Self-supporting/self-regulated community*, which is used to justify entrepreneurial behavior in the worlds. A user thinks of *Second Life* as an independent universe, in which his/her virtual self is alive, and thus they try to endow the virtual self with economic independence in that world. For example, users commented:



“....what I spend in here [Second Life] needs to come from here [*Second Life*]”  
“I have a night club and offer live entertainment.....so the sl [*Second Life*]  
income helps to pay for the artist and the staff.”

Thus, the *Autonomy* myth of SVWs is ultimately translated to economic independence of the virtual self in the context of virtual entrepreneurship. The relationship of autonomy and entrepreneurship can be found in entrepreneurial literature arguing that cultural individualism, emphasizing individual autonomy and discretion, encourages entrepreneurial behavior (Brandl and Bullinger 2009; Hwang and Powell 2005). The *Autonomy* myth of SVWs is also appears in some peripheral meanings in that they have associations with core meaning of virtual entrepreneurship *Self-supporting/self-regulated community*, which directly reflects the *Autonomy* myth of SVWs. In addition to economic independence, entrepreneurial behavior provides self-accomplishment (the peripheral meaning *Self-accomplishment; Reputation*). Virtual entrepreneurs can attain self-accomplishment through others' reaction and interest in their virtual creatures, as some entrepreneurs mentioned:

“.....satisfaction is possibly the most, when I make a sale it is quite thrilling”  
“.....personal satisfaction, and a little pay at this point, but personal satisfaction  
is the number one thing I get from it”

Autonomous culture treasures the sustaining and actualized self (Frank et al. 1995). Virtual entrepreneurs can achieve self-actualization through satisfaction from demonstrating one's ability. We can therefore say that the *Autonomy* myth of SVWs breaks through the peripheral meaning *Self-accomplishment; Reputation*. Additionally, self-accomplishment has an important motif for entrepreneurial behavior in literature (McClelland 1972). Thus, despite its peripheral status, *Self-accomplishment; Reputation* has a strong connection with the core element *Self-supporting/self-regulated community* in the map, which directly reflects the *Autonomy* myth that is considered “the cornerstone of entrepreneurship” (Hwang and Powell 2005, p. 201). Also,

in the context of entrepreneurship, the *Virtual identity* myth of SVWs is translated into the meaning of virtual entrepreneurship *Self-accomplishment; Reputation* because users' attempts to acquire satisfaction or reputation through their business is based on their desire to create a successful entrepreneurial self (i.e., generate a virtual identity).

The peripheral meaning *Laissez-faire economy* itself reflects the *Autonomy* myth. The thought of a *self-governing* (or autonomous) universe makes virtual entrepreneurs take economic freedom in a SVW for granted. Accordingly, the *Autonomy* myth has been used to justify their resistance against real-world government taxation on user-to-user trading of virtual goods and service operators' regulations to limit their economic activities. In the map, the *Laissez-faire economy* is associated with the core *Self-supporting/self-regulated community* mediated by another peripheral meaning *Self-accomplishment; Reputation*. The *Laissez-faire economy* can indicate a specific economic environment of *Second Life* where by entrepreneurial behavior a user achieves self-accomplishment and can create a self-supporting virtual self.

The *Hedonism* myth of SVWs is mirrored in the meaning of virtual entrepreneurship *Hedonic/game-like interaction/business*. The significant connection of *Self-supporting/self-regulated community* and *Hedonic/game-like interaction/business* suggests that virtual entrepreneurs' exertions to be self-supporting can be a part of game-like work. In a sense, entrepreneurial behavior can be considered one mode of gaming or realizing fantasies in *Second Life* as one virtual entrepreneur mentioned:

“The pleasure of doing things that I cannot do in First Life [the real world], like own a nine story apartment building that I can design or having an art gallery that offers art that I want to sell.”

“I wouldn't actually call it a job.....it is a pastime for me”

On the other hand, virtual entrepreneurs' perception of a game-like work in *Second Life* is weakly connected to a pessimistic view of *Second Life* and its economy (*Pessimism regarding*

*SL/virtual economy*). This may point out the volatility of hedonism, which may not only make users feel less attracted to *Second Life* but may also make virtual entrepreneurs less motivated as the time passes.

The link of the core element *Self-supporting/self-regulated community* and the peripheral element *High competition* is straightforward in that entrepreneurial behavior, aiming at creating a self-supporting virtual self, makes the virtual market highly competitive. The relation between the core *Self-supporting/self-regulated community* and the periphery *Personal skills for virtual entrepreneurs* is also easily understandable in that personal skills, such as computer graphic skills or scripting skills, help users engage in business for themselves. In culture in which self-support is a desirable virtue, individuals may be encouraged to demonstrate their capability to control the environment surrounding them. To achieve this aspiration, virtual entrepreneurs may try to exceed the norm and utilize their creativity. This argument is reflected in the association of the core meaning *Self-supporting/self-regulated community* and the peripheral meaning *Creativity-based business*.

*Socialization*, which is another myth of SVWs, is also translated into the core meaning of virtual entrepreneurship *Social nature of interaction/business*. The *Social nature of interaction/business* implies users' socialization goal in *Second Life*; furthermore, a social relationship with customers is important in doing business in *Second Life*. One user stated:

“.....communication with customers is number one.....without that you cannot have business in sl [*Second Life*]”

The *Socialization* myth of SVWs is thus projected onto the relationship between virtual entrepreneurs and customer users. The *Social nature of interaction/business* is closely associated with the peripheral meanings of *The real-world business principles*. This association suggests that although friendly relations with customers are thought of as a prominent trait of businesses

in *Second Life*, personal relationship management skills, which are used in conducting real-world business, can be similarly applied to businesses in *Second Life*. *The real-world business principles* reflects the *Shadow universe* myth of SVWs. Virtual entrepreneurs may have an idea that *Second Life* is a mirror of the real world, and thus social practices, including economic activities, are subject to the real-world conventions or rules. In particular, users, whose business in *Second Life* is an actual job or corresponds to income for their real-world life, are more likely to consider the virtual economy a real-world like economy as shown in the connection between *The real-world business principles* and *Serious business; Actual job*. Those users also recognize that there are several SVWs in which they can have a virtual self and do business. For example, one user commented:

“....SL [*Second Life*] has imposed a lot of different regulations that have upset many people. For long-term users of SL, virtual worlds aren’t constricted to SL. There are others that have superior graphic capabilities and a chance to attract users and business persons.”

This means that these entrepreneurs may initiate or close businesses in SVWs depending on SVWs’ economic situation or providers’ policies. This strategic thought draws another linkage to the peripheral meaning of virtual entrepreneurship *Competition among SVW providers*. On the other hand, the fact that virtual entrepreneurs make decisions strategically confirms the argument that strategic action is an essential trait of entrepreneurial action (Casson 1982). The weak relation between *Competition among SVW providers* and *Anonymous interaction/transaction* may simply mean that SVWs compete with one another by offering similar environments including anonymity which is a typical attribute of SVWs.

The last core idea of virtual entrepreneurship, *Widespread virtual economy; Lots of business opportunities*, describes an attractive condition indicating that *Second Life* economy is

so booming for users that they can easily recognize business opportunities. On the other hand, the core idea offers justification of entrepreneurial behavior in *Second Life*. One user said:

“I saw others owning clubs, doing other ventures, clothing, etc. (in *Second Life*). I wanted to get something going also.”

This shows that entrepreneurial behavior is prevalent in *Second Life* so that it is celebrated largely without question. This indicates that virtual entrepreneurship is institutionalized, or widely legitimated (Meyer and Rowan 1977), in *Second Life*. The institutionalization of virtual entrepreneurship can be affected by the *Growing SVWs/virtual economy* myth of SVWs and the *Organizational adoption* myth. Through enhancing the perception that *Second Life* and its economy are something more than play and are seen as a promising cyberspace, both myths contribute to the institutionalization of virtual entrepreneurship. Both myths are translated into the core meaning of virtual entrepreneurship *Widespread virtual economy; Lots of business opportunities*. Finally, *Widespread virtual economy; Lots of business opportunities* is associated with the peripheral idea *Micro business/transaction*. In terms of entrepreneurship, a small initial investment lessens entrepreneurs’ burden of acquiring financial resources, which is considered a crucial ingredient for entrepreneurs’ success (Lounsbury and Glynn 2001). Virtual entrepreneurs, who are free from financial burden, are able to examine diverse business opportunities, and this micro trait of virtual business has contributed in expanding virtual economy.

## CONCLUSION

In this study, we analyzed the meaning systems of virtual entrepreneurship shared by *Second Life* entrepreneurs through the core-periphery structure of social representations. Through this analysis, we found that virtual entrepreneurship is understood as users’ self-supporting practice, which depends on social relation. An additional insight from the study is the

institutionalization of virtual entrepreneurship. Although virtual entrepreneurship is a quite new and unfamiliar phenomenon in cyberspace, it is considered acceptable behavior without questioning whether it is the *right* thing in SVWs. Our findings suggest that institutionalization of virtual entrepreneurship is the result of translation of the collective meanings of SVWs (i.e., perceptions of real-world organizational adoption of SVWs, growing SVWs and virtual economy). Thus, we can conclude that the myths of SVWs are well translated in the context of virtual entrepreneurship.

The study makes some important contributions for theory and practice. The most important theoretical contribution of the study is its elaboration of translation. Despite the importance of the translation of social meaning systems into local meaning systems, both the theoretical research and empirical work on this topic are insufficient. We proposed and demonstrated an alternative approach that can be used to identify and examine aspects of translation using social representations theory and methods for a core-periphery structural analysis of social representations. The approach can be a useful framework by which researchers clarify the function of broader meaning systems in diverse contexts. In addition, the study contributes knowledge about virtual entrepreneurship. Because SVWs are a novel cyberspace and virtual entrepreneurship is an emerging social phenomenon in the worlds, virtual entrepreneurship has not been well conceptualized. By suggesting theoretically important factors and their relations, the study offers the fundamental knowledge for future research on virtual entrepreneurship.

The study also has practical implications for SVW service operators. Overall the study is beneficial for SVW service operators through informing them about virtual entrepreneurs' perceptions of the virtual economy. This knowledge can be useful in setting up a better

environment for virtual business so that common users are motivated to become virtual entrepreneurs, not only investing money in SVWs but also producing virtual goods to fill a void universe. Specifically, SVW service operators need to make efforts to realize a *laissez-faire* economy, which is one component of the representation of virtual entrepreneurship. Although operators' interventions in the economy have increased as the economy has expanded, they should remember that entrepreneurs have an autonomous worldview of SVWs and want economic freedom. Of course, this does not necessarily mean that operators should abandon their efforts to protect entrepreneurs and consumers from scams or malicious behavior, which would decrease entrepreneurial motivation. Accordingly, operators need to balance a *laissez-faire* environment while adding policies and protections to weed virtual crimes out. An additional lesson for service operators is that virtual entrepreneurs recognize low investment cost as one inducement for entrepreneurial behavior in SVWs. The increase of membership fees or charges for business activities can cause increase in investment cost, which can hurt entrepreneurial motivation in SVWs. Operators should therefore use care when proposing and implementing new regulations or fees which would significantly increase the investment cost in SVWs.

The study has the issue of generalizability. We recruited participants in one SVW or *Second Life*. Given SVWs can have different economic systems, so the study has a limitation in fully generalizing the findings. The other limitation is that our participants were limited to users residing in the US. Thus, the findings of the study should be re-visited in other SVWs and re-examined using data from other cultures in future research.

## CONCLUSION OF DISSERTATION

We now have watched the explosive growth of SVWs, and some business practitioners and academic researchers predict that these worlds are one of the next major developments of the future Web (Vereen 2007). The potential of these worlds is supported by the observation that *3D virtual environments* (MacMillan 2006) and *Web-as-participation* (Decrem 2006), which are the main characteristics of SVWs, have become the dominant environment of the Internet. As Philip Rosedale, the creator of *Second Life*, comments, SVWs may have a radical impact on the current web environment by changing a way of communication on the Web (Milbank 2008). In other words, optimistic Web pundits expect that SVWs will substitute current flat websites by offering a richer and more immersive environment for communication and sharing information. Of course, there is no way to predict how a technology will evolve. We may need more time to fully assess whether SVWs bring about the virtual revolution or are a transient fashion. Nevertheless, we can imagine the future of SVWs by analogy with the evolution of the Internet. Although the Internet was considered the “stupid network” (Isenberg 1997) and had the role of a secondary communication medium in 1990s, it is now an essential part of current human life. Some shortcomings of the early Internet, such as a slow speed, vulnerable security, and limited content, precluded people from imagining the current growth of the Internet 10 years ago. Current SVWs have problems similar to the early Internet. To access SVWs, users need a high-capacity computer which is connected via a broadband connection. Users are also vulnerable to theft of virtual property and sometimes complain of the lack of content in SVWs. However, like the Internet, if the upcoming SVWs overcome these drawbacks they have the potential to become a significant part of our future life beyond their current status of an optional web service. The promise of SVWs is supported by the fact that SVWs have become increasingly popular and a



technological environment supporting SVWs has been advanced. The following remark from Sam Palmisano, CEO of IBM, regarding SVWs gives us a clue to the future of SVWs (Kirkpatrick 2007):

“(SVWs are) the next phase of the Internet’s evolution..... (and they will be) the same level of impact as the first Web explosion.”

In the future, SVWs may evolve into a variety of forms rather than a certain dominant type of SVW. In addition to the current type of SVWs which are run on a separate software platform (e.g., *Second Life*), web browser-based SVWs will appear. Also, SVWs may be combined with other web services. For example, *Google* has considered the fusion of SVWs with social networking services and video-sharing web services; and *Cyworld*, which is the most popular social networking service in South Korea, has recently attempted to build a SVW-like environment such as a 3D interface. Therefore, rather than regarding current SVWs as the completed form, we may need to ask the question of what types or what variants of SVWs are more promising in the future.

Another important issue regarding the future of SVWs is interoperability among SVWs. The interconnection of SVWs enables service operators to mitigate their limitations as a single virtual space by extending their border and providing users with a one-shot exploration of the large-scale virtual universe, or the *Metaverse*, which was imagined by Neal Stephenson (1992) in his science-fiction novel *Snow Crash*. Although there are some barriers to interoperability among SVWs, such as different software platforms, difficulties in reaching agreement on transferring virtual property, and security risks, service operators basically recognize the benefits of interoperability and have begun efforts towards it. For example, *Second Life* enables users to teleport their avatars from *Second Life* to virtual worlds which run on an *OpenSimulator*, which is an open source platform for hosting virtual worlds (OpenSimulator 2010). Because

interoperability among SVWs enhances scalability and realizes the full potential of SVWs, it can be regarded as a crucial factor affecting the upcoming picture of SVWs (Virtual Worlds News 2008).

Technological environments may also influence the future of SVWs. Although current SVWs have several technological issues, such as security risk, difficult to control avatars, and system crashes, overall the advance of technologies may contribute the success of SVWs. For example, users could enjoy SVWs seamlessly by using faster Internet connection and superior navigators (control devices). Another technological challenge faced by the future SVWs is the widespread diffusion of mobile devices. A small screen of mobile devices may hinder users' immersion in the worlds. Nevertheless, the diffusion of mobile devices can help users access SVWs anytime and anyplace. Rather, the diffusion of mobile devices can increase users' perception of presence of SVWs by realizing ubiquitous access to SVWs.

In the promising social cyberspace, virtual consumption and entrepreneurial behavior have become a crucial component of virtual life. In this research, we explored the users' common understandings of virtual consumption and virtual entrepreneurship and what gains are achieved through these economic activities for users. Prior research has focused on legal and macroeconomic topics and rarely reflected the perspective of the economic subject, or users, who are consumers, producers, sellers, and investors in the virtual economy. This study is valuable in that it offers knowledge about users' understandings of the virtual economy, extending beyond current macro-focused research. The findings can be a theoretical foundation and provide primary information for researchers, SVW operators, and entrepreneurs.

An additional contribution is to introduce new methodological approaches to IS discipline, including core-periphery analysis of social representations for exploring the collective

understandings of social objects and means-end chain analysis for gaining a deep understanding of user goals in cyberspaces. These mixed, qualitative-quantitative methodological approaches can be a valuable addition to the methodological toolkits of IS researchers in a variety of domains.

In conclusion, we hope that our research is a meaningful resource for understanding fundamental elements of the virtual economy and further ignites interest in virtual consumption and virtual entrepreneurship.

## REFERENCES

- Abric J. C. (1976) *Jeux, Conflits et Représentations Sociales*, These d'état, Aix-en-Provence, Université de Provence.
- Abric, J. C. (1993) "Central System, Peripheral System: Their Function and Roles in the Dynamics of Social Representations," *Papers on Social Representations*, 2, 1993, pp. 75-78.
- Abric, J. C. (2001) "A Structural Approach to Social Representations," in: *Representations of the Social: Bridging Theoretical Traditions*, K. Deaux, and G. Philogene (eds.), Oxford: Blackwell Publishers, pp. 42-47.
- Alexandra. S. (2001) "More and More plugged" *Social Representations of the New Economy: An Investigation into the Common Sense of Business Professionals*, Doctoral dissertation, London School of Economics and Political Science.
- Argote, L., and Ingram, P. (2000) "Knowledge Transfer: A Basis for Competitive Advantage in Firms," *Organizational Behavior and Human Decision Processes*, 82(1), pp. 150-169.
- Augoustinos, M., and Walker, I. (1995) *Social Cognition: An Integrated Introduction*, London: Sage Publications.
- Bagozzi, R. P., and Dabholkar, P. A. (1994) "Consumer Recycling Goals and their Effect on Decisions to Recycle: A Means-End Chain Analysis," *Psychology & Marketing*, 11(4), pp. 313-340.
- Bartle, R. (2003) *Designing Virtual Worlds*, Indianapolis, IN: New Riders Press.
- Belk, R. W. (1988) "Possessions and the Extended Self," *Journal of Consumer Research*, 15(2), pp. 139-168.
- Berger, P. L., and Luckman, T. (1989) *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, New York: Anchor Books, Doubleday.
- Bonsu, S. K., and Darmody, A. (2008) "Co-creating Second Life: Market-Consumer Cooperation in Contemporary Economy," *Journal of Macromarketing*, 28(4), pp. 355-368.
- Borgatti, S. P., and Everett, M. G. (1999) "Models of Core/Periphery Structures," *Social Networks*, 21, pp. 375-395.
- Brandl, J., and Bullinger, B. (2009) "Reflections on the Societal Conditions for the Pervasiveness of Entrepreneurial Behavior in Western Societies," *Journal of Management Inquiry*, 18(2), pp. 159-173.
- Bray, D. A., and Konsynski, B. (2007) "Virtual Worlds: Multi-Disciplinary Research Opportunities," *The DATA BASE for Advances in Information Systems*, 38(4), pp. 17-25.

- Breakwell, G. M., and Canter, D. V. (1993) "Aspects of Methodology and Their Implications for the Study of Social Representations," in: *Empirical Approaches to Social Representations*, G. M. Breakwell, and D. V. Canter (eds.), Oxford: Oxford University Press, pp. 1-11.
- Brey, P. (2003) "The Social Ontology of Virtual Environments," *American Journal of Economics & Sociology*, 62(1), pp. 269-282.
- Campbell, C. (1992) "The Desire for the New: Its Nature and Social Location as Presented in Theories of Fashion and Modern Consumerism," in: *Consuming Technologies: Media and Information in Domestic Spaces*, R. Silverstone, and E. Hirsch (eds.), London: Routledge, pp. 48-64.
- Candy, L., and Edmonds, E. (2000) "The Human Element: Creativity Enhancement with Emerging Technologies," *Communications of the ACM*, 43(8), pp. 62-65.
- Capozza, D., Falvo, R., Robusto, E., and Orlando, A. (2003) "Beliefs about Internet: Methods of Elicitation and Measurement," *Papers on Social Representations*, 12, pp. 1.1-1.14.
- Casson, M. C. (1982) *The Entrepreneur. An Economic Theory*, Oxford: Martin Robertson.
- Castronova, E. (2001) "Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier," *CESifo Working Paper Series*, No. 618, <http://papers.ssrn.com/abstract=294828>, accessed on Nov. 1, 2009.
- Castronova, E. (2002) "On Virtual Economies," *CESifo Working Paper Series*, No. 752, <http://ssrn.com/abstract=338500>, accessed on Nov. 1, 2009.
- Castronova, E. (2004) *Synthetic Worlds*, Chicago, IL: The University of Chicago Press.
- Cooper, R. A., Day, T. E., and Lewis, C. M. (2001) "Following the Leader: A Study of Individual Analysts' Earnings Forecasts," *Journal of Financial Economics*, 61(3), pp. 383-416.
- Creed, W. E., D., Scully, M. A., and Austin, J. R. (2002) "Clothes Make the Person? The Tailoring of Legitimizing Accounts and the Social Construction of Identity," *Organization Science*, 13(5), pp. 475-496.
- Czarniawska, B., and Joerges, B. (1996) "Travel of Ideas," in: *Translating Organizational Change*, B. Czarniawska, and G. Sevón (eds.), Berlin: The Gruyter, pp. 13-48.
- Decrem, B. (June 13, 2006) "Introducing Flock Beta 1," <http://www.flock.com/node/4500>, accessed on Nov. 1, 2009.
- Denzin, N. K., and Lincoln, Y. S. (2005) *The Sage Handbook of Qualitative Research*, 3<sup>rd</sup> Edition, Thousand Oaks, CA: Sage.

- Di Giacomo, J. P. (1980) "Intergroup Alliances and Rejections Within a Protest Movement," *European Journal of Social Psychology*, 10(4), 329-344.
- Doise, W. (2001) "Human Rights Studied as Normative Social Representations," in *Representations of the Social: Bridging Theoretical Traditions*, K. Deaux, and G. Philogène (eds.), Oxford: Blackwell Publishers, pp. 96-112.
- Doise, W., Clemence, A., and Lorenzi-Cioldi, F. (1993) *The Quantitative Analysis of Social Representations*, New York: Harvester Wheatcheaf.
- Doorwewaard, H., Van Bijsterveld, M. (2001) "The Osmosis of Ideas: An Analysis of the Integrated Approach to IT Management from a Translation Theory Perspective," *Organization*, 8(1), pp. 55-76.
- Durkheim, E. (1965) *Elementary Forms of the Religious Life*, New York: Free Press.
- Fairfield, J. (2005) "Virtual Property," *Boston University Law Review*, 85(4), pp. 1047-1103.
- Farr, R. M., and Moscovici, S. M. (1984) *Social Representations*, Cambridge/Paris: Cambridge University Press.
- Fetscherin, M., and Lattemann, C. (June, 2007) "User Acceptance of Virtual Worlds: An Explorative Study about Second Life," <http://www.fetscherin.com/UserAcceptanceVirtualWorlds.htm>, accessed on Nov 1, 2009.
- Flament, C. (1984) "From the Bias of Structure Balance to the Representation of the Group," in: *Social Representations*, R. M. Farr, and S. Moscovici (eds.), Cambridge/Paris: Cambridge University Press, pp. 269-285.
- Flament, C. (1986) "L'Analyse de Similitude: Une Technique pour les Recherches sur les Représentations Sociales," in: *L'Etude des Représentations Sociales*, W. Doise (ed.), Paris: Delachaux & Niestle, pp. 139-156.
- Flament, C. (1994a) "Aspects Peripheriques des Représentations Sociales," in: *Structures et Transformations des Représentations*, C. Guimelli (ed.), Lausanne: Delachaux & Niestle, pp. 139-141.
- Flament, C. (1994b) "Consensus, Salience and Necessity in Social Representations," *Papers on Social Representations*, 3, pp 97-105.
- Fleiss, J. L. (1981) *Statistical Methods for Rates and Proportions*, New York: John Wiley & Sons.
- Frenkel, M. (2005) "The Politics of Transnational: How State-Level Political Relations Affect the Cross-National Travel of Management Ideas," *Organization*, 12(2), pp. 275-301.

- Gal, U., and Berente, N. (2008) "A Social Representations Perspective on Information Systems Implementation," *Information Technology & People*, 21(2), pp. 133-154.
- Gengler, C. E., and Reynolds T. J. (1995) "Consumer Understanding and Advertising Strategy: Analysis and Translation of Laddering Data," *Journal of Advertising Research*, 35(4), pp. 19-33.
- Gigerenzer, G. (1991) "From Tools to Heuristics: A Heuristic of Discovery in Cognitive Psychology," *Psychological Review*, 98(2), pp. 254-267.
- Grimmelmann, J. T. L. (2004) "Virtual Worlds as Comparative Law," *New York Law School Law Review*, 49(1), pp. 147-184.
- Guimelli, C. (1998) "Differentiation Between the Central Core Elements of Social Representations: Normative and Functional Elements," *Swiss Journal of Psychology*, 57(4), pp. 209-224.
- Gutman, J. (1982) "A Means-End Model Based on Consumer Categorization Processes," *Journal of Marketing*, 46(1), pp. 60-72.
- Hammond, S. (1993) "The Descriptive Analyses of Shared Representations," in: *Empirical Approaches to Social Representations*, G. M. Breakwell, and D. V. Canter, Oxford: Oxford University Press, pp. 205-222.
- Harré, R. (1998) "The Epistemology of Social Representations," in: *The Psychology of the Social*, U. Flick (ed.), Cambridge, MA: University Press, pp. 129-137.
- Hasselbladh, H., and Kallinikos, J. (2000) "The Project of Rationalization: A Critique and Reappraisal of Neo-Institutionalism in Organization Studies," *Organization Studies*, 21(4), pp. 697-720.
- Herzlich, C. (1973) *Health and Illness: A Social Psychological Analysis*, London: Academic Press.
- Hirschman, E. C. (1983a) "Aesthetics, Ideologies and the Limits of the Marketing Concept," *Journal of Marketing*, 47(3), pp. 45-55.
- Hirschman, E. C. (1983b) "Predictors of Self-Projection, Fantasy Fulfillment, and Escapism," *Journal of Social Psychology*, 120(1), pp. 63-76.
- Hirschman, E. C., and Holbrook, M. B. (1982) "Hedonic Consumption: Emerging Concepts, Methods and Propositions," *Journal of Marketing*, 46(3), pp. 92-101.
- Hobson, N. (2007) "Should Businesses Get a Second Life," *Knowledge Management Review*, 10(1), p. 5.

- Holmström, H., and Jakobsson, M. (2001) "Using Models in Virtual World Design," *Proceedings of the Hawaii International Conference on System Sciences – 41 (HICSS-41)*, Big Island, HI.
- Hwang, H., and Powell, W. W. (2005) "Institutions and Entrepreneurship," in: *Handbook of Entrepreneurship Research*, S. A. Alvarez, R. Agarwal, and O. Sorenson (eds.), New York: Springer, pp. 169-210.
- IBM Press (Oct. 10, 2007) *IBM and Linden Lab Launch Collaboration to Further Advance the 3D Internet*, <http://www-03.ibm.com/press/us/en/pressrelease/22428.wss#release>, accessed on Feb. 1, 2010.
- Isenberg, D. S. (August 1997) "The Rise of the Stupid Network," *Computer Telephony*, pp. 16-26.
- Itzkoff, D. (January 6, 2008) "I've been in that Club, Just not in Real Life," *New York Times*.
- Jager, B. (1983) "Theorizing and the Elaboration of Place: Inquiry into Galileo and Freud," in: *Duquesne studies in Phenomenological Psychology*, A. Giorgi, A. Barton, and C. Maes (eds.), Pittsburgh: Duquesne University Press, pp. 153-180.
- Jakobsson, M. (2006) *Virtual Worlds and Social Interaction Design*, Unpublished doctoral dissertation, Umeå University, Sweden.
- Jodelet, D. (1984) "Réflexions sur la Notion de Représentation Sociale en Psychologie Sociale," *Communication Information*, 6(2/3), pp. 15-41.
- Jung, Y., and Kang, H. (2010) "User Goals in Social Virtual Worlds: A Means-End Chain Approach," *Computers in Human Behavior*, 26(2), pp. 218-225.
- Jung, Y., Pawlowski, S. D., and Wiley-Patton, S. (2009) "Conducting Social Cognition Research in IS: A Methodology for Eliciting and Analyzing Social Representations," *Communications of the AIS*, 24, Article 35.
- Juul, J. (2005) *Half-Real: Video Games between Real Rules and Factional Worlds*, Cambridge, MA: MIT Press.
- Kamath, John-Paul (January 11, 2008) "Second Life will Emerge as Leading Collaboration Platform," *www.ComputerWeekly.com*, <http://www.computerweekly.com/Articles/2008/01/11/228868/second-life-will-emerge-as-leading-collaboration-platform-says.htm>, accessed on Feb. 1, 2010.
- Kirkpatrick, D. (2007) "Second Life: It's Not a Game," *www.cnnmoney.com*, [http://money.cnn.com/2007/01/22/magazines/fortune/whatsnext\\_secondlife.fortune/index.htm](http://money.cnn.com/2007/01/22/magazines/fortune/whatsnext_secondlife.fortune/index.htm), accessed on March 30, 2010.



- Kleine, S. S., Kleine III, R. E., and Allen, C.T. (1995) "How Is a Possession 'Me' or 'Not Me'?": Characterizing Types and an Antecedent of Material Possession Attachment," *Journal of Consumer Research*, 22, pp. 327-343.
- Klenosky, D. B. (2002) "The "Pull" of Tourism Destinations: A Means-End Investigation," *Journal of Travel Research*, 40, pp. 385-395.
- Knoke, D., and Burt, R. S. (1982) "Prominence," in *Applied Network Analysis*, R. S. Burt and M. J. Minor (eds.), Beverly Hills, CA: Sage, pp. 195-222.
- Kruglanski, A. W., Shah, J. Y., Fishbach, A., Friedman, M. R., Chun, W. Y., and Sleeth-Keppler, D. (2002) "A Theory of Goal Systems," *Advances in Experimental Social Psychology*, 34, pp. 331-379.
- Kruskal, J. B. (1956) "On the Shortest Spanning Subtree of a Graph and the Traveling Salesman Problem," *Proceedings of the American Mathematical Society*, 7(1), pp. 48-50.
- Lastowka, F. G., and Hunter, D. (2004) "The Laws of the Virtual Worlds," *California Law Review*, 92(1), pp. 3-73.
- Lehdonvirta, V. (2005) "Real-Money Trade of Virtual Assets: New Strategies for Virtual World Operators," *Proceedings of Future Play*, Michigan State University, MI.
- Lehtiniemi, T. (2008) *Macroeconomic Indicators in a Virtual Economy*, Unpublished MSc thesis, University of Helsinki, Finland,  
<https://oa.doria.fi/bitstream/handle/10024/37870/macroeco.pdf>, accessed on Nov. 1, 2009.
- Lin, A. C. (2008) "Virtual Consumption: A Second Life for Earth," *Brigham Young University Law Review*, 47, pp. 47-114.
- Linden Lab (2010b) *Value Added Tax*, <http://secondlife.com/corporate/vat.php>, accessed on Mar. 8, 2010.
- Linden Lab (March 6, 2010a) "2009 End of Year Second Life Economy Wrap up (including Q4 Economy in Detail)," <https://blogs.secondlife.com/community/features/blog/2010/01/19/2009-end-of-year-second-life-economy-wrap-up-including-q4-economy-in-detail>, accessed on Mar. 8, 2010.
- Locke, E. A., and Latham, G. P. (1990) *A Theory of Goal Setting and Task Performance*, Englewood Cliffs, NJ: Prentice Hall.
- Lorenzi-Cioldi, F. (1996) "Psychological Androgyny: A Concept in Search of the Lesser Substance. Towards the Understanding of the Transformation of a Social Representation," *Journal for the Theory of Social Behavior*, 26(2), pp. 137-155.

- Lorenzi-Cioldi, F. and A. Clemence (2001) "Group Processes and the Construction of Social Representations," in: *Blackwell Handbook of Social Psychology: Group Processes*, M. A. Hogg, and R. S. Tindale (eds.), Malden, MA: Blackwell Publishers, pp. 311-333.
- Lounsbury, M., and Glynn, M. A. (2001) "Cultural Entrepreneurship: Stories, Legitimacy, and the Acquisition of Resources," *Strategic Management Journal*, 22(6-7), pp. 545-564.
- MacInnes, I. (2004) "The Implications of Property Rights in Virtual World Business Models," *Proceedings of the Americas Conference of Information Systems (AMCIS)*, New York.
- MacMillan, D. (Nov. 20, 2006) "Why Savvy CEOs Hang Out in Second Life," *Business Week*, [http://www.businessweek.com/magazine/content/06\\_47/b4010068.htm](http://www.businessweek.com/magazine/content/06_47/b4010068.htm), accessed on Nov. 1, 2009.
- Market Truths (September 18, 2007) *Second Life Entertainment Market (Q2 2007)*, <http://sl.markettruths.com/reports/report.asp?4>, accessed on Feb. 1, 2010.
- McClelland, D. C. (1972) "The Use of Measures of Human Motivation in the Study of Society," in: *Comparative Studies in Organizational Behavior*, W.K. Graham, and K H. Roberts (eds.), New York: Holt, Rinehart and Winston, pp. 343-365.
- Meyer, J. W., and Rowan, B. (1977) "Institutionalized Organizations: Formal Structure as Myth and Ceremony," *American Journal of Sociology*, 83(2), pp. 340-363.
- Milbank, D. (April 2, 2008) "Goofy Characters and Weird People -- Sounds Like a Hearing," *The Washington Post*, p. A03.
- Moliner, P. (1995) "A Two-dimensional Model of Social Representations," *European Journal of Social Psychology*, 25(1), pp. 27-40.
- Moscovici, S. (1981) "On Social Representations," in: *Social Cognition*, J. P. Forgas (ed.), London: Academic Press, pp. 181-209.
- Moscovici, S. (1984) "The Phenomenon of Social Representations," in: *Social Representations*, R. M. Farr, and S. Moscovici (eds.), Cambridge/Paris: Cambridge University Press, pp. 3-69.
- Moscovici, S. (1988) *La machine à faire des Dieux*, Paris: Fayard.
- Nash, J., and Schneyer, E. (May 6, 2004) *Virtual Economies: An In-Depth Look at the Virtual World of Final Fantasy XI: Online*, <http://lgst.wharton.upenn.edu/hunterd/VirtualEconomies.pdf>, accessed on Nov. 1, 2009.
- Newell, A., and Simon, H. (1972) *Human Problem Solving*, Englewood Cliffs, NJ: Prentice-Hall.
- Nicholson, C. V. (Nov. 1, 2009) "Virtual Estates Lead to Real-World Headaches Sign in to Recommend," *The New York Times*.

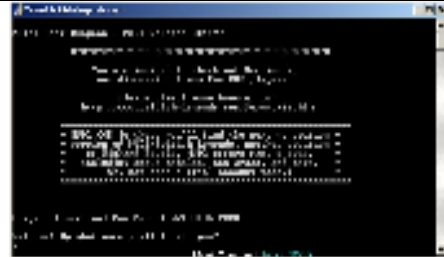


- Nicolini, D. (1999) "Comparing Methods for Mapping Organizational Cognition," *Organization Studies*, 20(5), pp. 833-860.
- North, D. C. (1990) *Institutions, Institutional Change, and Economic Performance*, Cambridge, England: Cambridge University Press.
- Olson, J. C., and Reynolds, T. J. (1983) "Understanding Consumers' Cognitive Structures: Implications for Marketing Strategy," in *Advertising and Consumer Psychology*, L. Percy and A. G. Woodside (eds.), Lexington Books, Lexington, MA, pp. 51-57.
- OpenSimulator (2010) "What is OpenSimulator?" [www.opensimulator.org](http://opensimulator.org/wiki/Main_Page), [http://opensimulator.org/wiki/Main\\_Page](http://opensimulator.org/wiki/Main_Page), accessed on March 30, 2010.
- Orfali, B. (2002) "Active Minorities and Social Representations: Two Theories, One Epistemology," *Journal for the Theory of Social Behaviour*, 32(4), pp. 395-416.
- Orlikowski, W. J., and Gash, D. C. (1994) "Technological Frames: Making Sense of Information Technology in Organizations," *ACM Transactions on Information Systems*, 12(2), pp. 174-207.
- Pawlowski, S. D., Kaganer, E. A., and Cater III, J. J. (2007) "Focusing the Research Agenda on Burnout in IT: Social Representations of Burnout in the Profession," *European Journal of Information Systems*, 16(5), pp. 612-627.
- Peppers, K., Gengler, C. E., and Tuunanen, T. (2003) "Extending Critical Success Factors Methodology to Facilitate Broadly Participative Information Systems Planning," *Journal of Management Information Systems*, 20(1), pp. 51-85.
- Penz, E. (2006) "Researching the Socio-Cultural Context: Putting Social Representations Theory into Action," *International Marketing Review*, 23(4), pp. 418-437.
- Pervin, L. A. (1989) *Goal Concepts in Personality and Social Psychology*, Hillsdale, NJ: Lawrence Erlbaum.
- Philogène, G. (1999) *From Black to African American: A New Social Representation*, Westport, CT: Greenwood-Praeger.
- Philogène, G., and Deaux, K. (2001) *Representations of the Social*, Oxford: Blackwell Publishers Ltd.
- Pieters, R., Baumgartner, H., and Allen, D. (1995) "A Means-End Chain Approach to Consumer Goal Structures," *International Journal of Research in Marketing*, 12(3), pp. 227-244.
- Platoni, K. ( May 6, 2004) "Will Second Life Survive?" *California Magazine*, p. 53.

- Radu, M., and Redien-Colloot, R. (2008) "The Social Representation of Entrepreneurs in the French Press," *International Small Business Journal*, 26(3), pp 259-298.
- Reicher, S. D.(1987) "Crowd Behaviour as Social Action," in: *Rediscovering the Social Group: A Self-Categorization Theory*, J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, and M. S. Wetherell (eds.), Oxford: Basil Blackwell, pp. 171-202.
- Reuters Second Life (Oct. 9, 2007) *European Residents Angry, but Not Leaving, over VAT*, <http://secondlife.reuters.com/stories/2007/10/02/european-residents-angry-but-not-leaving-over-vat>, accessed on Nov 1, 2009.
- Reynolds, T. J., and Gutman, J. (1988) "Laddering Theory, Method, Analysis, and Interpretation," *Journal of Advertising Research*, 28(1), pp. 11-31.
- Reynolds, T. J., and Rochon, J. P. (2001) "Consumer Segmentation based on Cognitive Orientations: The ChemLawn Case," in: *Understanding Consumer Decision Making? The Means-End Approach to Marketing and Advertising Strategy*, T. J. Reynolds, and J. C. Olson (eds.), Mahwah, NJ: Lawrence Erlbaum, pp. 283-298.
- Reynolds, T. J., Gengler, C. E., and Howard D. E. (1995) "A Means-End Analysis of Brand Persuasion through Advertising," *International Journal of Research in Marketing*, 12(3), pp. 257-266.
- Ridings, C. M., and Gefen, D. (2004) "Virtual Community Attraction: Why People Hang out Online," *Journal of Computer-Mediated Communication*, 10, Article 4.
- Rifkin, J. (2000) *The Age of Access*, London: Penguin.
- Rook, D. W, (1985) "The Ritual Dimension of Consumer Behavior," *Journal of Consumer Research*, 12(3), pp. 251-264.
- Schumpeter, J. (1968) *History of Economic Analysis*, New York: Oxford University Press.
- Scott, J. (1981) *Social Network Analysis: A Handbook*, London: Sage.
- Scott, W. R. (1994) "Institutions and Organizations: Towards a Theoretical Synthesis," in: *Institutional Environments and Organizations*, W. R. Scott, and J. W. Meyer (eds.), Thousand Oaks, CA: Sage, pp. 55-80.
- Scott, W. R. (1995) *Institutions and Organizations*, Thousand Oaks, CA: Sage.
- Searle, J. R. (1995) *The Construction of Social Reality*, New York: The Free Press.
- Shin, D-H. (2008) "Understanding Purchasing Behaviors in a Virtual Economy: Consumer Behavior Involving Virtual Currency in Web 2.0 Communities," *Interacting with Computers*, 20(4-5), pp. 433-446.




- Sivan, Y. (2008) "3D3C Real Virtual Worlds Defined: The Immense Potential of Merging 3D, Community, Creation, and Commerce," *Journal of Virtual Worlds Research*, 1(1).
- Sloan, P. (December 1, 2005) "The Virtual Rockefeller: Anshe Chung Is Raking in Real Money in an Unreal Online World," *www.CNNMoney.com*, [http://money.cnn.com/magazines/business2/business2\\_archive/2005/12/01/8364581/index.htm](http://money.cnn.com/magazines/business2/business2_archive/2005/12/01/8364581/index.htm), accessed on Dec. 1, 2009.
- Sotirakopoulou, K. P., and Breakwell G. N. (1992) "The Use of Different Methodological Approaches in the Study of Social Representations," *Papers on Social Representations*, 1(1), pp 29-30.
- Stephenson, N. (1992) *Snow Crash*, New York: Bantam.
- Strauss, A. L., and Corbin, J. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, Thousand Oaks, CA, Sage.
- Suchman, M. C., Steward, D. J., and Westfall, C. A. (2001) "The Legal Environment of Entrepreneurship: Observations on the Legitimation of Venture Finance in Silicon Valley," in: *The Entrepreneurship Dynamic - Origins of Entrepreneurship and the Evolution of Industries*, C. B. Schoonhoven, and E. Romanelli (eds.), Stanford, CA: Stanford University Press, pp. 349-382.
- Swanson, E. B., and Ramiller, N. C. (1997) "The Organizing Vision in Information Systems Innovation," *Organization Science*, 8(5), pp. 458-474.
- Tajfel, H. (1981) *Human Groups and Social Categories*, Cambridge: Cambridge Press.
- Tajfel, H., and Turner, J. C. (1986) "The Social Identity Theory of Inter-group Behavior," in: *Psychology of Intergroup Relations*, S. Worchel and L. W. Austin (eds.), Nelson-Hall, Chicago, pp. 7-24.
- Vaast, E. (2007) "Danger is in the Eye of the Beholders: Social Representations of Information Systems Security in Healthcare," *Journal of Strategic Information Systems*, 16(2), pp. 130-152.
- Vaast, E., and Walsham, G. (2005) "Representations and Actions: The Transformation of Work Practices with IT Use," *Information and Organization*, 15(1), pp. 65-89.
- Vaast, E., Boland, Jr., R., Davidson, E., Pawlowski, S., and Schultze, U. (2006) "Investigating the "Knowledge" in Knowledge Management: A Social Representations Perspective," *Communications of the AIS*, 17(15), pp. 314-330.
- van Rekom, J., van Riel, C. B. M., and Wierenga, B. (2006) "A Methodology for Assessing Organizational Core Values," *Journal of Management Studies*, 43(2), pp. 175-202.

- Veblen, T. (1912) *The Theory of the Leisure Class: An Economic Study of Institutions*, New York: Macmillan.
- Venkatesh, A. (1995) "Ethnoconsumerism: A New Paradigm to Study Cultural and Cross-Cultural Consumer Behaviour," in: *Marketing in a Multicultural World-Ethnicity, Nationalism and Cultural Identity*, J. Costa, and G. Bamossy (eds.), London: Sage, pp 68 - 104.
- Vereen, D. (April 30, 2007) "TOP 25 Things that Shaped the Internet; 25 Years of Paving the Information Superhighway," *USA Today*, p. 12B.
- Virtual Worlds News (July 08, 2008) "IBM and Linden Lab Officially Announce OpenSIM Interoperability," [www.virtualworldsnews.com](http://www.virtualworldsnews.com), <http://www.virtualworldsnews.com/2008/07/ibm-and-linden.html>, accessed on March 30, 2010.
- Voss, R., Gruberb, T., and Szmigin, I. (2007) "Service Quality in Higher Education: The Role of Student Expectations," *Journal of Business Research*, 60(9), pp. 949-959.
- Wagner, W., Kronberger, N., and Seifert, F. (2002) "Collective Symbolic Coping with New Technology: Knowledge, Images and Public Discourse," *British Journal of Social Psychology*, 41(3), pp. 323-343.
- Wagner, W., Valencia, J., and Elejabarrieta, F. (1996) "Relevance, Discourse and the "Hot" Stable Core of Social Representations – A Structural Analysis of Word Associations," *British Journal of Social Psychology*, 35(3), pp. 331-352.
- Walker, R. (May 9, 2009) "Immaterialism," *The New York Times Magazine*, p. 28.
- Weber, M. (1904) *The Protestant Ethic and the Spirit of Capitalism*, London: Allen & Unwin.
- Yee, N. (2006) "Motivations of Play in Online Games," *CyberPsychology & Behavior*, 9, pp. 772-775.
- Zilber, T. B. (2006) "The Work of the Symbolic in Institutional Processes: Translations of Rational Myths in Israeli High Tech," *The Academy of Management Journal*, 49(2), pp. 281-303.




## APPENDIX A: A BRIEF CHRONICLE OF VIRTUAL WORLDS

Name	Releasing year	Developer	Features	Screen shot
Multi-User Dungeon (MUD)	1979	Richard Bartle & Roy Trubshaw	<ul style="list-style-type: none"> <li>- The first multi-user internet-linked VW</li> <li>- Text-based</li> </ul>	
Habitat	1985	LucasArts Entertainment	<ul style="list-style-type: none"> <li>- The first avatar-based VW</li> <li>- 2D interface</li> <li>- The third-person perspective</li> <li>- Internal virtual economy</li> </ul>	
Meridian 59	1996	3DO	<ul style="list-style-type: none"> <li>- Advanced 3D interface VW</li> <li>- The first-person perspective</li> </ul>	



Ultima Online	1997	Electronic Arts	- The first commercially successful VW (200,000 users)	
Lineage	1998	NCSOFT	- Commercially successful VW (4M users)	
EverQuest	1999	Sony Entertainment	- Commercially successful VW (400,000 users)	



Entropia Universe	2003	MindArk	<ul style="list-style-type: none"> <li>- Fantasy &amp; social oriented VW</li> <li>- Internal economy based on RMT</li> </ul>	
Second Life	2003	Linden Lab	<ul style="list-style-type: none"> <li>- Socially oriented VW</li> <li>- Internal economy based on RMT</li> <li>- Commercially successful VW (16M users)</li> </ul>	
World of Warcraft	2004	Blizzard Entertainment	<ul style="list-style-type: none"> <li>- Commercially successful VW (11.5M users)</li> </ul>	

\* This table is based on Castronova (2002) and Bartle (2003)

## APPENDIX B: INTER-ATTRIBUTE SIMILARITY (ISA) MATRIX FOR VIRTUAL CONSUMPTION STUDY I

	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20	T21	T22	T23	T24	T25	T26	T27	T28	T29	T30	T31	T32	Total
T1		0.057	0.000	0.030	0.071	0.024	0.022	0.024	0.000	0.000	0.000	0.000	0.020	0.000	0.000	0.000	0.064	0.111	0.031	0.028	0.000	0.000	0.000	0.024	0.030	0.000	0.000	0.000	0.000	0.000	0.021	0.000	0.535
T2			0.000	0.028	0.014	0.037	0.038	0.012	0.014	0.000	0.012	0.014	0.069	0.028	0.012	0.014	0.045	0.000	0.000	0.026	0.010	0.055	0.014	0.013	0.013	0.046	0.000	0.026	0.022	0.000	0.094	0.022	0.680
T3				0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.000	0.000	0.059	0.000	0.000	0.063	0.000	0.000	0.050	0.032	0.000	0.000	0.063	0.353
T4					0.000	0.000	0.088	0.017	0.000	0.054	0.055	0.000	0.000	0.000	0.017	0.022	0.030	0.000	0.000	0.000	0.013	0.000	0.000	0.039	0.020	0.015	0.038	0.037	0.031	0.000	0.045	0.015	0.535
T5						0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.063	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.097
T6							0.012	0.000	0.048	0.030	0.000	0.000	0.048	0.000	0.029	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.000	0.037	0.000	0.077	0.000	0.000	0.000	0.045	0.011	0.023	0.395
T7								0.012	0.000	0.024	0.012	0.000	0.033	0.014	0.049	0.000	0.011	0.000	0.013	0.013	0.074	0.000	0.000	0.000	0.013	0.022	0.026	0.038	0.045	0.014	0.094	0.044	0.553
T8									0.000	0.031	0.000	0.050	0.049	0.043	0.000	0.000	0.024	0.000	0.000	0.000	0.042	0.000	0.000	0.000	0.040	0.025	0.074	0.000	0.000	0.000	0.011	0.000	0.390
T9										0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.125	0.013	0.000	0.138
T10											0.033	0.000	0.000	0.000	0.031	0.000	0.025	0.000	0.000	0.037	0.000	0.000	0.000	0.000	0.042	0.053	0.037	0.000	0.000	0.000	0.011	0.000	0.269
T11												0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.043	0.000	0.050	0.042	0.000	0.000	0.000	0.000	0.026	0.000	0.012	0.079	0.252
T12													0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.072
T13														0.000	0.024	0.000	0.000	0.000	0.000	0.000	0.035	0.000	0.032	0.000	0.000	0.042	0.027	0.000	0.020	0.000	0.032	0.000	0.212
T14															0.043	0.000	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.089	
T15																0.000	0.024	0.000	0.000	0.000	0.020	0.038	0.000	0.038	0.000	0.000	0.036	0.000	0.025	0.000	0.011	0.000	0.194
T16																	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.000	0.027
T17																		0.071	0.031	0.028	0.018	0.000	0.000	0.029	0.000	0.021	0.028	0.000	0.000	0.010	0.020	0.256	
T18																			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
T19																				0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.050	0.000	0.000	0.013	0.030	0.118
T20																					0.000	0.000	0.000	0.000	0.000	0.029	0.000	0.000	0.029	0.000	0.024	0.000	0.082
T21																						0.000	0.000	0.024	0.000	0.036	0.000	0.000	0.036	0.000	0.050	0.093	0.239
T22																							0.000	0.000	0.056	0.030	0.000	0.000	0.000	0.000	0.025	0.000	0.111
T23																								0.000	0.000	0.000	0.000	0.056	0.034	0.000	0.013	0.000	0.103
T24																									0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.029	0.041
T25																										0.000	0.000	0.000	0.000	0.000	0.013	0.000	0.013
T26																											0.000	0.000	0.000	0.000	0.021	0.020	0.042
T27																												0.042	0.000	0.000	0.012	0.000	0.054
T28																													0.028	0.000	0.012	0.000	0.040
T29																														0.000	0.067	0.020	0.087
T30																										</							

### APPENDIX C: INTER-ATTRIBUTE SIMILARITY (ISA) MATRIX FOR VIRTUAL ENTREPRENEURSHIP STUDY (ANALYSIS OF SVWS)

	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	Total
T1		0.028	0.037	0.033	0.031	0.026	0.013	0.017	0.000	0.025	0.021	0.011	0.023	0.021	0.008	0.015	0.036	0.024	0.000	0.368
T2			0.018	0.041	0.036	0.039	0.009	0.027	0.008	0.044	0.030	0.017	0.025	0.037	0.013	0.037	0.025	0.032	0.000	0.440
T3				0.022	0.012	0.016	0.000	0.000	0.000	0.017	0.024	0.000	0.014	0.000	0.000	0.009	0.007	0.010	0.000	0.133
T4					0.048	0.044	0.011	0.032	0.016	0.061	0.061	0.010	0.037	0.053	0.027	0.038	0.049	0.035	0.021	0.544
T5						0.052	0.006	0.030	0.023	0.050	0.065	0.011	0.048	0.045	0.035	0.027	0.045	0.019	0.017	0.473
T6							0.008	0.025	0.016	0.033	0.041	0.024	0.033	0.026	0.006	0.011	0.044	0.037	0.021	0.326
T7								0.012	0.000	0.006	0.015	0.019	0.022	0.013	0.012	0.000	0.015	0.000	0.019	0.133
T8									0.011	0.029	0.029	0.021	0.028	0.020	0.024	0.036	0.029	0.015	0.000	0.242
T9										0.023	0.024	0.000	0.027	0.018	0.011	0.018	0.000	0.020	0.000	0.140
T10											0.057	0.017	0.035	0.059	0.029	0.036	0.040	0.033	0.017	0.322
T11												0.019	0.048	0.070	0.047	0.027	0.057	0.024	0.014	0.306
T12													0.020	0.012	0.000	0.009	0.028	0.010	0.016	0.095
T13														0.036	0.046	0.036	0.040	0.027	0.027	0.212
T14															0.026	0.033	0.042	0.045	0.018	0.164
T15																0.036	0.017	0.015	0.011	0.079
T16																	0.021	0.041	0.027	0.089
T17																		0.016	0.021	0.037
T18																			0.010	0.010
T19																				0.000
Total	0.000	0.028	0.055	0.096	0.126	0.178	0.048	0.142	0.073	0.289	0.367	0.150	0.359	0.412	0.284	0.369	0.495	0.405	0.239	4.115

**APPENDIX D: INTER-ATTRIBUTE SIMILARITY (ISA) MATRIX FOR VIRTUAL ENTREPRENEURSHIP STUDY (ANALYSIS OF VIRTUAL ENTREPRENEURSHIP)**

	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	Total
T1		0.000	0.036	0.000	0.014	0.029	0.000	0.013	0.023	0.024	0.008	0.026	0.018	0.025	0.020	0.236
T2			0.022	0.039	0.028	0.039	0.030	0.027	0.039	0.043	0.060	0.018	0.050	0.017	0.046	0.459
T3				0.011	0.032	0.045	0.011	0.021	0.032	0.029	0.028	0.052	0.031	0.030	0.025	0.348
T4					0.038	0.039	0.010	0.037	0.053	0.034	0.067	0.018	0.058	0.017	0.038	0.409
T5						0.028	0.049	0.045	0.025	0.033	0.052	0.044	0.034	0.034	0.037	0.380
T6							0.030	0.018	0.013	0.061	0.046	0.036	0.028	0.035	0.030	0.298
T7								0.047	0.013	0.035	0.033	0.037	0.036	0.036	0.081	0.317
T8									0.012	0.041	0.057	0.052	0.041	0.042	0.044	0.288
T9										0.011	0.031	0.011	0.034	0.011	0.000	0.099
T10											0.061	0.024	0.045	0.039	0.056	0.225
T11												0.043	0.070	0.049	0.062	0.224
T12													0.054	0.059	0.033	0.146
T13														0.068	0.062	0.129
T14															0.038	0.038
T15																0.000
Total	0.000	0.000	0.059	0.050	0.112	0.181	0.129	0.207	0.210	0.311	0.444	0.360	0.498	0.464	0.572	3.597

## **VITA**

Yoonhyuk Jung was born in Daegu, South Korea. He received a Bachelor of Arts degree, majoring in sociology, in 1997, from Sogang University in Seoul, South Korea. He also served in the Korean Army from 1993 to 1996. After working at Korea Institute for Health and Social Affairs as a researcher, he started the master's program at Information and Communications University (current KAIST – ICC) in Daejeon, South Korea, in 2002 and completed a Master of Arts in Information Systems in 2004.

Yoonhyuk joined the doctoral program in information systems and decision sciences at Louisiana State University in Baton Rouge, Louisiana, in the fall of 2005. In the doctoral program, he has done research on users' adoption and sensemaking of information technologies, such as social media, wireless technology/application, and health information systems. He will complete his doctoral degree in the spring of 2010. He is married to Euna Lee, and has one daughter, Hanna.