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Los Angeles

Networks at their Limits:

Software, Similarity, and Continuity in Vietnam

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Information Studies

by

Lilly Uyen Nguyen

2013

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ABSTRACT OF THE DISSERTATION

Networks at their Limits:
Software, Similarity, and Continuity in Vietnam

by

Lilly Uyen Nguyen

Doctor of Philosophy in Information Studies

University of California, Los Angeles, 2013

Professor Leah Lievrouw, Chair

This dissertation explores the social worlds of pirated software discs and free/open source software in Vietnam to describe the practices of copying, evangelizing, and translation. This dissertation also reveals the cultural logics of similarity and continuity that sustain these social worlds. Taken together, this dissertation argues that the logics of similarity and continuity are expressions of Vietnam's distance from global networks. Vietnam is currently in a period of rapid economic transition and growing uncertainty. As the country continues to integrate into the global economy, information technologies like software take on new importance as icons of modern industry and economic development. Information technologies like software demonstrate connection to global networks and legitimize Vietnam's place among the global community. However, situated along the edge of global networks, Vietnamese feel the burdens of distance in

part with their desires for membership to the global community. This dissertation identifies ideals of difference that affiliate pirated software and free/open source software in the global North with an activist ethos, replete with ideals of transgression and rupture. Such ideals however, are incongruent with the experience of life in the global South, along global edges. Instead, this dissertation argues that through logics of similarity and continuity in the social worlds of pirated software discs and free/open source software, Vietnamese make sense of their place along the edges of global networks. At the place of edges, difference is a burden to overcome not a value to realize and logics of similarity and continuity serve to recuperate distance and disconnection. Analogously, this dissertation identifies similar commitments to difference in networks theories that emphasize hybrid forms. This dissertation proposes the concept of limits to challenge the prism of difference in these theories. By introducing the language of limits, this dissertation reveals the struggles of integrating into global networks and challenges connectivity as an already accomplished fact. The language of limits brings into relief the forms of breakdown—material and cultural—that serve as barriers amid desires for connection and legitimation.

The dissertation of Lilly Uyen Nguyen is approved.

Jean-François Blanchette

Christopher Kelty

Sharon Traweek

Thu-Huong Nguyen-Vo

Leah Lievrouw, Committee Chair

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2013

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Acknowledgments

This dissertation is the expression of journeys and connections across the Pacific Ocean, between California and Vietnam. I came up with the idea for this dissertation in Los Angeles and in the community of Little Saigon in Westminster, California. I conducted fieldwork in Vietnam, in the cities of Hanoi, Saigon, and Can Tho. I completed the writing of the dissertation in San Francisco, California. I want to convey my most heartfelt gratitude to all those who helped me during these crossings and connections.

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- 2010 Nguyen, L. Polyphony in social classification: Exploring hybrid forms of speech, practice, and text in digital settings. *Interactions: UCLA Journal of Education and Information Studies*, 6(2).
- 2008 Petrides, L., Nguyen, L., Jimes, C., & Karaglani, A. Open education resources: Inquiring into author use and reuse. *International Journal of Technology Enhanced Learning*, 1(1/2), 98 – 117.
- 2008 Nguyen, L. & Shilton, K. Tools for Humanists. In D. Zorich (Ed.), *A Survey of Digital Humanities Centers in the United States*. Washington D.C.: Council on Library and Information Resources.
- 2005 Petrides, L. & Nguyen, L. “Knowledge Management Trends: Challenges and opportunities for educational institutions.” In A. Metcalfe (Ed.) *Knowledge Management in Higher Education: A Critical Analysis*. Hershey, PA: Idea Group Publishing.

SELECTED PRESENTATIONS AND WORKSHOPS

Refereed Presentations and Workshop

- 2012 Same-same but Different: Software and its Entrepreneurial Others. Annual Conference of the American Anthropological Association. San Francisco, CA. November 14-18, 2012.
- 2012 The Social World of Copying: Entrepreneurialism in Genealogical Networks. Society for the History of Technology - Special Interest Group for Computers, Internet, and Society Workshop, “Information Identities: Historical Perspectives on Technological and Social Change.” Copenhagen, Denmark. October 7, 2012.
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- 2007 Dialectics of Memory and Forgetting in the Digital Capture and Surveillance of Sex Offenders. Annual Meeting of the Society for Social Studies of Science. Montreal, Canada. October 11-13, 2007.
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Chapter 1:

Introduction

Software through the prism of global circulation

In the spring of 2011, I lay in a dark room in Saigon, exhausted after a long day of work. Earlier that day, with my friend Mai-Phuong, we finished the last preparations for a week-long conference on free/open source software and design. We spent the entire day writing website copy, printing documents, preparing information packets, coordinating arrangements for the speakers, and visiting the conference site to finalize the room logistics. Saigon's humidity contrasted with Hanoi's cool air and I very quickly found myself struggling to keep up with Mai-Phuong's energy and enthusiasm. Mai-Phuong, at twenty-three, had already established her own software company with her husband. As the eldest daughter, she was also managing the construction process of converting her small family house into a seven-story hotel. She shared this house with her younger sister, her parents, and two maternal aunts. Throughout the day, our work was interrupted by regular phone calls during which I overheard her arguing with construction workers. In the afternoon, we drove to the outer edges of the city to buy eighty faucet heads for the hotel bathrooms. Mai-Phuong explained that construction materials were cheaper in Saigon than in her town since all merchandise had to initially pass through Saigon's ports. Later in the week when the conference was finished, she carried the two heavy bags filled with faucets during the three-hour journey home on the commuter bus.

Watching her juggle what seemed like an infinity of tasks, I could see that Mai-Phuong was a formidable young woman. She had studied in Singapore and the US. She told me funny stories

about living in Las Vegas and Orlando. For the past several years, she had organized many of the first free/open source software (F/OSS) conferences in Vietnam. Her savvy only became more apparent when she explained that the itinerary for the conference that week also included presentations and workshop demonstrations at one of the largest outsourcing companies in Vietnam, the prestigious fine arts university in Saigon, as well as a private design school. I asked her why she was interested in free/open source software and she explained plainly, “The community.” She then excitedly described to me a recent trip to Belgium during which she attended a free/open source software conference, “It was amazing! I don’t get to go to conferences often, but I’ve never attended something as incredible as this! Everybody spoke so well!” In our shared room, I laid in bed exhausted while listening to Mai-Phuong happily recount the details of her trip. Listening to her speak though my fatigue I realized that free/open source software represented to her the possibility of global encounter. She looked unlike the young male geeks I anticipated to find. Trained as a marketer, she was not a software developer and when I later asked her why she spent so much time organizing free/open source software events she replied, “Even if just one person learns about free/open source software through these conferences, it’s one more and that is enough for me.”

I was originally attracted to studying free/open source software in Vietnam for what appeared to be an apparent contradiction. How did a country like Vietnam foster a community of software geeks committed to ideals of freedom? The political language of freedom in F/OSS contradicted the reports I read of increasing surveillance and Internet policing by the Vietnamese government. So, I was quite surprised to find a nascent community of free/open source software advocates in Vietnam. I first visited Vietnam with the intent of solely studying free/open source software. However, Vietnamese F/OSS advocates decried pirated software as a barrier to their

success. They described pirated software as uncivilized (*không văn minh*) and unmodern (*không hiện đại*). In Vietnam, free/open source software stood in contrast to pirated software. Free/open source software here represented an antithetical ideal to the entrepreneurial ethos of commercial software as well as to the illegitimate copying of pirated software. It became difficult to hold free/open source software in distinction from other kinds of software, given the debates taking place among young Vietnamese about the merits and worth of these multiple forms of software. What became clear through these debates was that software was a site at which Vietnamese people debated their commensurability with the rest of the world. Software came to mediate the experience of global integration. Software mediated the experience of screen life as the interface for hardware, cables, bits, and connections that proliferate behind the glass of mobile phones and computers. More importantly however, software mediated the relationships among a diverse assemblage of actors including software users, technical developers, entrepreneurs, economic strategists, and government officials. Software became a convergence point through which these different groups interacted and mediated the experience of global integration by shaping the desires, anxieties, and aspirations around work, knowledge, and membership into modern global society.

The overarching aim of this dissertation is to examine the social worlds of software, particularly with consideration for the place of Vietnam along the very limits of global networks. To this end, this dissertation describes the practices of copying, evangelism, and translation that shape these social worlds. Such practices reveal broader cultural logics of similarity and continuity that sustain these social worlds. As cultural logics, both similarity and continuity challenge the ethos of transgression in the language of innovation and revolution. Terms like innovation and revolution are regularly used in magazines and marketing campaigns and paint

for us a picture of software as continually disruptive. Such disruption reflects Euro-American ideals about the value of work, knowledge, and technology however, this posture of disruption contrasts sharply with the logics of similarity and continuity for Vietnamese hoping to close the distance they perceive between themselves and the rest of the world.

This dissertation focuses specifically on refracted configuration of two forms of software: copied software discs and free/open source software. On the one hand, free/open source software represents a technological expression of American neoliberal ideals with its vocabulary of individual freedom, openness, and transparency. On the other hand, pirated software exists within more shadowy conditions and represents an illegitimate form of reproduction that appears antithetical to the sense of illuminated progress in free and open source software. Taken together, free/open source software and pirated software represent alternative forms of software that stand in contrast to commercial proprietary software. In the global North, pirated software is situated within the alternate politics of transgression. Media activists have taken up the cause of pirated software to contest corporate ownership of knowledge tools. In this manner, pirated software and free/open source software maintain a shared activist ethos at the service of broadly defined values of freedom. However, through the prism of global circulation in Vietnam, these two forms of software are refracted onto distinct moral tracks.

Contributions

The concepts of continuity, similarity, and limits I identify in this dissertation contribute to three particular scholarly fields. First, these concepts specifically revise network theories that reify values of difference. The figure of the network has recently emerged in theoretical debates in science and technology studies (STS). Under the broad umbrella of actor network theory, these

debates demonstrate the importance of networks as complex configurations of objects and people in the formulation of knowledge, technologies, and systems. The emergence of network theories was in response to theoretical debates that upheld the value of fidelity in representation. For example, Deleuze's efforts to "overthrow Platonism" is grounded in an overall refutation of Plato's configuration of good and bad forms of copying. Deleuze describes Plato's intellectual project as one intended to

"insur[e] the the triumph of the copies over the simulacra, of repressing the simulacra, of keeping them chained in the depths, of preventing them from rising to the surface and "insinuating" themselves everywhere" (1983, 48).

Through this initial depiction of Plato's project, Deleuze continues to assert that the merits of the simulacra, of the bad copy. The very idea of good and bad copy, according to Deleuze, is based on an untenable distinction. To this point, he refers to the Platonic texts of the *Phaedrus*, the *Statesman*, and the *Sophist* and argues that the historical uses of these texts to analyze forms of distinction presented themselves as a tautology. Rather than being used to identify good copy, instead, such texts were used to "hunt down the false claimant as such, to define the being (or rather the nonbeing) of the simulacrum" (1983, 47). It is from his identification of this tautological contradiction in which Deleuze celebrates the bad copy, the simulacrum. "The simulacrum is not degraded copy, rather it contains a positive power which negates *both original and copy, both model and reproduction.*" Thus, rather than fidelity and direct correspondence, network theories instead assert divergence and disparity such that notions of difference and decentering are idealized. I take this view of networks from the work of Bruno Latour and Gilles Deleuze. My intervention into theories of networks is to point out the ways in which networks are cut, the ways that networks stop and break; that is, the very limits of networks. Previous theories of networks typically emphasize circulation and flow, where connection is assumed as an already accomplished

fact. Instead, through an analysis of copied software discs and free/open source software in Vietnam, this dissertation looks at connection from the perspective of limits and breakdown. From my fieldsites, I identify the ways that these limits and breakdowns are both material and cultural. In turn, this dissertation revises network theories by identifying the dynamics of similarity and continuity that contribute to the very formation of networks. Against a backdrop of distance from the centers of global networks, the place of Vietnam is situated along the very edges of global circuits of capital, work, and knowledge. This distance renders difference as a burden to overcome, not a value to realize. In turn, at this place along the edge, Vietnamese within the social worlds of software deploy logics of similarity and continuity in their efforts to recuperate distance and overcome disconnection and difference. Connectivity to global networks along these limits is thus an expression of legitimation and these logics of similarity and continuity reveal difference as a more pervasive ethical dilemma in contemporary globalization.

Second, this dissertation also contributes to the growing body of contemporary ethnographies that examine the experiences of globalization and neoliberalization in Vietnam. This dissertation contributes to these discussions by looking at the ways that information technologies like software are situated within global circuits of capital, knowledge, and work while also demonstrating the unique experience of Vietnam at this particular moment of global integration. Current ethnographies of Vietnam have explored a wide range of social life in contemporary Vietnam; however, there has been little work that looks in-depth at the cultural politics of knowledge, expertise, and technology. This dissertation thus reveals the specific configurations of knowledge, expertise, and technology in Vietnam.

The understanding of this configuration also contributes to the information studies through a global and cultural approach to informatics. Technological infrastructures, information cultures,

and knowledge systems take different shape in different places. Recent studies of technologies in Ghana, Brazil, and India demonstrate the local configurations of technology and culture at these various places (Burrell, 2012; Takhteyev, 2012; Xiang, 2007). As such, there is a growing body of scholarship that considers the ways in which technologies are particularly shaped at different locales. Such an appreciation and analysis of difference stands in contrast to a historical universalizing tendency in information studies. The phenomenon of information has emerged as a particularly potent site within discourses of modernization. Ron Day describes the specific history of discourses of information and traces its modernist genealogy. In doing so, he argues that early information theorists constructed a

social, utopian value for information and helped to raise information and its connotation of factuality and quantitative measure to a privileged, even totalitarian, form of knowledge and discourse (Day, 2001, 2).

Such totalizing tendencies continue in information studies and arguably explain the Euro-American centric focus in the study of information phenomenon. This small yet growing body of scholarship that explores new locales of information, I argue, builds on Day's historiography of discourses, rhetorics, and ideologies of information by looking at configurations of information that are already otherwise. Southeast Asia—and Vietnam more specifically—carries specific weight in light of its historically fraught and violent relationship to the global North. Vietnam was placed into the global order in the late 19th century through the destructive violence of colonialization. The cultural politics of colonialization asserted racialized forms of difference such that the colonies were subsumed in relation to the metropole and thus differentiated as inferior. In protest and defiance, Vietnamese reclaimed this difference through wars and assertions of independence. Amid such a turbulent history, we can view the modernization projects in Vietnam as fraught with the politics of difference. In turn, information technologies, software, and knowledge infrastructures

take on special significance amid such complex histories of difference along with contemporary desires for similarity and desires for equal footing in global networks.

In considering the specificities of Vietnam's place within global networks, this dissertation explores the cultural politics of information technologies such as software. This cultural approach to the study of software may contribute to other scholarly debates including legal debates concerning the globalization of intellectual property, studies of culture and software engineering, and the globalization of technological expertise. Especially as many of these countries look towards free/open source software as a political strategy against American technological hegemony, this understanding of software, similarity, and continuity in Vietnam may reveal struggles common to countries throughout the global South. This dissertation's global and cultural contribution to informatics and information studies is especially urgent in light of Day's identification of a troubling tendency.

The overwhelming trend has been to place responsibility for the creation of an "information" society into ideologically conformist, "professional" hands, which inhibits truly critical analyses and discussions where the fundamental premises and political stakes of information and communication might be shown and put into question (Day, 2001, 5).

The global and cultural approach in this dissertation takes up Day's call for more critical analyses of information and technology that do not reproduce the ideologies of those working to promote information technology across the globe. This dissertation also contributes to information studies as an example of fieldwork methods. The method of fieldwork has been developed in anthropology for the study of culture. To meet the critical challenge identified by Day, fieldwork methods need to be incorporated into information studies to reflect the growing complexity of information across myriad locales throughout the world. In this manner, this dissertation challenges notions of transfer and reproduction that typify technological implementation plans. This dissertation also challenges the assumption of increased political freedom and transparency through the implementation of

these technical tools. Such challenges question altogether the very idea that information technologies can be wholly reproduced across different settings, countries, and cultures. Nevertheless, reproduction serves as an overarching desire and ideal, around which technology plans are formed and enacted. Additionally, this dissertation identifies the ethos of transgression that entangles pirated software and free/open source software in the global North and analyzes how these two forms of software break apart. Such refraction and separation is an expression of cultural logics of similarity and continuity that is explained in more detail in the subsequent chapters. As countries look towards the technology sectors to promote economic growth, it is increasingly important to understand the cultural dynamics that take place through the practices of producing, implementing, and distributing information technology.

Setting and background

Vietnam is a country with over 90 million people, living in a territory of 125,000 square miles. To give this some perspective, the state of California has approximately 38 million people living in an area of about 160,000 square miles. Life in Vietnam feels dense. Driving along National Highway 1, looking over the rice fields along the Mekong Delta, a French friend remarked “There is no empty nature in Vietnam.”

Fieldwork for the dissertation took place in the cities of Hanoi and Ho Chi Minh City.¹ In Vietnam, the phenomenon of software is an urban one. Free/open source advocates held conferences in the lecture rooms of universities in the cities. They met in the coffee shops and beer halls tucked into the winding alleys and boulevards of the city. Software shops clustered in the shopping streets in the downtown districts. New software parks were situated on the very

¹ The city’s name was changed from Saigon to Ho Chi Minh City by the Vietnamese government at the end of the war. The name Saigon is still commonly used in everyday conversation. In the dissertation I use the two names interchangeably.

outskirts of cities. Life in the city was dense with smells of grilled meat, sewage, sweat, incense, fresh fruit, and fragrant trees. The sound of the city was a cacophony of honking motorbikes, children yelling, thumping electronic dance music, and clattering dishes. This sense of density was amplified in the organization of space. With minimal distinction between retail and residential areas, living rooms also doubled as cafes, tea stands, or storefronts. Sidewalks became extensions of private homes, with grandmothers sitting in plastic chairs, slowly fanning themselves in the heat as they watched over children playing next to moving traffic.

In contrast to the density of social life along urban streets, new hi-tech software parks offer a new perspective of life in Vietnam along urban perimeters. The most well known of these hi-tech parks, Quang Trung, is situated about fifteen kilometers from downtown Ho Chi Minh City. To get to Quang Trung from downtown, you start at the glitzy New World Hotel and ride along August Revolution Street bustling against other motorbikes exiting the city. The road abruptly turns and runs adjacent to the tarmac of Tan Son Nhat airport. At the following intersection a vendor sells motorbike helmets. She lays them in neat rows on worn plastic sheeting on the pavement, waiting for those passing by to purchase the flimsy plastic caps. As you continue, the street gradually opens up and traffic speeds increase. The wind kicks in and the buildings pass you at quick, even intervals. The buildings out here are more dispersed. During my first visit to Quang Trung one hot spring afternoon, I was surprised to see the large lawns. The office buildings in the software park were tall. Several were still in the process of construction. The park was notably empty of people, except for a young couple sitting on shaded bench and a young woman working in a flimsy booth selling sweet rolls. Mai-Phuong later explained to me this expansive emptiness at Quang Trung park as unrealized ambition. “Right

now [the software park] is empty! They have all these buildings but nobody is renting them. Nobody is investing in them. They just state the plans in the papers but it's not true.”

Mai-Phuong's dismay at the emptiness of these newly built software parks signaled a broader state of vulnerability. Software is an integral part of a vision for high-tech economic growth and modern development, how this vision will pan out is still uncertain. Since the mid-1980s when the Communist Party abandoned its collectivist policies, Vietnam has undergone an extensive period of transition towards economic liberalization. Vietnam's economic growth has been declared exemplary. From having been one of the poorest countries in the world, Vietnam's economy has grown at an average rate of 7.3% for the past twenty years. Vietnam has boasted of alleviating poverty at an unprecedented rate. In the early 1990s, 58% of the Vietnamese population lived below the poverty line. By 2008, this number was reduced to 14.5% and fell below 10% by 2010 (World Bank, 2012). Vietnam's transition from a very poor country to a middle-income country is “now a case-study in development textbooks” (World Bank, 2011). The state of transition however, is chronic. As a middle-income country, Vietnam's transition is not complete. In matters of economic transition, the World Bank offers most tellingly, “Transition is a journey, not a destination” (2011, 11).

The vulnerability of this transition and change appeared in many other ways. My fieldwork period coincided with a time of rapid inflation. The rising cost of fuel alone was the subject of acrid complaints in everyday conversation. Vietnamese very eagerly sought the American dollar bills I had, hoping to hedge against the insecurity of the Vietnamese dong. In a country that shows little tolerance for civil unrest, the summer of 2010 saw several large demonstrations in both Hanoi and Ho Chi Minh City. These protestors challenged Chinese claims to the Paracel and Spratly Islands, located in the contested waters of the South China Sea.

The newspapers showed photos of protestors carrying flags with their fists in the air. Old and young alike, Vietnamese protestors formed large crowds and walked through the streets of Hanoi and Ho Chi Minh city carrying banners that read “The Paracel and Spratly Islands Belong To Vietnam!” These large crowds gathered in the city centers continuously for several days before the security police put a stop to them. The specter of public urban crowds, even in the name of anti-Chinese nationalism, continues to pose an imminent threat of subversion (Thomas, 2001). The vulnerability of transition was also seen in regular complaints about the current “9X” youth generation. Born after the war and having grown up during the 90s, these young adults knew nothing of the suffering and hardships of the “subsidy period” (*thời bao cấp*) that immediately followed unification. State corruption was a regular feature in the country’s newspapers, leading many Vietnamese people to conclude that through economic transition and growth, party cadres had abandoned the righteous principles that had brought independence to the country. After an extended period of economic momentum, Vietnam had now arrived at a moment of uncertainty.

In Vietnam, free/open source software was mobilized in part with efforts towards growth and development. The Vietnamese government issued in 2004 its first official software policy in which it described free/open source software as specifically contributing to the goals of industrialization, modernization, and economic development (*Approving the overall project on application and development of open-source software in Vietnam in the 2004-2008 period*, 2004). In 2007, Vietnam secured its ascension into the World Trade Organization and has since been forced to comply with international intellectual property regulation. In response, Vietnam created more stringent standards of enforcement while increasing infringement fines, however this has done little to curb the prevalence of pirated software. In 2008 the Vietnamese government issued a second software decree, mandating the use of F/OSS within all government

ministries while setting a hasty timeline for completion of training and implementation by the end of June 2009. One free/open source software advocate described this renewed interest in F/OSS four years after the initial policies as a political workaround that allowed the Vietnamese government with negotiate lower software procurement rates while also serving as a symbolic display of commitment to international intellectual property law compliance.

Free/open source software specifically refers to a volunteer-based form of software production in which individuals are allowed to use, modify, and redistribute software without payment. F/OSS entails not only technical practice of writing code but also rhetorical practices of argumentation towards the development of a “movement” (Kelty, 2008). Practices of producing free/open source software include new social formations of “recursive publics” in which geeks work out the very infrastructures that allow the very grounds that constitute their existence. While Kelty’s work emphasizes the distributed quality of free/open source software, recent government efforts to legislate F/OSS invite new attention to the place of nations.

In Vietnam, F/OSS’s deployment and implementation has been part of larger efforts to reduce software procurement costs, counter US-commercial interest, and promote economic development and national interest. As software increasingly play a prominent role in Vietnam’s larger efforts towards modernization and industrialization, there appears to be a reconfiguration of the discursive space that typically accompanies F/OSS. This can be seen in the new assemblages that have accompanied F/OSS’ growth in Vietnam in which we find members of government ministries, international NGOs, education non-profits, the Vietnamese diaspora, along with private companies. The ensemble of these interests represents a new space of political engagement and policy making that has not previously been a part of the work of F/OSS. In Vietnam, F/OSS has been clearly legislated as a direct confrontation to piracy, however the

continual prevalence of piracy invites further study and consideration.

Chapter 2:

Literature Review

Cultural politics of global techno-entrepreneurialism in Vietnam

Why study information technologies like software in Vietnam? I situate this question across several bodies of literature including: network theories in science and technology studies (STS), cultural studies of software that identify the importance of place, ethnographies and histories of piracy that identify the importance of piracy as both an illicit infrastructure and entrepreneurial form, and recent studies of freedom in Vietnam. Through the examination of both pirated software and free/open source software, this dissertation studies the cultural politics of global techno-entrepreneurialism. By bringing a postcolonial sensitivity to the study of software, this dissertation examines the cultural economy in which multiple forms of software circulate globally. Both pirated software and free/open source software represent competing modes of engagement in global technological life. Situating such an approach in Vietnam is especially compelling given the country's long and complicated history as a site through which visions of freedom were and are negotiated. Such studies describe the paradoxes of freedom in such a manner that they invite further inquiry of the ways freedom is technologically negotiated in such a seemingly 'unfree' place. Information technologies like software are embroiled in and shaped by moral philosophies of freedom. To date, there has been little work that examines such freedom in relation to entrepreneurial and economic practice. Drawing from these divergent literatures, I describe my approach in this dissertation as the study of the cultural politics of global techno-entrepreneurialism to further examine the social worlds of software as countries in

the global South look to integrate themselves into the global economy through the development of information technologies.

The place of networks in science and technology studies

Networks are important analytic frameworks within science and technology studies (STS). From this network perspective, information technologies are calcifications of divergent interests and cultural processes. As culturally mobile objects, information technologies operate as convergence points through which different social groups interact (Bowker & Star, 2000; Star & Griesemer, 1989). Through these interactions, information technologies are designed, contested, stabilized and thus emerge as the result of negotiations among conflicting and intermingling cultures (Fujimura, 1992; Traweek, 1992). This dynamic approach underscores the ways in which these artifacts sit at the center of a complex web of relationships among divergent and convergent interests (Haraway, 1997; Latour, 1992). In the course of their travels across social worlds—from designer, to user, policy maker, economic strategist, and other possible stakeholders—information technologies like software reconfigure the web of relationships that ultimately constitute their formation. As such, processes of producing information technologies entail a recursive dynamic in which information technologies shape the web of relationship around them, after which this web of relationships then shapes the technological objects, and so forth. As software travels across different places it continuously reconfigures this network by enrolling new interests and foreclosing others. The translation of technological artifacts thus transpires, in part, through the dynamic web of relationships that cohere around these artifacts.

Postcolonial approaches to STS contribute to these network approaches through careful attention to political economic conditions of global circulation (Anderson, 2002; McNeil, 2005).

Postcolonial perspectives have focused on historical power struggles in order to provincialize knowledge practices from the global North (McNeil, 2005) which serves to challenge claims of universality that typically motivate global science and technology endeavors (Harding, 2008). This provincialization is especially helpful in light of the way information technologies like software are deployed with the intent of furthering national goals of economic development and modernization based on assumptions of causality between information technologies and economic growth (Philip, 2003; Russill, 2008). In part with this approach, postcolonial STS scholars have strongly criticized economic development discourses by looking carefully at the details of work in the practice of global economic development. These investigations demonstrate how in spite of a rhetoric of progress and wealth, development has instead created conditions of underdevelopment, poverty, and dependence for many in the global South (Escobar, 1995; Gupta, 1998).

In doing so, postcolonial perspectives have as a starting point the interrogation of the in-between conditions of hybridity and borderlands (Anderson, 2002). By first looking at the ways in which certain actions described as global or universal are in fact expressions of something much more particular and local, postcolonial approaches to STS paint for us a picture of cultural flux and also portray science and technology as moments of cultural interaction. These same scholars eschew the view of these communities of the global South as mere inactive and passive receivers of development (Escobar, 1997). Instead, they argue for an overall approach that is sensitive to the forms of agency that individuals exhibit in their encounters with development. This appreciation creates a space in which we attempt to discern the modes of difference in the active appropriation of and engagement with development. Whether these forms of engagement are described in terms of flexibility, improvisation, appropriation, or mutation (Ong, 1999, 2006;

Suchman, 2002), the notion of attending to the forms of difference performed through agency directs our attention to the ways in which culture exists in a continual state of flux. This understanding builds on cultural approaches to the study of globalization through a shared recognition of the hybridity of culture. As such, rather than emphasizing reproductive-imitative dynamics in the travels of science and free/open source software, postcolonial approaches focus on the ways in which these are culturally translated in new locales (Hayden, 2005; Marques, 2005).

Understanding the specific role of place and the subsequent web of relationships that cohere around different forms of software in Vietnam can provide new insight into the ways in which these technologies are culturally situated. This research builds upon previous cultural approaches to the study of software by specifically examining how F/OSS is culturally translated in Vietnam. Moreover, by looking at how F/OSS and piracy work come to represent distinct worlds of software, this dissertation analyzes how Vietnamese produced similarity and continuity through the work of producing, reproducing, and circulating software. In doing so, this study interrogates the role of place in shaping the translation processes and hybrid dynamics that underlie software's migration into new locales. The assemblage approach to place used in this study challenges definitions of place that are grounded in territory and instead underscores the way that cultural practices are situated and produced through wider ensembles of social relationships (Basso, 1996; Escobar, 2001; Gupta & Ferguson, 1997).

The concept of network cuts across a wide range of approaches within science and technology studies, including cyborg studies (Haraway, 1991), global assemblages (Ong & Collier, 2005), and actor-network theories (Latour, 2005). However, there has been little work that explicitly considers networks in postcolonial conditions. In this manner, my work

contributes to science and technology studies by combining together two previously distinct yet interrelated, scholarly areas within the field: postcolonial approaches to the study of knowledge along with network theories.

Software and the question of place

Software has recently emerged as a global culture. Moreover, Takhteyev (2012) describes software as constituting a “global world of practice” with shared forms of meaning, language, and actions that render members of these worlds legible to one another. However, an emphasis on the global dimensions of software elides the differentiated forms of access to participating in the world of the global. Previous research has shown that free/open source software is a technological extension of specific neoliberal values like openness, transparency, and individual freedom (Coleman & Golub, 2008; Coleman, 2004; Coombe & Herman, 2004; Kelty, 2008; McInerney, 2009). With a vocabulary of progress, individual autonomy, and value-neutrality, F/OSS is seen as an expression of American political ideals. As a social artifact that has evolved from a specific cultural history, F/OSS builds upon a tradition of computing that is aligned with American libertarian culture and politics that favors disruption and transgression (Agre, 2002, 2003; Liu, 2004; Turner, 2006, 2009). This tradition is visible in current claims about the freedom and wealth of networks and open computing (Benkler, 2006). While early research of free/open source software narrowly focused on the psychological aspects of these technologies (O’Mahony, 2006; Raymond, 1998; Weber, 2004), they tended to neglect the broader cultural contexts that shape F/OSS. In short, these studies focused on the *why* of F/OSS with little consideration of the *where* in shaping *how* F/OSS is implemented.

The question of place is vital in shaping the meaning, language and actions among the

worlds of software. Takhteyev's study of software developers in Brazil describes the substantial efforts of local communities to reproduce globality in the "wrong place" of Rio de Janeiro. Participation in global culture at wrong places is contingent on logics of connectivity and reproduction; that is, actively building relations and social connections that span distances, as well as reproducing foreign practices in local environments. Additional studies of free/open source software in other countries of the global South describe this software as diverging from their original ideological commitments. For example, Chan (2004) describes how F/OSS adoption in Peru consisted of a dramatic shift whereby F/OSS policy was introduced as a strategy to counter threats of US corporate interest. In this situation, open source software was seen as vital to government interests as part of larger beliefs in government responsibility for providing free information, national autonomy from foreign corporate interests, and citizen rights to access information freely. The experiences of Peru speak towards F/OSS's malleability in relation to different political ideals, where values of individual autonomy were instead replaced by values of national sovereignty. As free/open source software travels into new terrain, these tools have become increasingly mobilized in relation to state programs and strategies for economic development (Coleman, 2005; Kagai & Kimolo, 2005; Karaganis & Latham, 2005; Kim, 2005). Such state mobilization of F/OSS represents a departure from the vision of individual freedom as expressed among software advocates in the global North. The question of place is important for the study of free/open source software for the forms of distance that are created between technology centers and technology peripheries, along with the subsequent work to recuperate such distance. F/OSS in other places also reveals the ways that notions of freedom are imagined and mobilized in relation to different goals. F/OSS in other places reconfigures its very meaning.

Piracy as entrepreneurialism in the global South

In the global South, access to media and knowledge goods often takes shape through forms of piracy. The term generally refers to the illegal copying of media goods such as books, music, films, along with software. Dent defines piracy as “the production or movement of goods and services by personnel unauthorized by governments or corporations to participate in the circulatory process” (2012, 29). The term piracy also has been used to describe chronic conditions of uncertainty and precarity that give rise to informal infrastructures in the global South (Larkin, 2008; Simone, 2006; Sundaram, 2011). Piracy is thus characterized by illicitness. Such illicitness is born of material exigency but understood as not ideal. Piracy simultaneously demonstrates the hope of human resourcefulness but also the despair of decay and distance. Simone uses the term piracy to refer specifically to the practices of everyday African residents “attempting to operate more resourcefully in underresourced cities” (2006, 357). For Simone, piracy in the underresourced African cities of Douala and Johannesburg entail practices of appropriation, heretic uses of materials, and making-do. Such terms emphasize piracy as illicit responses to the less than ideal availability of resources. The illicitness of piracy is a response to the material necessity of everyday life. This illicitness also characterizes the way that piracy forms an infrastructure for the circulation of media and knowledge.

Larkin (2008) argues that in a place like Kano, Nigeria, piracy serves as an important infrastructure for the distribution of media goods, such as film, music, and books. Liang (2009) and Sundaram (2009) make similar claims about the importance of piracy as an infrastructure for the circulation of media in India. Even in its illicitness, piracy as infrastructure constitutes the primary point of entry into the information economy for many people removed from authorized networks

of distribution, consumption, and global circulation. Along global fringes, the only in-roads into global networks and society are those illicit circuits. The question then becomes through what means and processes do places in the global South attain legitimate membership into global society?

In the global North, such piracy is viewed simply as illegal. Dent describes this view of piracy as “grounded in the belief that pirates parasitically appropriate value they did not create, thereby disrupting customary processes of production and consumption” (2012, 29). This parasitic understanding of piracy explains the moral challenge that piracy poses to Euro-American ideals of creativity and innovation (Philip, 2005; Sundaram, 1999). Such a limited view of piracy is exemplified in the recent language of “remix” and “free culture” (Jenkins, 2006a; Lessig, 2004) in which forms of piracy are only valued in the way they transform cultural goods and thus confer *additional* value. Mere reproduction or copying as we see in the global South, however, parasitically circulates value that does not conform to the logics of value from these Euro-American perspectives. Larkin (2008), Liang (2009), Sundaram (2009), and Dent (2012) write about the pervasiveness of illicit reproduction of various media such as books, music, and film. Reproduction in digital media such as software has not received similar examination in the global South. Instead the language of “remix” and “free culture” has set the terms of debate with respect to piracy within digital media such that pure copying is derided as a form of theft (Condry, 2004; Lessig, 2004). Such views place piracy’s illicitness under stark light, emphasizing its illegality without consideration for the struggles over legitimacy contained therein.

Johns (2009a) traces current debates surrounding pirate downloading to histories of broadcasting in Great Britain. More specifically, he identifies the influence of rational choice theory in the defense of pirate broadcasts in a time of government broadcast monopoly. Such

pirate broadcasts paved the way for commercial broadcasts. Johns identifies the influence of Ronald Coase—of game theory fame—in excoriating the monopoly system in the UK and argues that it was “on Coase’s ground that commercial television was allowed in the UK.” The popularity of pirate radio in the 1960s offered an attack on the BBC’s broadcast monopoly took on full force.

Johns states that

[T]he *point* of pirate radio was to challenge the public monopoly of the BBC and eventually overthrow it, becoming legitimate itself in the process (2009a, 51).

Pirate radio broadcasters eventually sought to establish themselves as legitimate commercial enterprises. Along the way, they invoked moral philosophies of laissez-faire economics to attack government broadcast monopolies, all in the name of competition and free markets. Such free-market enthusiasts viewed piracy as a business force. Piracy aided in the work of markets and entrepreneurialism, not against it.

This historical account of piracy in Great Britain, combined with anthropologies of piracy in the global South suggest the importance of piracy in commercial and entrepreneurial practice. These accounts of piracy invite us to rethink the way that piracy is publicly understood as transgressive, illicit, or immoral. Piracy is fraught with the politics of legitimation. The language of illegality used to frame piracy masks the politics and dynamics of legitimacy at stake within the term. Pirate infrastructures in the global South are illegitimate with respect to the global North. Pervasive piracy in Asia and other countries of the global South is viewed as indication of an “uncivilized disrespect for intellectual property” (Pang, 2004). In contrast to this broader public view, this dissertation draws from the research of piracy in the Global South that shows the importance of piracy as an entrepreneurial practice. This dissertation looks at piracy with the specific intent of understanding the moral struggles over illegitimate and legitimate commercial practices in a context of global integration.

Vietnam as a place to think freedom

Vietnam occupies a distinct symbolic position in relation to the global North, particularly in relation to concepts of freedom. Nguyen (2012) writes about the debts that freedom creates for the Vietnamese diaspora. As refugees, Vietnamese-Americans have been burdened with the gift of freedom. The narrative goes as such: Vietnamese-Americans have been liberated from the Communist dictators, forcing these refugees into exile. Countries like the United States, Australia, and France have welcomed these refugees where they are now successful and wealthy. Nguyen argues that through this narrative of redeemed refugee, members of the Vietnamese diaspora understand themselves as the beneficiaries of freedom from a benevolent imperial force. Freedom is received as a gift with its constitutive demands for debt. As recipients of this freedom, Vietnamese-Americans perform repayments of this gift through displays of US patriotism at public events among the Vietnamese refugee communities. Nguyen describes one particular float created for the annual Rose Bowl parade in Pasadena. A successful Vietnamese female entrepreneur commissioned the construction of a small boat set on turbulent waters. On the float was a banner that read, “Thank you United States and the World!” Such public displays of gratitude exemplify the burden of the gift of freedom.

Nguyen-Vo (2008) writes about the irony, contradictions, and paradoxes of freedom in Vietnam as the country has moved to a market-driven economy. In the popular press, market liberalization is celebrated for bringing new goods to Vietnam. Such abundance is especially important given the vivid memories of abject scarcity during the post-war subsidy period (*thời bao cấp*). The Vietnamese governments describes its political economic system as “capitalism with socialist orientation” and Nguyen-Vo argues that freedom in such a socialist-capitalism

configuration emphasizes freedom in terms of consumer choice: the freedom to choose among the stocked shelves of supermarkets and malls; the freedom to select new brands of soap, motorbikes, and mobile phones. However, concomitant with this rise in economic freedom is the rise of political suppression. Such uneven forms of freedom, Nguyen-Vo argues, is not an aberration of political development, but the result of

the global neoliberal economy's requirements for various labor and consumption needs rely on governments that will deliver by promoting choice and applying repression to different segments of their populations (2008: xxii).

In spite of continued economic growth, the Vietnamese government continues to repress political freedom, engaging in regular surveillance, and locking away dissidents who publicly argue for multi-party democracy or improved human-rights laws. This rupture between economic growth and political development appears as a contradiction to development theories that assume causal association across these two domains. Additionally, the majority of Vietnam's gross domestic product originates from the country's state-owned enterprises. In a neoliberal economy, loosely understood as the retreat of state-ownership in economic activity, the Vietnamese government nevertheless has positioned itself as a primary economic actor. "Ironically, the Vietnamese socialist state is the biggest stakeholder in the market that is part of the neoliberal economy" writes Nguyen-Vo (2009, xix).

These analyses identify Vietnam as a place of in which we in the global North make sense of freedom. Borrowing geographical definitions of place as sites in which people make meaning (Tuan, 1977), the place of Vietnam consists of both those among the diaspora as well as within geographical terrain of Vietnam. Moreover, Vietnam has had the distinct historic privilege of being a place through which we imagine and understand our freedom. The experiences of Vietnam as war and loss for the United States at the middle of the 20th century initiated new

conversations about the limits and costs of enacting freedom in unknown places. Freedom through the prism of contemporary Vietnam builds on this to reveal differentiated and uneven forms of access to freedom that accompanies the global circulation of people, markets, and goods. Vietnam is a place to think through what we mean by freedom. Moreover, Vietnam is a site through which we have come to understand the ironies, contradictions, and the outer extent of our freedoms. From the analyses of Nguyen and Nguyen-Vo, we see that freedom at the place of contemporary Vietnam exists in forms of gift and debt, as irony, paradox, and contradiction. Such perspectives on freedom challenge teleological development theories that assume causal relationships between markets, political freedoms, and social development. Such perspectives too often guide the deployment of technology initiatives in Vietnam and other countries of the global South under names like “technology transfer” or “Information Communication Technology for Development” (ICT4D). Understanding freedom as gift, debt, irony, paradox, and contradiction pushes us to consider how discourses of freedom are mobilized in relation to myriad phenomenon, including technology and software.

Chapter 3:

Research Design and Methods

Site selection

Vietnam is an ideal location for this study in light of its recent entry into the World Trade Organization, its recent policies to promote and implement open source software, and the continued pervasiveness of piracy throughout the country. For this dissertation, I conducted fieldwork across two communities, the community of free/open source software advocates and pirated software shops. I also conducted fieldwork in Hanoi and Ho Chi Minh City. As the political capital of Vietnam, free/open source software advocates concentrated in Hanoi. I originally intended to conduct fieldwork only in Hanoi however, after several months there discovered a nascent community of free/open source software enthusiasts in the South. As I pursued these relationships, my research fieldsites extended into Ho Chi Minh City.

The free/open source software community converged onto online via email list groups and social networking sites. Additionally, members of the free/open source software community convened at conferences, workshops, and other events. They also met informally at cafes, restaurants, and bars. Participant observation of the free/open source software community took place across these myriad sites and locations. I conducted fieldwork of piracy primarily at software shops. I selected these shops based on several criteria including ease of rapport with the shop owner, shop popularity and business traffic, the mix of Vietnamese and foreign customers, and geographic location.

Access and language preparation

I originally gained access to the free/open source software community via email list group. After careful Internet searches, I was able to identify several free/open source software email groups for the international Vietnamese community as well as for members located in Vietnam. The email list became the site of “first contact” through which I introduced myself and explained my research goals. Through this channel, I was able to secure an internship with a private free/open source software company in Hanoi. This internship signaled my commitments and membership to the community which made access to other individuals much easier. After my arrival, I worked for two months as an intern for this company. During this initial period, I also volunteered to help organize several free/open source software events. I gave public talks about various free/open source software initiatives in Vietnam.

Among the software shops, I originally accessed these shops as a patron. During the initial fieldwork phase, I regularly bought software discs at several shops throughout the city. I scheduled these visits at regular intervals, about every month or so, to gradually build trust over time. I conducted fieldwork of one shop. After shopping at her store for several months, the shop owner came to see me as one of her regular customers. She agreed to have me work in her shop during a difficult period in which she did not have enough employees.

With respect to language access, I am a native speaker of both English and Vietnamese. Prior to leaving for fieldwork, I enrolled in Vietnamese classes to improve my reading and writing. I spent a total of two years preparing my Vietnamese language skills. I am also fluent in French, having minored in the subject for my Bachelor’s degree and having spent a year in Lyon, France. While the predominant language for my study is Vietnamese, English and French were useful

during participant observation the free/open source community, given the visibility of French NGOs within this area.

Participant groups

There were four total participant groups for this study. The first group consisted of free/open source software workers. These people worked for small companies that specialized in free/open source software products. The second group free/open source software advocates in the public and non-profit sector. These people typically worked in educational institutes, NGOs, and government ministries. The third group consisted of software shop owners and employees. The fourth participant group consisted of customers of the software shop.

Data collection

I collected data through two methods: participant observation and semi-structured interviews. I conducted participation observation of all four groups and I conducted semi-structured interviews with members of the free/open source software community. Participant observation data allowed me to compare and contrast the forms of work in producing, reproducing, and circulating software across the two sites. This allowed me to analyze how F/OSS is negotiated and translated, the ways pirated software is made and used in Vietnam, and identify the forms of overlap between them.

Participant observation of both communities focused on work practices. I observed practices associated with implementing and tailoring F/OSS to existing clients, pitching F/OSS to potential clients, and organizing F/OSS community events in Hanoi and throughout the country. These data also included discussion of the benefits and problems of pirated software and formal

declarations about the value and benefit of F/OSS. These data provided insight into how the free/open source software participants communicated their interests and reasons for promoting F/OSS to themselves, their clients, members of the community, and the wider public. These data also provided a window into the strategic alliances between the technical experts and members of other social worlds with an invested interest in F/OSS.

As part of the participant observation of the software shops, I focused on work practices associated with reproducing and circulating pirated software. I observed the work of organizing, making, and selling software. I observed the owner's and workers' relationships with other distributors and manufacturers of pirated material, interactions with international and domestic customers, how the shop owner and workers reacted to demands for software they did not have on hand, and how they tried to advertise to new customers and retain regular customers.

I also conducted semi-structured interviews with members of the free/open source software community. I asked questions regarding: educational training, international experience, information practices, interests in computers and other technologies, reasons for use of F/OSS and/or pirated software, perceptions of government software policies, and personal values and commitments about the importance of information technologies.

Data sources consisted of handwritten fieldnotes and audio recordings that were transcribed into digital documents for analysis via Atlas.ti, a qualitative data analysis tool. I collected additional data through digital photographs and video that were also analyzed with Atlas.ti.

Prior to leaving for fieldwork, I obtained IRB (IRB #G09-08-100-01) approval through the UCLA Office for Protection of Research Subjects.

Fieldwork biography

Fieldwork for this dissertation took place over two and half years from April 2009 to December 2011. My overall approach to fieldwork draws from multi-sited approaches to ethnography in which fieldsites are constituted through the social networks that emerge around a given object of inquiry (Burrell, 2009; Hine, 2007; Marcus, 1995). Such an approach is ideal for understanding local articulations of global phenomenon (Burawoy, 2000; Marcus & Fischer, 1986; Miller & Slater, 2000; Ong, 1999).

The early stages of fieldwork began in California, during the Spring of 2009. Based on early Internet searches, I identified a small community of Vietnamese-speakers involved in free/open source software projects throughout the world. During this early period, I discovered several individuals working on free/open source software projects however, these men worked independently and I could not discern their involvement in a Vietnamese F/OSS community. After further research, I eventually discovered the Hanoi Linux User's Group (HLUG). The group was originally created by a French-Canadian gentleman working for an international non-profit in Vietnam. Through further sleuthing, I later discovered that one of the group's Vietnamese administrators, Huy, was an old college friend of the younger brother of my mother's former co-worker. This seemed like a fortuitous coincidence at first however, Vietnamese with foreign experience constitute a class of their own, particularly those Vietnamese who had traveled or studied abroad during the turbulent war years. My mother, her former co-worker, and Huy² all belonged to a similar class of foreign educated Vietnamese. Once I discovered this connection, I was able to email Huy personally and introduce myself. Working as the email list administrator, Huy was one of the senior members of this community.

² All names used in the dissertation are pseudonyms.

During this early stage of fieldwork, we exchanged several private emails. As a Vietnamese-American, this personal connection allowed me to perform an authentic Vietnamese identity that, in turn, made my rapport much easier with the Vietnamese members of the F/OSS community. During this time, I also joined the email group for HLUG and formally introduced myself. Several members of the community responded with warm greetings after my initial introduction. From there, the relationships slowly evolved.

I visited Vietnam in the July 2009 to conduct additional research. This visit lasted only three weeks during which I attended a small F/OSS workshop in Hanoi. Prior to my visit, I emailed the group to announce that I would attend the event, in the hopes of meeting as many members in person as possible. When I eventually arrived in Hanoi, I saw that the event was small, with only about ten people present including a representative from the Ministry of Science and Technology along with her Communist party attaché. As I sat down at the table, several members greeted me warmly. They asked about my trip, wanting to know more about my visit. As I opened my mouth and began to speak Vietnamese, several of them smiled and remarked on my vocabulary and southern accent. The party attaché stared at me with a stern glare and offered me juice and cookies. That afternoon, I met Minh. Of all the people I met that afternoon, Minh remarked most candidly on my accent and funny turns of phrases. Minh later would prove to be one of my strongest allies in the field.

I returned to the US and did not travel to Hanoi again until August 2010. During this time, I regularly followed the emails on HLUG. As I began making preparations for my eventual fieldwork period, I emailed the list again, asking for advice and input regarding F/OSS projects in the country. I announced myself as a Ph.D. student and plainly stated my interest in working for a F/OSS company, hoping to entice companies looking for free American labor. This strategy

worked. Several days later, a woman named Quyen replied to my request, stating that she worked for Minh and that they would be happy to host me as an intern at their F/OSS company.

I was based in Hanoi from August 2010 to September 2011. During my first year in Hanoi, I tracked software throughout the country. Several weeks after my arrival, I began working with Minh and Quyen at Minh's company. I worked there for approximately a month. My energy, anxiety, and expectations at this point markedly clashed with the subdued response I received in person. As a woman, I was expected to work with the other women in the office of which there were three others including Quyen. During my first visit, I made the mistake of asking Minh very specific questions about the company. When I asked him about his clients, he slyly avoided my question with the response, "You will have to ask Quyen about that." Only in retrospect do I now realize how such questions were too arched for this initial encounter. Minh's company was split along gender lines. The men worked on the top two floors. The women worked on the middle floor. Minh had his own separate office adjacent to the women's room. For the next several weeks, I sat in the office with the other women, working on my computer while they worked quietly. After several weeks of this, I quickly abandoned the participation observation of the company and instead focused my energies to the activities among the wider free/open source software community.

During this first year, I gave several presentations on free/open source software projects in Vietnam. Just prior to leaving for Vietnam, a woman living in New Hampshire contracted me, asking if I could bring two OLPC computers to Vietnam³. Several years earlier, Stephanie had

³ The One-Laptop-Per-Child (OLPC) project was initiated by Nicholas Negroponte at MIT. Originally named the "\$100 Laptop Project" in 2005, this project intends to provide computers to children in developing countries. Since then, the project has been renamed and continues primarily as an educational development project with the OLPC non-profit organization working to build and distribute OLPC computers. While the OLPC organization has formally partnered with governments in various countries such as Peru, Paraguay, several others, the OLPC project in Vietnam consisted of this one woman bringing over a handful of computers to the fishing village of Vung Vieng.

previously visited Vietnam as an ambassador for the One Laptop Per Child project. She alone had initiated an OLPC pilot project for Vung Vieng, a floating fishing village in Ha Long Bay located several hours northeast of Hanoi. She requested that I bring these two computers to the village as well as help village members run software updates. When I arrived on the scene in Hanoi with the two OLPC computers, members of HLUUG immediately saw me as a volunteer and advocate for the project. By bringing the computers to help Stephanie, members of the F/OSS community in Vietnam immediately viewed me as member of their social world. They viewed me as an advocate for free/open source software in Vietnam even though I regularly introduced myself as a researcher. They invited me to speak about the OLPC project in Vietnam and in September and October 2010, I gave two presentations as an informal OLPC ambassador. During my first year in Hanoi, I also attended planning meetings for several F/OSS projects that were never realized. I participated in translation sprints during which several members met face-to-face for several hours to translate software manuals from English into Vietnamese. I also organized informal meet-ups, which were primarily attended by young college age men. During this first year, I flew to Saigon several times to attend and organize conferences as well as give presentations about the OLPC project.

During this first year, I also frequented software shops during periods of lulls among the F/OSS community. I began shopping at media stores and stalls, purchasing illegally copied books, music, movies, as well as software discs. After several months, I identified several shops with shopowners who seemed especially friendly and slowly narrowed my attention to those. Through this process, I worked for a month at a movie and music disc shop in the Old Quarter of Hanoi. During this short month, I learned about the rhythms of the Old Quarter. I learned about the processes of organizing discs, procuring and copying inventory. I learned about the people

who worked in the shop and the kind of community they formed. I abruptly stopped working at this shop when the storeowner invited me to her home one afternoon to meet her two children. She offered me gifts of dried apricots, lotus seeds, and *bánh đậu xanh*---tiny square sweets prepared from finely ground mung bean paste. She asked her children to speak to me in English and explained to me that for the past ten years she had sent her children to English-speaking schools that followed exclusively English and Australian curricula. She spoke disparagingly of the Vietnamese culture of teacher authority. She asked me questions about schools in the United States and schools in Singapore. She explained coyly that her children were like me, part Vietnamese and part American given their extensive experience with English-speaking culture through their schooling. Her politeness and subtle performance that afternoon made me realize very quickly the proper ways of implying requests and seeking connection to strangers in Vietnam. My approach thus far had been too pointed, too direct. This woman's ability to respond directly to my initial requests to work in her shop put her in an equivalent position to request something of me, in this case helping her children to gain access to American education institutions. I learned that immediate and easy connection ran the risk of incurring immediate social debts that would, in turn, require social graces beyond my capacity to pay. Embroiling myself in relations and networks at these diverse fieldsites required an additional sensitivity to the forms of reciprocity that would be expected from me.

Because of this, I did not conduct fieldwork in another disc shop until six months later. During this time, I very slowly built relationships with several shopowners. My time in Hanoi coincided with an increase in government raids of pirated software. These raids targeted software use within companies as well as retail distributors. While everyday users were unaffected by these efforts, those working in the software and information technology industries were

increasingly worried about their company eventually being the target of government raids. So, software, along with movies and music, occupied this uncomfortable position of being pervasive while increasingly illegitimate. When talking about movie or music discs, Vietnamese referred to them as pirated (*lậu*) with an embarrassed giggle. The fact that these discs were illegally copied was not lost on them. Typically after this giggle, the Vietnamese people I spoke with admitted with a twinge of defeat that pirated goods were everywhere and they could not imagine how this could be otherwise in Vietnam. Pirated and pervasion were not antithetical in Vietnam. Given this, I proceeded cautiously as I attempted the second time access a disc shop. Over several months, I frequented one particular shop, developing a rapport to the point that the shopowner came to view me as one of her regular customers. When I eventually found the right opportunity to make my request to work in the shop, I was able to phrase it as “learning the trade.” In this way, I represented my research interests as a desire to learn more about the profession at a moment when she was low on help and needed additional employees. My desire to learn the trade of running discs coincided with her need for help, thus creating a reciprocally beneficial encounter.

From September 2011 to December 2011, I moved to Saigon, where I reconnected with the relationships I had previously established while based in Hanoi. I had not anticipated conducting fieldwork in Saigon when I originally planned my fieldwork. In Saigon, the community of F/OSS advocates overlapped with the vibrant commercial software community. During this last stage of fieldwork, I conducted participant observation of a start-up company that built mobile phone applications for American and European companies. I also attended and helped to organized events related to entrepreneurialism, start-up culture, and mobile phone application development.

Diaspora as method

The overall methodological approach I have taken in this dissertation is a reflection of my own subject position within the Vietnamese diaspora. As a *Việt-Kiều*⁴ in Vietnam, I was a curious sight for many Vietnamese. A common question for Vietnamese people to ask each other concerns origins: “*Quê bạn là ở đâu?*” – “Where are your roots?” Vietnamese custom asserts patriarchal lineage and most Vietnamese living in Vietnam locate their origins at one single village or city within the country. My family history, however, did not conform to such a singular narrative. My father’s parents were both originally from a village in the north, just outside of Hanoi, called Ha Dong. In 1954 when the country was split in two, per the stipulations of the Geneva Accords, my father’s family fled their wealth and bourgeois villa in central Hanoi to live in Saigon. So, while my father was born in the north, he grew up in Saigon and has now spent more years in the United States than he has in Vietnam. On my mother’s side, there is a similar lack of singular origin. My mother was born in My Tho but spent much of her life in Saigon and eventually California. Her mother was originally from My Tho while her father was originally from the impoverished village of Ha Tinh, located in the very middle the Vietnam, at the most narrow width of the country along the Laos border.

Thus, my Vietnamese “roots” are diffuse, spread across the three distinct regions of Vietnam: the north, the south, and the middle. All three represent three separate areas and Vietnamese view these three regions as maintaining distinct cuisines, cultures, and customs. As a *Việt-Kiều*, I was already an “impure” Vietnamese. This state of impurity, however, was exacerbated in my inability to point to a singular *quê*—a singular root or point of origin. My *quê*,

⁴ This is the term commonly used in Vietnam to designate Vietnamese living abroad. It is important to note that this term is not used among the diasporic communities but only within the country of Vietnam.

as one young Vietnamese friend jokingly pointed out, was the entire country of Vietnam—a joke only because it was such a preposterous notion for a *quê* to refer to an entire country. The importance of roots among Vietnamese is exemplified in the phrase “*mất gốc*” – “loss of origin.”

My inability to point to a singular point of origin is a reflection of the geopolitical climate during the time of my parents’ and grandparents’ youth. My father’s father believed in the cause for independence and fought with the Viet Minh—a coalition of national independence fighters that included multiple political factions of which the Communists were but one. When the French were defeated the Communists purged their political competition. I never had the opportunity to ask my grandfather how he came to flee Hanoi. I can only assume that he must have thought a better life was possible in the newly formed southern Republic of Vietnam than under the northern Communist Democratic Republic of Vietnam. My mother’s father fled the village of Ha Tinh, located in the middle region of the country. This part of the country is known as the home and origin of the Communist Party in Vietnam. Ho Chi Minh’s *quê* is located in the nearby village of Nghe An only several kilometers north of my grandfather’s home village of Ha Tinh. My grandfather left his village after having learned the craft of tailoring and set off at eighteen years old to Hanoi, then to the mountain town of Da Lat, before eventually settling into Saigon to work and eventually open his own tailor shop. My maternal grandfather describes his early movement throughout the country as way to escape the violence of revolution that was pervasive in his home village. The period of the early 20th century in Vietnam was a time of intense internal movement. Many people in rural areas moved to the cities looking for work. This experience of urbanization is beautifully described in a collection of stories, *The Light of the Capital* (Lockhart & Lockhart, 1996). Such movement stopped when the country was split in two and did not pick up again until national reunification at the end of the war in 1975.

I provide this very brief family history to sketch a portrait of my position as a Vietnamese-American. My parents were as equally mobile as their parents, fleeing Vietnam after unification and eventually settling in southern California. I come from several generations of people caught in the waves of global circulation. My status as a *Việt-Kiều* in Vietnam coupled with my inability to point to a specific *quê* placed me as a fraudulent Vietnamese, as someone who had *mất gốc*—lost roots. This history of flight across several generations informs my interest in global circuits and flows. This loss of roots is the result of continued circulation and movement.

My family history as part of the diasporic community of Vietnamese has informed my concerns to the struggles of global membership. As a member of the Vietnamese diaspora, I was raised in Westminster, California. Westminster is famous for having the largest concentration of Vietnamese people outside of Vietnam, with several Vietnamese language newspapers, radio stations, and television channels. For many among the diaspora, Little Saigon represents the capital of the international Vietnamese community, for these people were political exiles of the current government. For those who live within the community, Little Saigon represents a modern Vietnam that was denied to them in their flight. Paradoxically, the ability to create this version of a modern Vietnam appears as a legitimating catharsis, the exemplification of authentic membership into modern life. Such a paradox has attuned my attention to the complex ways in which people imagine and negotiate legitimate membership into global society. This explicit diasporic experience has created for me the feeling of having grown up in a Vietnam simulacrum.

I write about this experience and personal history of diaspora to reconsider how we think about method. I view fieldwork as an orchestration of encounters and events from which to

think. Ferguson defines the anthropological event as “an occasion for reflection on a broad set of issues, rather than as ethnographic evidence in the traditional sense” (2002, 560). Fieldwork in this manner thus requires one to actively consider one’s place and position in the world, inclusive of the complex entanglements that constitute our being. In the context of diaspora, these entanglements are far-reaching, across expansive geographical boundaries and sedimentary histories. As a member of the Vietnamese diaspora, a member of a fraudulent Vietnam, I have orchestrated through this dissertation an extensive encounter with the authentic Vietnam, the Vietnam grounded in territory. Such an encounter between legitimate and illegitimate worlds haunts the entirety of this dissertation.

Chapter 4:

The Social World of Copying and Cultural Logics of Similarity

Introduction

Through an ethnography of a software disc shop along Hanoi's Computer Street, this chapter argues that copying comprises an important dynamic to entrepreneurialism in genealogical networks. Among the trade in computer repair and maintenance, networks and hierarchies form such that new members are created as former employees venture out to establish shops on their own. This chapter argues that copying makes entrepreneurial sense for many of the global South as an expression of distance from global networks of distribution and consumption. By entrepreneurial sense, not only do I mean that copying provides income, but rather that copying conforms to ideals of appropriate entrepreneurial practice. Copied software discs however do not fit within models of creativity and innovation in the global North, in spite of the current language of "remix" in current discourses of open access and free culture (Condry, 2004; Jenkins, 2006b; Lessig, 2004). From this view, copying is defined as a form of thievery and piracy. Acts of pure copy—that is, reproduction without substantive transformation—are illegitimate as they do not confer additional value (Philip, 2005; Sundaram, 2011). Recent ethnographic studies of copied discs challenge this view to describe the cultural complexity of copied discs (Dent, 2012; Larkin, 2008). Building from these ethnographic studies, this chapter challenges the piratical frameworks that continually haunt critical analysis of copied discs. Through an ethnographic account of copied discs, I show that copying comprises a logic that upholds an entrepreneurial network within Computer Street. Such a network has its roots in

Vietnam's history of craft and guild commerce.

This chapter describes the social world of copying and identifies two forms in particular. First, this chapter describes the copying of software discs to describe the work and material forms of transferring bits across discs, cables, and people. Such an approach demonstrates the substantive labor of copying. Secondly, this chapter describes the copying of shops and argues that such reproduction performs visibility, continuity, and stability among entrepreneurial networks. Such stability is vital for people in the global South who are removed from global circuits of consumer goods (Jackson, Pompe, & Krieshok, 2012). These entrepreneurial networks of repair and maintenance reproduce as genealogies, as former employee apprentices venture on their own and create new shops. Among the trade in software, copied discs operate as condensations of these hierarchical and networked relationships. The notion of genealogy underscores the extant hierarchies in long-standing trade communities in Vietnam and highlights the ways that copying, in fact, operates as an entrepreneurial logic in its own right within networks replete with material, history, and time.

Histories of craft and commerce: Computer Street in entrepreneurial context

In the fall of 2010, Hanoi celebrated its one thousand year anniversary. Government officials designated celebratory events to culminate on the auspicious date of October 10th, 2010—10/10/10—during which national and international tourists alike flooded the capital to celebrate with local residents. Celebrations started at the park of Ly Thai To. Regarded as the father of Hanoi, Ly Thai To moved the capital from a mountain marshy outpost to the flat Red River Delta, situated at the confluence of several rivers. According to official history, the emperor Ly Thai To established the imperial capital on the grounds of Hanoi's current citadel.

Over time, merchants surrounded the areas of the imperial palace in service to the emperor, providing his court with silk, paper, food, and other services and sundries. This area evolved into a commercial center, eventually forming Hanoi's now famous Old Quarter, also known as the 36 Guild Streets (Nguyen, 2002). Bustling with street vendors, shops, cafes, and restaurants, the Old Quarter remains the commercial heart of the city.

Along these streets, commerce and craft concentrated over time such that the streets eventually became associated with particular trades. Walking along the narrow roads, signs read Silver Shop (*Hàng Bạc*), Salt Shop (*Hàng Muối*), Cotton Shop (*Hàng Bông*), Drum Shop (*Hàng Trống*), Fabric Shop, Mattress Shop. The peculiar naming convention of “shop” to mean streets refers to the early forms of trade and commerce that shaped the urban organization of the city. Regular traders from Hanoi's surrounding craft villages established storefronts, workshops, and guilds that surrounded the capital's imperial walls. The names of the streets thus referred to the specific trades and goods that were made there. The peculiar naming convention of Hanoi's Old Quarter thus embodies the craft and commercial history of the region. Nowadays, the names remain, however the trades and goods on the street have changed. Over time, these trades and their locations have changed significantly. Shoes are no longer sold on Shoe Street but can be found instead on Wooden Bridge Street. The wooden bridge from which this particular street derives its name is also gone, paved over to ease traffic. Shops on Chicken Street sell the latest fashions from Thailand and Hong Kong.

Similar to the Guild Streets of the Old Quarter, other kinds of trade concentrate along urban streets throughout the rest of Hanoi. As an entrepreneurial system, this craft-based production and commerce undergirds the trade in software discs. The craft and workshop modes of production underscore the importance of relationships within this entrepreneurial system

(Elyachar, 2005). Similar to the village kinships that bound urban traders with village craft producers, software discs are similarly produced through intricate networks of relationships. The trade in software discs is not constituted through guilds and other formal institutions, nevertheless, discs shops and their shopkeepers form genealogical connections as former apprentices venture out on their own and train other individuals seeking their livelihoods.

Software shops cluster on several streets in Hanoi, most notably on one street that runs parallel to the historic citadel on the outskirts of the Hanoi's old commercial quarter. The street is known informally as Computer Street (*Phố máy tính/Phố hàng tính*) while its official name celebrates an ancient leader who expelled Chinese imperial invaders. The street itself runs a short kilometer and is lined on either side with lean trees. During the 1980s, local residents referred to this same street as Military Street. Given the street's proximity to the national citadel, only military and high-ranking officers were allowed to live on the street and in the surrounding neighborhoods. Over time, this military affiliation has attributed to the street and its residents an aura of social prestige and rank. Residents on the street regularly boasted of the neighborhood's social pedigree. To this day, only families with the proper military credentials are allowed to own property in the surrounding vicinity.

Under French colonial rule starting in the late 19th century, the street was contained inside the citadel's walls (Nguyen, 2002). After Hanoi's independence from the French in 1954, the street remained within the citadel. Only until the 1980s, did the street become accessible to public traffic (Nguyen, 1995). This timing coincided with the national government's economic liberalization policies. These policies allowed the residents on the street to transform their living rooms into small shops that serviced and repaired electrical devices and appliances. Such transformations were notably recorded in a collection of short stories titled *Military Street* (Lai,

1992). Over time, these repair shops began to fix computers, altering the complexion of the street. Like geological layers, Computer Street slowly grew atop Military Street. Driving along Computer Street nowadays, the military history of the street is still visible in myriad ways. Towards the northern start of the street are the offices for several of the military's publications, including their daily paper *Capital Security*, their arts magazine, and their academic publisher. Towards the end of the road are gated compounds to additional military office buildings. These compounds are immediately recognizable with their foreboding gates in front of which young soldiers in their faded green uniforms silently stand guard.

Up and down the street are a variety of computer shops. One can find all kinds computer merchandise, including keyboards, mice, cooling fans, hard drives, custom-made cords and cables. Large signs mark these shops: "Computer Super Market," "Computer Hospital," "Computer Repair," "Computer World." Other signs advertise additional services, "Hack Wii," "Eliminate Viruses," "Repair devices." The density of the computer trade has waned over the years on Computer Street, slowly giving way to new and trendy shops. A beer salon sits across from the military newspaper office. Inside the salon, the walls and floors are covered in dark wood panels and serves imported European beers. Further down the road is a Korean-style coffee shop that caters to Hanoi's young and fashionable.



Image 3.1: Computer Street, Hanoi, Vietnam

Software Shop on Computer Street: The work and networks of copying

Halfway down Computer Street is a short stretch where several software shops cluster next to one another. All three shops are part of a larger building complex, each distinct store cramped in part of a larger web of inter-related spaces. Over the course of several months, I bought discs at several of these shops, eventually becoming familiar with one shop, whose owner was named Thuy. Thuy's shop is small, about ten feet wide and ten feet deep, crammed and cramped with display shelves. Faded images of video games line most of the wall surfaces. Thuy's shop specialized in selling software discs but the perimeter of her shop was lined with glass display cases in which she stored additional paraphernalia for sale including keyboards, computer fans, blank discs, headphones, memory cards, and memory sticks. A thin layer of dark dust coated the merchandise in these shelves.

Thuy kept the shop open from early morning until late evening. The shop was most busy during the morning before customers headed to work, before dinner, and during the later evening. She employed three additional employees who worked differing shifts. Thuy typically worked every day, along with one younger employee, and myself. One employee was her niece while the two other were young college students. Thuy referred to the two other employees as her *cháu*, suggesting that they were her niece, nephew, or younger cousin. However, both the two *cháu* employees eventually quit during my time there leaving Thuy and her niece to handle the work of the shop for the rest of the hot summer months. She often complained about the difficulties of finding employees.

Thuy described her work as disc running: “All day, I’m running discs!” Discs littered the shop. Stored in soft plastic sleeves, discs were piled in stacks on the shelves, on the tables, and on the desks. Discs were stuffed in boxes on the floor of the shop. Discs were stored in plastic drawers that drooped under the accumulated weight. Thuy’s shop primarily sold software intended to work with Windows operating systems. During the time of my fieldwork, Thuy was slowly building her catalogue of Apple software based on growing customer requests. Thuy also sold video games for proprietary consoles (Sony Playstation, Nintendo Wii), document applications (Microsoft Office suite), design software (3D architectural rendering software, Adobe CS4), foreign language tutorials (Rosetta Stone), and Vietnamese learning games for children. Other popular discs included stock image libraries and game collections for iPhones. Her shop neither sold music discs nor movie discs.

To organize the work of selling these discs, Thuy relied on several documents. One document consisted of a spreadsheet that listed the software titles sold within the shop. The document did not keep track of the shop’s disc inventory. Thuy also relied on several binders in

which were pages containing printed images of the software titles and their catalogue number. These binders were organized into six categories of discs: Windows software stored on CD discs, Windows games stored on CD discs, Windows games and software stored in DVD discs, games for Playstation, games for Wii, and Games for Xbox, and Apple software stored on CDs. The binders were orienting devices. Customers typically thumbed through the binders, staring at the images before making their selection after which Thuy or one of her employees would retrieve the disc from a shelf in the back of the room, place the disc in a small translucent plastic bag before handing it to the customer. To reproduce discs, Thuy and the employees copied existing discs from her computer using Nero, a popular disc burning and video editing software application. To obtain new discs, Thuy regularly bought them from other shops. Buying and burning discs were the primary method of production and reproduction. Discs were categorized as copy discs and origin discs, where origin discs were those reserve discs used to produce additional copies when stocks were low.

Thuy had three computers in her shop. One computer was placed near the front entrance on a low table while the other two were crammed along the back display cases. Thuy often sat at the front computer burning discs while anxiously gazing out to the street, in anticipation of customers. I and the other employees often worked on the back computers, taking blank discs, slotting them in the disc drives, and waiting for task bars to complete on the screen. Copying was thus pervasive in the shop and served as the primary backdrop for all other activity. Second only to attending to customers, burning discs was constant, a vital part of running discs in and out of the shop.

The transfer of bits across discs, computers, and people required a great deal of physical labor. The process of copying discs started with the elaborate task of rummaging through the

plastic shelves in which the discs were stored to generate a list of disc titles that needed restocking. The discs were organized numerically and crammed in shelves. To make this restocking list, I pulled each shelf from the cabinet, placed it on the ground, squatted low while running my fingers through the plastic sleeves, scanning for missing discs in the sequence, or discs with low stocks. Those numbers that were missing from the sequence, I wrote down. Or, those discs that had few copies, I pulled them from the shelf and placed them on a stack, from which they would be copied. The work was fatiguing and caused my knees and back to ache. This stock check typically was conducted once every week or two and was not the purview of any one person within the shop. Because the work was cumbersome and could not be performed all at once, other employees would pick up where another had left off. After these restocking shifts, I placed a piece of paper among the discs to indicate where the next person should continue. Typically, the work of restocking the discs took place over several days.

In the back corner of the shop, Thuy had a large box. After I had finished the restocking list one afternoon, Thuy brought out the box from under a pile of sweaters and several motorbike helmets and dropped it onto the shop floor. She said that in the box were the origin discs. With the restocking list in hand, Thuy asked me to find those discs that needed to be copied. I sat down and began to rummage through the box. One by one, I grabbed origin discs and placed them among one of the many stacks along the desks. If the source discs were not available in the box, Thuy or an employee then looked through a spreadsheet file to identify the corresponding title. This work in turn would generate a secondary list of software titles and with this list in hand, Thuy put on her helmet, hopped on her bike and drove to another shop to purchase the discs. Thuy never mentioned the names of these other shops to me. She occasionally entrusted

her niece with the responsibility of purchasing additional origin discs, however neither I nor the other employees were able to do so.

One evening, a nosy neighborhood teenager came into the shop. He was tall with short and wispy hair. Bored during the lull of the afternoon heat, the teenager sauntered into the shop and proceeded to make conversation with Thuy. As he continued, he began to pester her for free equipment. Thuy simply ignored him, quietly eating her dinner while waiting for more customers to arrive. The teenager complained about her discs, saying they were faulty. He threatened to go to another shop to get better discs. This statement caused her to react. She replied, “No, all shops buy them from the same origin, same source, they are all the same.”

The teenager continued with his complaint, saying that if this was so, he wanted to go to the source and tell them himself. He demanded further, “How can they operate such a business, selling low quality products?”

Thuy refused to reveal the source of her discs, saying instead that the source seller was quite large. Thuy’s remark about the man’s physical stature was meant to scare the lanky teen. However, this statement caused the teenager’s eyes to light up in recognition. “Ah, I know exactly who it is! I had a friend who once worked for him a while ago!”

At that moment, Thuy’s niece got up from her stool and left the shop, heading out to the supplier to replenish the shop’s stocks. The teenager jumped up, following her out of the shop which caused Thuy to frantically run outside and shout to her niece to turn around. Thuy clearly did not want this pesky teenager to annoy her disc source.

Copying is largely dependent on larger networks of relationships among the shops along Computer Street. Although Thuy lacked the ability to download software, many other shops regularly downloaded software with ease. As a customer of another shop on Computer Street, I

saw young men searching and downloading files from Russian websites. Unlike in that shop, Thuy and her employees did not download software. Instead, they relied on other sellers along Computer Street to replenish her stocks when needed. Thuy lacked the ability to download software however this did not prevent her from selling discs. Shops were not isolated commercial units but part of webs of relationships. In part with working with faulty discs, improperly copied software often caused her customers' computers to break down. In these instances, Thuy grabbed her phone and in several minutes an outgoing man with a dyed mohawk arrived at the shop. Hong specialized in fixing computer hardware and was Thuy's primary repairman both for her customers' computers as well as hers. If customers sought software she did not have, she asked the customers to write down the software names on a slip of paper after which she would climb onto her motorbike and disappear down Computer Street to purchase them elsewhere. As a former customer in her shop, Thuy once directed me to an online catalogue of another software shop down the street. Once I had made my selections, again Thuy disappeared down Computer Street and returned with the discs in hand.

The production, reproduction, and circulation of discs required substantive labor and elaborate networks. At first blush, the circulation of discs appears as acts of retail however on closer inspection, the social world of copying within Thuy's shop demonstrates the complex networks of relationships with other disc producers and computer repair processes. Such networks suggest that copied discs are situated within broader forms of repair and maintenance along Computer Street. As a locale that condenses a trade community onto a singular site, the figures of the street and the shop were intimately connected. Shops in proximity to one another formed a trade network such that Thuy regularly relied on other shops on Computer Street to maintain her business. She regularly purchased discs from other shops when her stocks were low

or when customers demanded discs she did not have. She turned to other shops to repair computers when she was unable to address her customers' problems. Rather than view software shops and copied discs as part of a retail economy alone, Thuy's networks of relationships demonstrates that software discs are entangled within processes of computer repair and maintenance.

Copying as tending to and mending error

Early one evening, just after dinner, a pair of twin brothers arrived at the shop. The two were identical with skinny legs, cropped hair-cuts, and shy smiles. They were regular customers and Thuy and the other female employees often cooed when they came into the shop, complimenting them on their manners and good behavior. They came to the shop on bike, with one brother pedaling while the other stood on mounted pegs. Once there, the two quietly studied the images in the weathered binders. They traded whispers, consulting with one another as they tried to discern which game was worth the small bills in their pocket. This evening, however, they arrived with a recently purchased disc in hand. One brother spoke up, "The disc doesn't work." He handed the disc over to Thuy who promptly placed it into her disc drive. Pursing her lips at the screen, after a moment she exclaimed that the disc worked fine. The twins glanced at each other and smiled sheepishly. Thuy turned to them and said that she would show them how to install the game. The twins moved closer to the computer screen, focusing their eyes as Thuy began navigating her mouse.

The twins only spoke Vietnamese and the text on Thuy's computer was in English. Thuy was adept in navigating through her computer interface in spite of her own limited English skills. As she clicked with her index finger and continued with her explanation. Thuy paused at regular

intervals to ask them, “Can you remember that?” At each turn, the twins slowly nodded, their eyes wide and their attention fixed. For the last step, Thuy asked the twins to pay careful attention. She pointed her mouse to a text file within the disc data, opened the document, and highlighted a long numerical string. Again, she turned to the twins to see if they would remember this and again they nodded. She then navigated her mouse through several layers of screens and folders before finding the appropriate location where she then pasted the software’s registration key. She turned to the boys and asked if they understood how to do this. They nodded silently. Thuy then navigated back to her desktop screen, clicked on the game icon and suddenly, an image of Garfield the cartoon cat appeared as the game started. The twins broke into wide smiles and looked again at each other with new confidence. Thuy handed them back their disc and the boys happily left the store.

Many of Thuy’s customers had difficulty installing software. They often thought the data on the discs were corrupted because of the difficulties they faced at home as they tried to run the discs on their computers. These difficulties were often due to the complications of installing software with illegitimate registration keys. However, the possibilities for breakdown were numerous. Occasionally discs were accidentally left blank or mislabelled. During one short period, a particular batch of video games regularly brought angry customers back to the shop demanding their money back. Thuy was usually able to install the games herself, assuage the customers, and explain to them how to install the discs themselves, or simply exchange the faulty discs for different software altogether.

Customers with new computers also experienced breakdown. One day, a customer came into the shop and purchased a large stack of video games. His computer was exceptionally new, installed with the latest operating system. Thuy complimented him on his computer, describing it

as *xin*. The term connotes a meaning of novelty coupled with high quality and is used primarily to describe consumable status objects, like motorbikes, computers, and handbags. Novelty with this term connotes temporal dimensions whereby these artifacts are of the latest fashion, up-to-date and of superlative quality and performance associated with global commercial chains.

Thuy's own networks were often incompatible with such chains. This very customer with the *xin* computer returned the next day, unable to install and run the games. Thuy subsequently spent the next two hours trying to install the video games, eventually to no avail. Thuy diagnosed that the disc was incompatible with the computer's video card, tossed his discs onto a stack on the counter and told him to pick out other games in exchange. The customer eventually left without complaint.

Breakdown was thus not only an expression of material decay but also of rupture and disconnections. Breakdown occurred in the decay of material form, when software discs were improperly copied. Breakdown also occurred when customers did not know how to copy and place registration keys within the appropriate prompts. Breakdown also took place when incompatible *xin* machines were brought into the repair networks along Computer Street. Breakdown was an expression of rupture across incompatible networks.

Amid this broader breakdown and rupture, the discs were central artifacts of stability. Discs cemented and affirmed the relationships between Thuy and her customers. Insistent on holding onto the bills her customers paid, she never once returned their money in return for badly copied discs. In one instance, one careful customer bought a large stack of software discs. However, before leaving the shop, he sat down at Thuy's computer and tested each disc, one by one. He spent nearly thirty minutes at the shop. He complained loudly that her discs were faulty

and said further, “If they don’t work, I’m returning the discs!” She quietly corrected, “If they don’t work, I’ll exchange the discs for new ones.”

More than just a mere process devoid of friction, installation was charged with uncertainty for which Thuy’s expertise was continuously on call. Installation became moments of intervention and negotiation. Copied discs come to life as a result of the zigzag of the cables, connectors, formats, machines, discs, and people. Moments of installation thus become a condensed articulation of these myriad data travels and threads. During an exceptionally time-consuming installation interlude, Thuy loudly joked to a customer “You should pay me one hundred thousand dong! This here is a lesson!” This joke highlights the cost and labor of installation. This customer had bought several discs and returned the next day, complaining of being unable to install any of the discs. At these critical moments, Thuy either made one of two decisions: she either installed the software herself for the customer or she provided a lesson and explanation so that the customer could install the software herself. Thuy later explained further, “Installation is very time-consuming. I just do it for them, but next door, they charge twenty-thousand dong for each service. That’s more expensive than the price of discs!” When I pressed further to ask why she performed such services without charge, she simply shrugged and said she wanted return customers.

Copying and installation are thus discrete moments of possible rupture. Discs are artifacts that rearticulate the multiple and constitutive connections. Through the work of selling discs, copying discs, and installing software, Thuy mends the moments of breakdown. Discs that are faulty or improperly copied could always be replaced with others of their kind. When replacing such copies, Thuy never checked to see whether or not the new discs were in fact correctly copied. She simply looked through the shelves, found another disc and handed it to her

customers and while faulty discs (*có lỏi*) were subject to complaint and debate, they were neither contested nor challenged. As a result, moments of breakdown and rupture provide opportunities to cement social relationships. Thus, the work of mending connections condensed within copied discs. Within the software shop and among the trade of Computer Street, copied discs were a vital link in these networks of maintenance and repair. So, while discs themselves were prone to error, they simultaneously served as stabilizing entities; that through their reproducibility, no matter their faults and errors, the discs allow for constant and replenishing connections. Stability was the result of continual disconnection and reconnection.

Discs also served as stabilizing artifacts through forms of reinstallation, as part of broader strategies of renewal and repair. Customers regularly came into the shop to purchase discs of older operating systems. In fact, discs for Windows XP were so popular that they merited their own special place within the array of shelves and were half the price of the other discs, selling for seven thousand dong while typical discs were more than double the price at fifteen thousand dong.⁵ The three computers in the disc shop were in varying states of breakdown. Several USB ports for the front computer worked inconsistently. The computer often stopped working as a result of the use of these ports. The use of USB ports on this machine became a point of contention between Thuy and her employees. While attending to hurried customers, the other employees used the troublesome USB ports in their haste. This caused Thuy to yell, accusing them of carelessness and contributing to the breakdown of the machine. When these moments of breakdown did occur, Thuy grabbed a Windows disc, placed it in the computer's disc drive and wiped clean the harddrive to reinstall the operating system. Reinstallation was a process of renewal, a strategy to contend with broken machines. In part with this strategy, Thuy kept near

⁵ At this time, Summer 2010, one US dollar was approximately equivalent to twenty-thousand Vietnamese dong.

her computers Windows discs and anti-virus compilation discs. Reinstallation and renewal were common strategies for her customers as well. Customers reinstalled their computers when their computers became bloated with viruses, when the machines ran too slow, when drives stopped working. In this manner, reinstallation was like a technical cure-all for the myriad reasons computers stopped working.

Copied discs thus play an important role in contending with machine breakdown, in spite of their own forms of error. Fault, error, and breakdown can be viewed as the constitutive counterpoints to the networks of repair and maintenance along Computer Street. Such co-constitution is an expression of Vietnam's distance from global circuits of consumption goods. A foreign executive of a software multi-national company in Hanoi explained that after extensive searching his employees were only able to locate one shop in which to buy a licensed copy of Windows. This experience led him to lament that Vietnam was a place where piracy was intrinsic. However, this view ignores the ways that copying in fact makes entrepreneurial sense, conforming to ideals of appropriate action. Piracy, defined as the unauthorized circulation of goods (Dent, 2012), comes into being only through the recognition of the gap between those with the authority to produce and circulate goods and those without such authority. While deeming such copying as piratical only emphasizes the way it which it violates legitimate tracks of circulation, I argue instead that copying and circulating software discs is an expression of long-standing distance that only becomes problematic with increasing proximity to global chains of distribution. Copying amidst conditions of error and breakdown and their attendant networks of repair and maintenance makes entrepreneurial sense in Vietnam and also comprises an entrepreneurial logic on its own right.

Copying as entrepreneurial logic

The work within the shop consisted of a wide range of activities. Participants sold discs to customers, burned discs, searched the internet for cracked registration codes, repaired broken equipment, installed and reinstalled software and computer games. Overall, the work within the shop comprised strategies of repair and renewal in conditions of material breakdown. Copying emerged as an overall tactic within this broader arc of strategies and consisted of several forms. First, disc copying was the primary activity that grounded all other work in the shop as described above. More importantly, copying emerged as a habit (*thói quen*) in professional training and the production of new shops. This copying had the effect of performing similarity, proximity, and continuity among the genealogical networks.

During the period of early encounter, I frequented software shops throughout the city. I regularly frequented these shops to build long-term rapport. One day, while driving around the Old Quarter running errands, I decided to return to one particular shop with a friendly female owner. As I unfastened my helmet and climbed off my motorbike, I was surprised to see a new face. The owner was not there and instead was a younger woman with a chiseled bob and steely glare. I vaguely recognized her from previous visits to the shop.

I asked about the other woman, “Wasn’t there another woman who worked here? What was her name?”

She replied, “Her name was Thuy.”

“When will Thuy return?”

“In about two to three days. What did you need from her?”

I explained that I had previously requested Thuy to look for some specific software. I explained that I had not heard word from her so wanted to come and see. As I left, I saw a young

man from the shop next door waving excitedly at me. Several days later, I returned to the shop. Driving by slowly on my motorbike, I peered in and still did not see Thuy. I was perplexed. I had never known her to take a day off. Instead, I saw two men in dark coats, neither of whom I recognized. Only many months later did I realize that I had made a mistake. After I had worked at Thuy's shop for several weeks, she mentioned that the shop next door was, in fact, run by her former employee.

She said, "We used to work together. She worked in my shop, but she decided to branch out her own shop. Everything in her shop she copied exactly like here. She even bought the same table set as mine."

I had mistaken the other shop for Thuy's. Her former employee had copied Thuy's shop so precisely I did not realize that I had walked into a different shop altogether. Thuy continued, saying that customers typically became accustomed to specific people, specific sellers. She pointed towards me, "like you." Those who were accustomed to her would keep coming back to her shop. Those who were accustomed to the other woman simply did not note the mistake and would continue with the other shop. Thuy explained that since the new shop had opened about a month ago, people were often confused. Customers came into her shop looking for her former employee while customers went into the shop next door looking for her. I then realized that the young man waving at me must have recognized me as a previous customer and tried to catch my attention. Thuy's shop was now situated in the middle of two other software shops. Thuy's former employee copied every aspect of Thuy's shop—from the display tables, to the pictures on the wall, to the positioning of computers. However, Thuy insisted that those customers who had a direct relationship to Thuy would remain so. Those with direct relationships to the other woman would remain buying discs next door. By replicating Thuy's shop, her former employee

and new competitor played on forms of likeness and proximity. Not to be seen as an act of duplicitous reproduction, this kind of copying logic serves to maintain the relationships Thuy's new neighbor cultivated and maintained as an employee apprentice in Thuy's shop.

Thuy herself described her previous working experience as "learning the trade." Before embarking on her own, Thuy worked for a man who also owned a shop on Computer Street. She stated that her former boss' shop sold primarily computer hardware and later on began selling software. She worked for him for seven years and explained that during this early period, several other men worked in the same shop, learning the trade like herself. These men eventually also started their own shops. One such friend came to the shop one day. They sat talking cheerily for a long while. While I sat organizing and burning discs, I overheard the two friends talking about their spouses, parenting styles, their businesses. When he eventually left, she turned to me to share some gossip.

"Lots of these men open shops much larger than mine, not tiny like this. Like that guy who just left, he used to work with me and he opened a huge store on this street where the rent is over ten million dong a month. He has three shops on this street alone and another on [another street]. They sell computer merchandise, not software. Their shops aren't tiny like mine. But if you sell a lot of discs, software makes more money than computer merchandise."

I asked, "Did your old boss mind that you opened your own shop?"

She replied without hesitation, "Since he paid too low wages, I had to open my own shop after learning the trade."

As a former employee apprentice herself, Thuy's own experience mirrored those of her new neighbor. While this additional competition was a source of Thuy's anxiety, Thuy did not express feelings of resentment towards her former employee. Thus, through these processes of

apprenticeship and copying, social relationships were not only maintained but also dynamically generated. The notion of copying as a generative dynamic became only more apparent as I continued to work in the shop. One day, I arrived at the shop and before I was able to settle in, Thuy came to me, saying in an urgent voice, “Lilly, I’m so worried. I have to copy my neighbors. She repeated this several times. She was emotional and complained that for the past two days she had not made more than one hundred thousand dong while the month before business had been very busy. She vented in frustration, “There’s so much competition, I have no customers!” She continued explaining that two days ago, her other neighbors placed two large signboards boards by their doorway. On these boards were photocopied images of software and video games. The images were placed in clear plastic sleeves and mounted on a white board.

I walked out to my parked motorbike to get a better look and was surprised to see a new sign with easy to read lettering and carefully arranged images. The neighboring shop owner had placed two boards on either side of his large doorway. The board on the right had written across the address of the shop in even red vinyl cut letters. Below this were the words “Software + Newest Games” in blue vinyl cut letters. Below that was an even grid of software images. The images themselves were high resolution downloads, with vibrant crisp color, suggesting that the owners printed them from a laser printer. Glancing back on Thuy’s shop, her signs looked weathered. One little sign hung askance from the front tree. She had two whiteboards that were placed on the uneven sidewalk. On these boards Thuy had handwritten the names of various software. Thuy’s signs carried the worn patina of time and weather. Looking back at the neighboring shop, the alluring signboards stretched the entire height of the doorway. This signboard brought new visibility to the shop with its bright surface, even arrangement, and colorful images. While standing there, I saw a small boy pause in front of a photo for a video

game before rushing into the shop. I turned and walked back inside Thuy's shop. As I sat down, she turned to me earnestly and said that for the past several days she was so worried she was unable to sleep. She repeated, "I have to copy their sign."

Over the next two and half months, Thuy and I worked on this copy project. What I initially thought would be a straightforward job of reproduction slowly became much more complex. Planning and designing the sign was crammed in between moments of attending to customers, copying discs, and other more pressing work. During moments when the shop was empty of customers, Thuy talked with me about how to proceed with replicating the sign. One afternoon, she came to me with a small sheet of paper in hand and began sketching boxes and letters. She wrote down some words and handed the sheet to me. I saw the words "CD - DVD Room" scribbled at the top.

She asked, "What do you think?"

I hesitated. I did not understand the word "Room" in this context. I asked her what the word meant, explaining that in English the word "room" translated to "phòng" in Vietnamese.

She replied, "In Vietnam, every shop does as such, it's a habit."

We walked out to the front of her shop where she pointed to her signs on which the phrase "CD – DVD Room" was clearly marked. She motioned to another sign, however quickly became embarrassed when she saw the words "CD – DVD ROM." I quietly returned to the shop, not wanting to point out her mistake.

Once back inside the shop, Thuy continued with a sigh. "We still have to plan the colors!" She asserted that since red was the brightest color, thus all the text on the sign should be in red. She walked outside again and pointed to a previous sign we had just looked at, as proof of seeing red text. Her use of her current signs as justification for decision-making struck me as

odd. She turned to ask for my opinion.

Again, I paused before asking, “Why not green or purple?”

She immediately countered while shaking her head, “No, green is not strong enough.”

I explained to her that I didn't think that green was necessarily the best color but if everyone else had red lettering, perhaps she could differentiate her shop from the others. She paused for a long time and we sat there in silence while staring across the street. My eyes landed on a particular sign across the street. I pointed to it and explained that while I had never been inside that shop, I always remembered it. It was distinct with bold backdrop of maroon and one single word in the center. She quietly stared and I grew increasingly concerned that I may have offended her and offered in apology, “Perhaps it's because I'm a foreigner so I don't know what Vietnamese prefer, but I just want to share my opinion.” She hurriedly reassured me that she was not offended and that she understood that in my saying so she might have a different perspective. Over the next few weeks however, I realized that my interjection had little effect and we continued with the project of copying her neighbor's sign.

Copying this sign thus became an exercise of enrolling customary habits in the production of similarity. It was several weeks before Thuy hung two completed signboards on either side of her storefront. When she finally tied them to the metal railing, I stepped outside to look back on her storefront and get a better view. Her signboards looked absolutely nothing like the sign next door. As a result of Thuy's desire to place as many images as possible on the boards, they butted against each other. Along the left-hand side the images had been modified to fit within a particularly narrow column. This visually conveyed a feeling of jumbled compression. The images were fuzzy and pixelated, a result of the low resolution of the image files Thuy's employees had downloaded. The images lay unevenly on the board's surface. The

rolled tape that adhered the print-outs onto the board bunched and created lumpy surfaces around the edges. Thuy herself printed the images from the shop's ink-jet printer. Several days later when a heavy storm blew into Hanoi, the colors immediately ran down the page, leaving streak marks on the board. Thuy had a nephew cut and apply the vinyl lettering at the top of the board and as a result of his uneven hand, tiny bubbles lay trapped under the sticky plastic.

Regardless of the final outcome, Thuy's anxiety about the signboard demonstrates deeper ideals of likeness and similarity in entrepreneurial activity among the software shops. Thuy's signboard ended up looking completely unlike her neighbors as a result of the visual composition and material form of the images. Nevertheless, the effort and work of copying provided a window into the way that Thuy understood the importance and value of copying altogether. Through Thuy's experiences, copying emerges as a rooted logic in entrepreneurial practices that can be understood through the metaphor of genealogy.

Typically, notions of copying when decried as acts of valueless reproduction do not take into account the possible relationships among the copiers; that is, this devalued and voided understanding of copying does not take into account existing relationships across these people, agents engaged in acts of copying. The concept of genealogy reverses this, looking the ways that copying in the case of the software shops in Hanoi, are expressions of relationships in the place of the street, over time. The concept of genealogy within the context of Computer Streets helps to think about how copying acts as an entrepreneurial habit that is generative, whereby relationship are maintained without disrupting extant hierarchies, such hierarchies that are vital to learning and the securing of livelihoods.

Regardless of the final outcome of the copied sign, processes of copying had demonstrative value in the social world of discs because copying made visible what otherwise

was unseen. While Thuy's sign eventually looked nothing like her neighbor's, the act of copying brought a visibility that was dependent on the proximity of shops. In the same manner that her other neighbor fashioned her shop in the exact image of Thuy's, this logic of copying had the broader effect of rendering her shop visible by demonstrating a similarity in kind. Whereas, difference was understood as leading to invisibility, copying was thus the antidote that rendered Thuy's shop similar to her neighbors and thus visible to those passing by.

At one point Thuy explained another quirk of national habit, "Vietnamese are strange. If a place is crowded, Vietnamese people think it is of high quality. Doesn't matter if it's true or not." What she described as a unique quality of a national character may not necessarily be true, however, this statement taken together with the broader social world of copying suggests that likeness is valued as an index for stability. Concerns of quality extend to all consumer domains—motorbikes, make-up, clothing, food, including computer devices. These concerns of quality often have geographical dimensions whereby brand and locations of production serve as varying indices for quality and reliability such that, for example, motorbikes of the same brand but manufactured in different countries would be viewed of differing quality (Vann, 2005). In environments of continual breakdown, consumption is fraught with risk. Particularly as Vietnam becomes increasingly connected to global distribution chains, this anxiety is exaggerated as increasing commercial inroads from different places open up even more possibilities for unforeseeable risk. In day-to-day conversation, Vietnamese regularly exchange stories of harmful goods manufactured in China while newspapers report on nefarious street vendors treating food with harmful chemicals. The subject of goods and their states of quality are the subject of everyday complaints and regular conversation. This general moral anxiety leaves people continuously searching for signs of reliability such that popularity and similarity become

convenient indices.

Copying thus helped to produce continuity in uneven technological networks. Copied discs served as stable points in unreliable networks of machines and devices but also as stabilizing points across social networks of repair between shop-owner, customer, and sites of repair. Copying, as a broader entrepreneurial logic in the economy of Computer Street, produced continuity in genealogical networks of hierarchy as people learned new trades and branched out on their own. Copying established likeness and similarity, important qualities as people developed their entrepreneurial lives over time within established networks of hierarchy. Copying in this entrepreneurial environment was thus generative, not merely imitative. These networks of maintenance and repair were specifically grounded in the locale of the street in which mutual proximity of the shops conveyed quality and helped to establish the value of their businesses.

Through this examination of the software disc shop, I have attempted to lay out the social world of copying. In a software shop along Hanoi's Computer Street, copying takes on several forms, through the work of reproducing discs and the generation of new shops. For the latter, copying is a key dynamic that permits novelty in the form of new shops within extant hierarchies of production. Copying is thus an important part of the entrepreneurial logic of trade networks that originate from shopkeeping modes of production. The effect of copying is visibility of shops, continuity of relations, and stability of trade networks of repair and maintenance. Copying thus performs a social scaffolding among disparate connections. The networks on Computer Street comprise a trade community of repair and renewal. As part of this, breakdown and repair are expressions of Vietnam's peripheral place in relation to global chains of distribution. As a result, networks of repair are mutually constituted with error and breakdown as a result of such

distance and marginalization. By looking at the entrepreneurial forms that sustain the circulation of copied discs, this chapter challenges current debates of piracy that merely frame software copying as an illegal act. By describing the work of copying discs, this chapter demonstrates that way these seemingly simple acts of mundane reproduction, in fact, require substantial work while also entangled within networks of computer repair and renewal. Copied discs are thus produced within larger trade communities, a genealogical system in which people are arranged hierarchically amid long-standing relationships and histories. Copying as an entrepreneurial logic that produces shops also performs visibility, continuity, and stability across these trade networks.

The pervasive copying in this shop and the neighboring shops comprises a generative dynamic in the formation of a local entrepreneurial network. This entrepreneurial network is grounded in the streets of Hanoi and situated within an extensive history of fabrication, craft, and entrepreneurialism in Vietnam. As Vietnam becomes increasingly entangled into global circuits of capital, knowledge, and work, the pervasive shopkeeping entrepreneurialism we find here is delegitimized and deemed piratical. While most Vietnamese recognize these practices as pervasive, there is a sea-change taking place in which more and more Vietnamese come to view these practices as illicit in spite of their pervasiveness. Younger Vietnamese are starting to see such logics of copying through a similarly piratical frame as they gain more familiarity with the social worlds of work and knowledge of the global North. The discourse of piracy in software frames these logics of similarity as an anti-figure to the kinds of appropriate work and knowledge among Silicon Valley-style entrepreneurialism. From this piracy perspective, such a local form of entrepreneurialism stands in contrast to the morally correct entrepreneurial engine of creativity and difference. The stubborn local persistence of copying and similarity is antithetical to the transcendent universal economic engine of creativity and difference. The logic

of similarity in this world of copying configures *local* networks, particular networks that are disconnected from the universal and expansive networks of global corporations like Apple, Google, Microsoft, or Intel. As Vietnam becomes increasingly entangled into global networks, the configuration of local networks becomes increasingly suspect and is a crucial point of legitimation over Vietnam's membership into global economic networks.

Chapter 5:

Evangelism and Translation in Free/Open Source Software: A Nation in Continuity

Building a national community

Members of the free/open source community in Vietnam saw themselves as in the process of starting and seeding a local community. Advocates spoke in a hopeful future tense of Vietnamese members one day contributing to English-speaking and international free/open source projects. As one advocate explained during a local TV broadcast, “We hope that free/open source software will develop and take hold among (Vietnamese) users. Only after that will we have the opportunity to contribute back to the international community.” Members of the free/open source software community in Vietnam expressed a general feeling of separation from the global community. From this sense of separation and hope, community members thus saw themselves not as developing software but more importantly as developing a community. One young member explained, “Any kind of open source software must start from the community. The most important thing is to develop the community of users in parallel with the software and users will directly and indirectly contribute to that software’s development. If we only just build individually...then it will be difficult to be successful.”

Departing from project-based modes of organization that typify free/open source software, the social world of free/open source software in Vietnam was primarily organized towards the development of a national community. National governments in Latin American and other countries in the global South have passed policies that mandate the use of free/open source software as alternative to expensive proprietary options (Chan, 2004, 2007). These procurement

laws are typically couched in terms of national independence defined in myriad ways, such as relieving dependence on foreign corporations, facilitating transparency through e-government, or promoting citizen rights to information access. In the case of Vietnam, free/open source software was understood as serving national interests to stimulate the growth of a local information technology industry. Free/open source software was not affiliated with the transgressive politics of hackers. Instead, F/OSS was understood as a legitimate strategy for economic growth. Free/open source software became affiliated with government efforts for national economic growth and development. Many of the free/open source software advocates in Vietnam also worked as businessmen. Many of the older men had formed their own companies. Many of the younger men worked in large software companies with dreams of eventually establishing their own companies as well. In this manner, these men did not view free/open source software as antithetical to for-profit practices, but instead viewed this software as a morally correct way of making money through technical work. Such morality was defined in terms of nation, first and foremost.



Figure 4.1: Website banner for Vietnamese free/open source software company

The image in Figure 4.1 was taken from a company named Vinades that describes itself as the first open source company in Vietnam. The company was established in 2010 and produced an open source content management system called NukeViet. This content management system has become the posterchild for free/open source software in Vietnam. The

system and the company have received many awards and NukeViet is promoted on a government list of approved free/open source software packages. The CEO for Vinades is also featured regularly on government television programs about free/open source software. The company describes its business development model as one that simultaneously serves country, government, along with the local free/open source community. As part of its public image, the very concept of Vietnam is the organizing principle for this company. More broadly, this very concept brings together community, government, and business through software.

For this community, free/open source software—as supported by the Vietnamese government—provided a means for making money within government networks. These men regularly spoke of local governments or other state agencies as both partners in free/open source software projects as well as customers or clients. They concentrated their attention on national and local governments as clients. This is significant as their commitments to government client networks departs from a broader public suspicion of state-owned enterprises. In private conversation, these men personally complained to me about government corruption and the culture of “red roses” (*hoa hồng*). The phrase “red rose” is a metaphor for the red envelopes typically filled with money and exchanged during Lunar New Year festivities to friends and family. The culture of red roses however, referred to the circulation of cash-filled envelopes that was assumed to accompany business transactions of any stripe across government institutions. These men never registered these complaints publicly.

Nevertheless, through the moral language of freedom provided within free/open source software, these men aspired to a vision of technology-based economic development that included the government at service towards the nation.

These software enthusiasts thus cohered into a community through the practices of evangelizing and translating. Through the practices of evangelizing, Vietnam advocates constituted a social world of masculine leaders. Through the practices of translating, these advocates worked to promote an ideal of nation that was in continuity with the rest of the world. Through the practices evangelism and translation, these software advocates worked towards the development of a national community, a community they hoped to be distinct yet in synch with the global community. Through the language of freedom, free/open source software mediated the experience of global economic integration by providing Vietnamese free/open source software enthusiasts with a morally appropriate way of making money through technical work.

A culture of masculinity and the aesthetics of leadership

Beer and drinking are serious business in Vietnam. Alcohol is primarily the domain of men, a medium through which men assert themselves as men. Business contracts are socially cemented through a quick shot of butane-level spirits. The protocol for drinking requires the men to sit in a circle in which they all face each other. This way, each is visible to the group when taking a sip. No one is allowed to take a drink individually. Instead, the rules of drinking require that the eldest man set the drinking pace for everyone else. Whenever the eldest drinks, the younger men toss their glasses back in kind. Drinking is governed by rules of symmetry and through such immediate symmetry, masculinity is rendered visible since it becomes all to clear by the end of the night who has a better handle on his alcohol. Alcohol is a unit for the measure of masculinity. During my fieldwork, I never saw a woman sitting among the drinking circles. Nevertheless, one of my first offline encounters with the Vietnamese free/open source software community was in a beer hall.

Minh is the CEO of a small company that specializes in free/open source software products and services. After my initial arrival into Vietnam, he organized a small gathering over beer and invited me along with several other men of the free/open source software community in Vietnam. The beer hall that night was crowded, filled with red-faced men, laughing and shouting at one another. Young waitresses hurried back and forth through the restaurant, carrying food, and tall glasses of beer. Wood chopsticks, napkins, and peanut shells littered the terra cotta tiled floor. The place smelled like a dirty dishcloth.

When I arrived, I noticed that I was only one of two women at the table. The other woman introduced herself as Quyen and explained that she worked as an office manager at Minh's company. As I sat down, Minh cheerily handed me a small glass. I smiled and thanked him with a quick sip and a nod before sitting down and introducing myself to the others at the table. Several men were in their late 30s. Several others were well into their mid-60s. One of the men had brought his young son to the beer hall that night. Unprompted by the father, Quyen tended to him throughout the evening. She asked the boy what kind of food he wanted and gently placed vegetables and meat into his rice bowl. When the boy said he was thirsty, she ordered him a can of Fanta. Quyen also served the men food. Amidst her caretaking, Quyen and I talked about settling into Hanoi.

I had invited my husband to this evening's beer offline meet-up. As I sat there chatting with Quyen, Minh suddenly pointed over my head and said, "That must be your husband." Minh had never met my husband, but as a red-haired American in a locals-only beer hall, he certainly stood out. I had explained earlier to Minh that my husband would arrive after me and when Minh saw a sweaty American walking into the beer hall with a lost expression on his face, Minh easily put two and two together. I stood up and turned to wave to my husband and as he approached the

table, I introduced him to everyone explaining that he worked with digital media. One man replied approvingly, “He’s an IT person.” For the rest of the evening, the men directed their attention to my husband. I sat quietly and listened in on their conversations. One man talked fondly about his memories of taking dancing lessons. He argued that such dancing lessons helped him to develop the confidence he now needed as the CEO of a free/open source software company. I listened in as another man, Nhan, described his hatred for his wife. This same man spoke openly to my husband about his time in the military during the war. He then launched into his personal biography, explaining how he learned about computers and became interested in free/open source software as part of his education in the military. He described his immense admiration of Richard Stallman. For the rest of the evening, I chatted with Quyen. I noticed that she did not engage in conversation with the other men at the table. I surmised as Minh’s office manager, she had no expressed interest in free/open source software. And so for the rest of the evening, she and I talked about food and places to eat around Hanoi.

Towards the end of the evening, my husband I stood up to leave. Nhan, turned to my husband again and thanked him for listening and speaking with him that evening. This gratitude stunned and insulted me. As an American man, my husband’s ears and attention conveyed a validation that my own could never signify. As we biked home that evening, my husband proceeded to recount to me as many of the details he could from his conversation with Nhan. As a female anthropologist working among men, this would not be the first time I would bring my husband to aid in my fieldwork. I encountered difficulties in building early rapport with these men. However, my husband’s presence served as an ice-breaker. His attention conveyed a social validation for these men that eased conversation for this was a world of men. This culture of masculinity was an important dynamic of this community of leaders and software advocates.

Such masculinity was entangled within a political aesthetic of leadership. Nhan was the most visible and vocal leader of the community, serving as the public face for the free/open source software movement in Vietnam. During my first evening among these men, Nhan quoted Richard Stallman at several instances. He expressed deep admiration for Richard Stallman. When I said that perhaps he was Vietnam's own Richard Stallman he tilted his head and shrugged his shoulders as if to deflect such unworthy praise, however the slight smile on his face revealed just how flattered he really was. Nhan featured prominently on government television shows about free/open source software. He gave opening speeches at conferences asserting the future success of free/open source software in Vietnam. He was regarded as the paternal figurehead of the Vietnamese free/open source software community. As a leader, he eschewed purely technical debates and insisted that free/open source advocates needed to address issues of policy and society. Nhan embodied the aesthetics of leadership in Vietnam in his speech and rhetorical style. He regularly used the words like “struggle” (*đấu tranh*), “must” (*phải*), “movement” (*phong trào*), “revolution” (*cách mạng*), and “success” (*thành công*) in his public speeches. The fact of his military experience along with the militancy of his language conveyed an aesthetic of authoritative leadership.

Freedom and the boundaries of the political

As part of the new government mandate for free/open source software use at the end of 2009, Vietnamese free/open source software enthusiasts began including the word freedom (*tự do*) when referring to the software. In Vietnam, the word freedom is not a word used in everyday conversation. A Vietnamese free/open source software advocate explained to me that in the early days of free/open source software use in Vietnam during the late 1990s, Vietnamese people were

hesitant to use the term *tự do*. Huy was a middle-aged man and worked as a researcher and educator for an international educational institute. Huy further described that Vietnamese people previously preferred the more neutral term of open source software (*phần mềm mã nguồn mở*). Over time however, the term *tự do* became more socially acceptable. Nowadays, the common term for free/open source software in Vietnam matched the English phrase “free/open source software” (*phần mềm tự do mã nguồn mở*). The increased use of the word freedom coincided with the decrees that mandated free/open source software use within all government ministries. When I asked Huy how he became interested in free/open source software, he replied simply that he liked the ideas behind it and that they resonated with what he referred to obliquely as his own “political reasons” which he did not clarify.

While the phrase *tự do* had become commonplace in the social worlds of free/open source software, discussions of freedom remained limited. My time in Vietnam coincided with a precarious moment for bloggers and journalists in Vietnam. Beginning in 2009, the Vietnamese government increased its policing of online discussion while issuing new decrees that increased the sentences for those found criticizing the State and advocating for multi-party rule. In this fraught climate, notions of freedom carried grave political stakes and signified a serious politics in play. The phrase signaled a traversal into the explicit domain of the political however conversations about politics were reserved for intimate friends and trustworthy interlocutors. During everyday chit-chat, I often encountered the phrase “Well, that’s politics” (*Thì cái đó là chính trị*) that served to identify a transgression into questionable conversational territory. By demarcating the boundary of permissible speech, my interlocutors signaled that the conversation had encroached onto controversial domains that exceeded the speakable possibilities of polite conversation. I often struggled to recover my social footing after such a remark.

The domain of politics represented a cordoned-off space that required explicit and self-conscious movement. Yurchak's (2008) discussion of an anti-politics movement during the Soviet era explains this self-conscious movement in further detail. He describes the emergence of a group of artists towards the end of the Soviet era who absolutely refused political life. For these artists, this meant living life in the most banal of terms, in retreat from the political domain. They avoided talking about politics altogether. They did not resist government, they did not celebrate grand national accomplishments, they did not seek to undermine the Communist Party, they simply ignored politics altogether. They worked menial jobs so as to not contribute to political economic goals of contributing to Soviet society. They did not engage in activism to undermine the Soviet regime. This kind of banal living was an explicit decision on the part of these artists to refuse an imposed hyper-politicization of all domains of life. Yurchak argues that eschewing political life altogether, these people ignored a totalizing political subjectivity imposed by the State. Similarly in Vietnam, the State largely defines the domain of the political such that the use of political terms requires self-conscious affiliation with State. The political language of free/open source software in Vietnam—with words like “movement” (*phong trào*) and “revolution” (*cách mạng*)—were only possible through this affiliation. In accordance with this officially sanctioned domain, the culture of politics in Vietnam carried an aesthetics of gravitas. In contrast to the Soviet artists described above, free/open source software advocates plunged themselves headlong into the domain of the political. In part with the gravitas associated with ideals of nation and the language of freedom, the community of free/open source software attracted those who aspired to such gravitas; that is, leaders. The language of freedom in free/open source software demarcated a political community reserved for those who saw themselves as leaders. As a heavily bounded discursive space, the language of freedom and the

domain of politics pushed free/open source software beyond the political imaginations of everyday Vietnamese and only appealed to those who aspired to be leaders.

Evangelism and the rhetorical authority of leaders

This demarcation and traversal into the domain of politics shaped how free/open source software advocates in Vietnam argued for the moral significance of free/open source software. I describe their rhetorical practices as evangelism. Through this discussion of evangelism as a rhetorical style, I analyze a culture of leadership within free/open source software. Evangelism, with its origins in religious practice, allows speakers to perform and enact their positions as specifically moral leaders. Evangelism as a particular kind of rhetorical style thus aspires to impact, to change in action, and ultimately conversion of newcomers. Evangelism was one of the primary practices that constituted the Vietnamese free/open source software community. Evangelism consisted of organizing meetings, planning conferences, preparing and giving talks, all with the intent of promoting free/open source software to a wider public, in service towards building a national community. Many of the evangelicals of the Vietnamese free/open source software community were programmers and several were not. All conducted themselves as leaders.

Within information technology corporations, evangelists play an important role working to building a critical mass of users in the hopes of transforming singular technologies into common platforms and standards. Large technology companies like Apple, Adobe, Amazon, and many others employ individuals who serve as “Chief Evangelists” and work as public figures to create awareness for new products. Evangelists for free/open source software work in a similar fashion, bringing and converting new users. Popular free/open source software projects like

Ubuntu have dedicated teams of volunteers who work as evangelists for the project. One particular goal of evangelism within free/open source software is to demonstrate moral commensurability. McInerney (2007, 2009) explains specifically how free/open source software evangelists advocated for the use of these technologies among non-profit organizations by demonstrating moral affinity between these tools and the missions and values of these organizations. In turn, practicing technological evangelicals assert themselves as moral technological leaders, proselytizing in the hopes of bringing newcomers into the free software fold. As evangelists, free/open source software enthusiasts in Vietnam saw themselves as advocating for a national community. As part of a government sponsored television broadcast of free/open source software, one leader described the Vietnamese free/open source software community as an elite group of actors including the government, private companies, universities, and programmers. He further explained that “each free/open source software community exists within an international community and we develop together but the local community will struggle for those qualities that are particular to our country.” The term “struggle” along with the differentiation between the national and global free/open source software communities suggests that these evangelists saw themselves as bearing the responsibility of representing a national community. As free/open source software evangelists, this community of men saw themselves as leaders in a struggle for national technological independence. In turn, the rhetorical style of evangelism conformed to the aesthetics of political gravitas, authority, and leadership. At free/open source software events, these men stood at podiums and spoke into microphones with their prepared slides displayed on large screens. Meanwhile, potential converts sat quietly along benches and chairs. At the various universities in which these men spoke, hoping to convert students, banners hung at the tops of the stages with phrases such as “The Glorious Vietnamese

Communist Party Lives Forever.” Free/open source software events were formal engagements. Vietnamese advocates typically promoted free/open source software for myriad reasons including its low cost, individual ownership of data, ease of training and education, national independence from foreign companies, and participation in global communities. The reasons themselves were varied but the manner in which they argued for them suggested committed convictions and strident assuredness that conformed to the gravitas and moral inflection of freedom. Free/open source software appealed to these Vietnamese men as an artifact encased within a strident moral authority. This moral authority appealed to their dispositions and desires as leaders and followed the aesthetics of serious politics.

Through the rhetorical work of evangelism, the men of the free/open source software community in Vietnam aspired to a lofty authority. Authoritative language as aspiration became apparent as I worked with one young advocate. When I initially met Long, I was very impressed by his politeness. As a young man in his early 20s, Long was looking to find his way in the world. Instead of the printed t-shirts and flip flops I saw on other young men his age, Long preferred a more professional look which consisted of a short-sleeved button-up shirt tucked into pleated polyester slacks. This was the uniform for men much older than him. His clothing reflected a profound earnestness to exit his youth. He combed his hair in a neat side-part. Earlier that year, Long dropped out of college in frustration. He explained that at the very prestigious university in which he was enrolled, students regularly paid teachers as part of their schooling. Students personally paid to pass exams. Students paid teachers for after-school tutorial sessions to learn the required curriculum. Long found this corrupt education system morally reprehensible and dropped out of school as a result. His active refusal to participate in this morally suspect system was a refreshing departure from the ambivalent ennui I witnessed in other Vietnamese

students.

As Long and I worked together on various free/open sources software projects, I encountered this strident moralism in many other ways. He vehemently complained of the outlandish hair colors that had become popular among young Vietnamese hipsters. Such hair dye was definitively “un-Vietnamese” he declared. When a foreign visitor came to town and asked him for references for places to eat, he replied that he did not know since traditional Hanoians eat solely at home. He explained with a tone of condescension that the abundance of restaurants in Hanoi was due to outsiders from neighboring villages descending onto the city. Implicit in this statement was an indictment of non-Hanoians who violated the sanctity of the home-meal eaten with the family. He remarked at drivers along the road who violated traffic laws, mumbling and shaking his head when he saw a motorbike driver cruise past without a helmet.

Our work together consisted of planning and giving a talk on the One-Laptop-Per-Child project in Vietnam. We disagreed sharply on the tone of the talk. Long insisted that we had to outline a clear-cut strategy for implementation and success. My impulse was to speak in less strident terms, however Long had a different idea. Sitting in the air-conditioned computer lab at the local university, Long spoke quickly and vigorously insisted that what the project needed was a centralized group who would be responsible for localizing the project in its entirety. We debated this for several minutes. What became clear to me as we spoke was his insistence on success—a vision of teleological success that was singularly defined. Long was convinced that without a central group directing and organizing, the project would most certainly fail. As an aspiring advocate, Long felt that it was his job to provide a face of expertise and success.

In many ways, Long was not representative of other young men in Vietnam. His serious demeanor and stark moralism were atypical among the other young men I saw drinking in the

beer halls with friends. But Long's quirks were appropriate and conformed to the rhetorical habits of the Vietnamese F/OSS community. Like the other software evangelists, Long aspired to become a leader and an authoritative figure in the community. He very quickly learned to speak in the same fashion as the older men.

Free/open source software advocates aspired to authoritative discourse because it conformed to the political aesthetics of gravitas. Additionally, the language of freedom conjured long-standing historical ideals of national independence that serve as authoritative discourse within post-war Vietnamese society. Bakhtin states that authoritative discourse:

...determine[s] the very bases of our ideological interrelationships with the world, the very basis of our behavior...The authoritative word demands that we acknowledge it, that we make it our own; it binds us...we encounter it with its authority already fused to it. The authoritative word is located in a distanced zone, organically connected with a past, that is felt to be hierarchically higher. It is, so to speak, the word of the fathers (1981, 342).

Bakhtin's configuration of authoritative discourse is useful because it serves as an ideal to which to which these men strived. As a group of male leaders, they very much desired for ideals of freedom as expressed in free/open source software to become ideological foundation for guiding software work and software use in Vietnam more generally. The men of the free/open source software community in Vietnam strived to be the fathers of the authoritative discourse for free/open source software within their nation. Practices of evangelism thus became masculine performances of moral authority, of an elite class of male experts evangelizing to bring unknowing Vietnamese computer users into the fold. This paternalism further reinforced the space of free/open source software as a congregation of men. As with the ritualized forms of alcohol consumption, hierarchical positions shaped the ordering of the community. As a rhetorical style, evangelism amplified the traversal into serious politics that accompanies the language of freedom in Vietnam. Evangelism consisted of performances of technical superiority

and moral correctness. Evangelism allowed these men to serve the broader effort of building a national community by establishing themselves as leaders. Evangelism as a rhetorical style thus effectively produced them as leaders. Evangelism comprised performances of masculine leadership that reinforced paternalist and authoritative modes of speech. These performances were in part with larger performances of demonstrating the software's "success." As advocates for free/open source software and representatives of various software projects in Vietnam, their personal image of success reflected on their software as successful too.

Translating a nation and global invisibility

In addition to evangelism, translation was a vital practice around which this community of advocates formed. In 2009, the Ministry of Science and Technology established a fund of 124 million Vietnamese dong⁶ to finance the work of translation into Vietnamese several free/open source software packages including Ubuntu, Firefox, and OpenOffice.⁷ These three software packages had been identified and prioritized by the Vietnamese government in part with a 2008 decree that required information technology agencies within all government ministries to completely switch over to free/open source software alternatives. As such, the Ministry of Science and Technology solicited input from the Vietnamese free/open source software enthusiasts to translate these packages to meet their implementation deadlines by 2009. Working in collaboration with the government, Vietnamese free/open source software advocates localized these software packages through the work of translation while forming a community of leaders through practices of evangelism.

With this fund, members of the free/open source software community were paid by the

⁶ Approximately \$6,200 at the time.

⁷ Ubuntu is a Linux-based operating system, similar to Windows or OSX. Firefox is a free/open source internet browser, similar to Internet Explorer. OpenOffice is word-processing software, similar to Microsoft Office.

government to translate the software. They signed formal work contracts that obligated them to deliver fully translated software packages in exchange for remuneration. Participants were paid by units of text called strings, with each string consisting of short phrases such as “umbrella list,” “give yourself peace of mind,” “legal hostname,” or “You may see removable media like external hard drives or thumb drives listed.” These men were paid per string. Most of the translators were young men, computer science students at the local universities. One young man explained to me that he consistently earned about a little over 1 million dong per month.⁸

Translation was important to provide Vietnamese-language software for the majority of non-English speaking Vietnamese people. Translation was seen as a vital process for the success of free/open source software to increase the community of users. Like other technological evangelists, these men aimed to generate public awareness in the hopes of growing a community of users. As the focus of their attention and time, prioritizing translation made sense to the moral purpose of nation and freedom. However, the work of translation was problematic in that it did little to render the Vietnamese free/open source software community visible to the global community of free/open source software geeks. Free/open source software advocates regularly repeated the term success in a future tense that clearly indicated a concern with lagging behind the rest of the world. During their public talks, evangelists oscillated between confident performances of teleological success with bold statements like, “Free/open source software in Vietnam *will* be a success!” to more ambivalent discussions of the challenges to free/open source software in terms of unlicensed software and public unfamiliarity.

But why do I highlight this repetition and concern with success? The term success struck me as an odd way to think about and frame community—a successful community. The concerns

⁸ This amount was worth approximately \$50 at the time.

for success conveyed a linear progression that invited the additional question—by what measure is this success imagined and accounted for? The language of success reflected a deep-seated anxiety for validation and recognition from the broader global community however such recognition remained evasive. Many of the Vietnamese participants saw themselves as removed from the English-speaking open source community. One evening over beers, Thanh explained to me that the Vietnam Ubuntu group was not formally recognized by Canonical, the corporate arm that provides support services for various free/open source software projects, most notably Ubuntu.⁹ Canonical stipulated as a requirement for recognition that members regularly meet online via IRC to ensure a public record of meetings and activities. The young men of Hanoi's Ubuntu community, however, regularly met face-to-face in the myriad beer stalls that dotted the neighborhood surrounding the science university in southern Hanoi. Thanh said that since they were unable to provide records of their meetings via IRC, they thus could not be formally recognized as a localization team for Ubuntu. As he said this, Thanh shrugged his shoulders and gave an embarrassed smile.

In Thanh's embarrassment I saw a tension between the desire for recognition and the challenges of conforming to the optics of recognition. Thanh and his fellow Ubuntu users were invisible to the institute that conferred legitimacy. Moreover, the work of translation itself was invisible. As a global community, recognition, and legitimacy were only conferred and traded through the lingua franca of English. In efforts to seed and grow a community, members of the free/open source software community concentrated their time and energy on bringing the English-speaking world of free/open source software into Vietnamese. Such translation work was thus only visible and valuable to Vietnamese speakers, while invisible to the global

⁹ The broad ecology of free/open source software not only includes volunteer projects, but new relationships across several forms of social organization, including organized publics and social enterprises. For a more detailed overview of this ecology, please see Fish et. al (2011).

community at large. The work of translation provided little value to the wider world. The spirit of this lack of recognition was exemplified by an American free/open source software developer who visited Vietnam during my fieldwork. This gentleman worked for Canonical and happened to visit Vietnam for a vacation. When I asked if Canonical had any interest in Vietnam, he flatly said no and explained “They don’t contribute new code.” Such translation, while vital in the formation of a Vietnamese free/open source software community, was ancillary on the global stage to the more prestigious work of writing and contributing new code. This translation work did little to bring them recognition from the English-speaking free/open source software community.

As a specifically Vietnamese community, national identity as a quality of community departs from the social worlds of free/open source software that orient themselves around specific software projects. As a project, free/open source software is typically organized across national boundaries. Within a project-mode of technical work and social organization, nationalities fall by the wayside, comprising explicitly global and international communities. However, in Vietnam free/open source software was entangled within a broader effort to build a community based on national identity. Such community-building represented a reactive affirmation of national identity as the country continues its steady integration into global markets. Ideals of “community” and “nation” served as the moral imperatives for the free/open source software community in Vietnam. Vietnamese F/OSS evangelists had their individual projects they supported, including Firefox, Fedora, and Ubuntu. Nevertheless, these distinctions mattered little. These technological evangelists cohered into a community around national aspirations and it was this national identity that provided the common ground for their mutual affiliation. In turn, the Vietnamese free/open source software community defined themselves by

national identity in a way that departed from the project-based orientation of most free/open source software communities. This only reinforced their invisibility to the broader global free/open source software community.

A national community in continuity with the world

Through the practices of evangelism and translation, free/open source software advocates worked towards the formation of a national community. The language of freedom in F/OSS worked in conjunction with a political culture of exclusivity such that this software appealed to this group of men as a technology of moral authority and leadership. The practices of evangelism thus served to enforce their positions as leaders of a national community. Such practices also conformed to a broader culture of masculinity and paternalistic authority. In addition, practices of translation reinforced their limited presence among the global community. Both evangelism and translation drew hard boundaries around the Vietnamese community of F/OSS enthusiasts however, such boundary work was at odds with a broader climate of global integration. The heightened political language of F/OSS conformed to a now dated political aesthetics that had limited appeal among the younger generation of Vietnamese seeking status and legitimation through icons of global status. In fact, and paradoxically enough, many of these advocates viewed free/open source software as an opportunity to gain access to foreigners and outsiders. Long regularly sought out online forums in English to learn more about F/OSS. Other leaders regularly trolled online news sources about free/open source software to translate into Vietnamese. Others still eagerly sought opportunities to travel abroad to meet with English-speaking members of the global F/OSS community. This nationalism was not a rejection of foreign influence, as has been the case in the early days of independence. Instead, free/open

source software advocates worked towards bringing Vietnam into the global community.

The work of continuity among the world of free/open source software advocates in Vietnam comprises efforts for connection; that is, efforts to establish parity and commensurability with the wider global network of free/open source software advocates. However, such continuity is based on a complex negotiation of similarity with claims to universality. Through their evangelism and translation, these Vietnamese software advocates put forth what they viewed as a universal vision of morally appropriate software---free/open source software in service of the technical, economic, and social development of the country. Universality, as a desired quality of their moral beliefs, was integral to the practices of evangelism and translation that defined this community. This universality works in conjunction with a desire to connect with the global network of free/open source software community. The logic of continuity among the free/open source software advocates is the expression of a universalizing similarity that bridges between Vietnam and the rest of the world.

Chapter 6:

Similarity and Continuity at the Edge of Global Networks

One can always discover networks within networks; this is the fractal logic that renders any length a multiple of other lengths, or a link in a chain of further links. Yet analysis, like interpretation, must have a point; it must be enacted as a stopping place.

— Marilyn Strathern (1996)

Unraveling the moral dyad of free and freedom

Vietnam is located at a congregation of edges. Vietnam is located at the oceanic edges between the South China Sea and the Gulf of Thailand. Vietnamese see themselves sitting along the geographical faultlines between China and the rest of Southeast Asia. Vietnam is an edge between China and the rest of Southeast Asia. Vietnamese typically narrate their history as having fought off Chinese rule after one thousand years of colonialization. More recently, Eric Harms (Harms, 2011) has described a new edginess to life in Vietnam. Life along the perimeter of Ho Chi Minh City defies idealized categories of urban and rural that have guided city planning and land development to date. More importantly, Harms argues, the categorical ambivalence that accompanies this edginess brushes up against the very logics that render order. National tropes of modern life perpetuate a rural-urban binary. Hóc Môn residents narrate their life in terms of this dualism while life experienced at this edge challenges the fixity of such categories. Software along the global edge that is Vietnam analogously breaks apart the dyad of free and

freedom that has shaped the moral categories for understanding software.

For many in Vietnam, software mediates the cultural experience of global integration. Quite literally, software mediates the experience of screen life as the interface for hardware, cables, bits, and connections that proliferate behind the glass of our mobile phones and computers. More importantly, software mediates the experience of global integration by shaping the desires, anxieties, and aspirations around work and knowledge. Through the lens of modern technological development, the Vietnamese government has focused on promoting information technology industries in part with a vision of economic progress. Defined broadly as hardware, software, and digital content, the Vietnamese government in 2006 passed legislation to promote growth of the information technology industries. More recently, the development of software for local markets has grown at a faster rate than software development for export (*Hội Tin Học Thành Phố Hồ Chí Minh*, 2010). Globally, software is an artifact and a convergence point through which different groups interact. Software sits at the center of a complex web of technical developers, entrepreneurs, activists, artists, economic strategists, and government officials. Software presents itself in Vietnam as a cultural encounter with cultural seams at which people debate Vietnam's commensurability and parity with global networks of technology and capital.

In this dissertation, I have demonstrated how concepts of free and freedom become unraveled and take on new life as the artifact of software travels into new terrain. The cultural politics of transgression that bind values of free and freedom within software in Silicon Valley are reconfigured in Vietnam. First, the concept of free emphasizes the way unauthorized software, such as copied discs, are illicit and illegal reproductions. Such unauthorized copies are based on knowledge property and ownership regimes that govern the proper tracks on which copies can circulate. Unauthorized copies, either in disc or download form, reveal themselves as

transgressive only within such specific intellectual property and knowledge ownership regimes. The language of piracy thus underscores and assumes such transgression. The language of piracy has come to pervade how we think about unauthorized circulations, forming what I call a piracy paradigm in which software reproduction is limited to frameworks that define such reproduction as either moral rights or a moral wrong. As a moral wrong, unauthorized software reproduction is a form of property theft. As a moral right, software reproduction promotes knowledge access in the face of greedy corporate profit-seeking. Johns' (2009b) historical account of book piracy during the British colonial period describes the moral terms of debate at the time and shows how the terms of debate have changed little over time.

However, this piracy paradigm does not reflect the mundane reality of copied discs along Hanoi's Computer Street. In fact, many Vietnamese people are not aware that the discs they purchase at these shops are in fact illicit. The ethnography of a software disc shop presented here shows the work of supposedly free software. The piracy paradigm assigns transgression into these unauthorized circulations however, these vagrant circulations do not appear as such for people along Computer Street in Hanoi. Unauthorized software copies may be free in their download forms, however, in Vietnam the durable disc is the primary form for these unauthorized copies. Copied discs are vital stabilizing artifacts amid ongoing breakdown. These discs were produced, reproduced, and sold within cultures of shopkeeping in which copying was a logic through which people shared skill and expertise. Situated within broader networks of repair and retail, copied discs served as stabilizing points within ongoing computer breakdown. Additionally, the shop was an important stabilizing locale, a site in which Thuy imparted expertise and shared knowledge to consumers who struggled with patched-together systems. Simply getting software and machines to work required significant work and expertise. The

social world of unauthorized software discs worked towards replenishing connection amid continual rupture and breakdown. Unauthorized software discs thus circulated within a social world governed by logics of copying. Thus, the politics of transgression that bind free and freedom do not uphold as software travel into new terrain. Instead, values of similarity served as the moral frames through which Vietnamese shopkeepers and F/OSS advocates understood the significance of their actions. Establishing similarity was an especially important strategy for forging connections for those situated along the edges of global networks.

In the same manner that concepts of free were refracted among software's circulation in Vietnam, concepts of freedom took on new valence among free/open source software advocates in Vietnam. Among the social worlds of free/open source software, Vietnamese evangelists used the language of freedom as a moral framework to mediate the place of Vietnam within the global economy. The language of freedom presented software as an artifact that struck a balance between the integrity of the nation and its commensurability with a global community. The language of freedom in free/open source software recapitulated long-standing ideals of national independence; that the free/open source community worked in service towards the broader Vietnamese community. This national community was always ambivalently placed in subsumed relation to the global community.

Free/open source software thus represented a novel yet uncertain balance between national independence and global parity. With the ready-at-hand language of freedom in free/open source software, these men envisioned an alternate mode of technology-based work. They saw their concerns for society and nation as standing in contrast to entrepreneurs who they viewed as preoccupied with desires for personal wealth. Thus, through the language of morality, society, and nation, Vietnamese software evangelists viewed free/open source software as a

moral artifact that recuperated a lost moral authority that accompanied neoliberal development. Many of these male advocates worked as CEOs for their own companies or as senior employees for other software companies.

However, the technical work of producing software took a back seat to the evangelical work of building a national community. Free/open source software represented a morally correct way of making money from producing software that also included the moral work of building community. Free/open source software was thus morally correct in that it entailed contributions to nation and society. The language of freedom thus opened a space for explicit moral discourse. Through the moral authority of freedom, software, and evangelism, these men asserted themselves as leaders and advocates for a technologically mediated freedom in Vietnam. Their commitment to nation, society, and moral authority has significance in Vietnam due to the historical distrust of autonomous expertise in post-war Vietnam. Nguyen-Vo describes a history of pervasive politics in which “claims to autonomous apolitical logic in the realm of expertise were seen as direct attacks on the party-led State” (2008, 71). She argues that a defining characteristic of the political imaginary for Vietnamese independence was a rejection of a social realm separate from the state such that the Vietnamese Communist Party viewed all demands for autonomous expertise as a political threat, bourgeois in origins, thus foreign and imperial.

The assertion of politics in the domain of software work thus represented a conservative appeal. Discourses of freedom within the Vietnamese free/open source software community thus departed from an aesthetics of transgression and instead appealed to ideals of continuity, placing a Vietnamese community in relation to a global community, while recuperating the moral idealism that has since been lost to the bald greed of neoliberal development. Discourses of freedom thus allowed Vietnamese software advocates to maintain national coherence and

historical ideologies of pervasive politics in a climate of increasing global connection.

Global circulation of software serves as a prism to refract and separate the dual concepts of free and freedom. Free, understood as without cost, is typically understood as pirated software to highlight its illicit and unauthorized reproduction and circulation. Freedom, understood as a transgressive politics, builds on the first notion of free to defiantly embrace these illicit circulations as a political gesture against corporate property interests. In this configuration, free and freedom are closely intertwined. Such entanglements unravel in part with software's circulations. Unauthorized reproduction of software does not carry with it the weight of political transgression. The language of freedom in free/open source software represents a conservative appeal. The dyad of free and freedom is formed as part of a Euro-American configuration of transgressive politics and aesthetics in response to a specific history of knowledge property regulation.

Taken together, both copied software discs and free/open source software represent alternatives to authorized, proper, proprietary software. Purchasing proper software however is beyond the economic means of most Vietnamese people. Additionally, many scholars of media in the global South have argued against intellectual property law enforcement on moral grounds of unfair pricing (Liang, 2009; Sundaram, 2011). Liang and Sundaram put forth the idea of “pirate modernity” to describe the marginalization that results from the lack of access to proper proprietary software. This kind of marginalization however is often seen as illicit and illegal. Philip (2005) critiques this view, stating that such a perspective reifies the transformative capacity of knowledge work. From this view, transformation is valued as a dynamic that produces difference. In contrast to proper knowledge and proper software, copied discs and free/open source software in Vietnam produce similarity and continuity. Both copied discs and

free/open source software in Vietnam, with their logics of similarity and continuity, revealed the limits at which values of transformation and difference break down.

Similarity and continuity in a time of disconnection and difference

This dissertation has revealed the experience of living along the edges of global networks and software's role in mediating that experience. It was this edginess that provided the grounds on which Vietnam's software communities grew. Postcolonial studies provincializes knowledge regimes from the global North through the language of margins and borderlands, thus emplacing knowledge forms otherwise seen as universal and beyond place (Anderson, 2002). It is with this intuition that I have shown how software mediates the experience of globalization along the edges of networks. Network discourse typically emphasizes flowing, linking, connection, circulation (Castells, 1996) without consideration for the friction and ruptures that nevertheless ensue. For those of us located in the global North, such impediments to connection are annoying aberrations, departing from our assumed state of connectivity. Instead, among the social worlds of software in Vietnam, we see an overriding sense of disconnection and distance from the rest of the world. Feelings of distance were manifest and reinforced through the technical and material disconnections that comprised everyday life for most Vietnamese. Disconnection within the disc shop comprised the material forms of breakdown and decay. Disconnection among the evangelists comprised the feelings of distance from global English-speaking free/open source software communities. Disconnection and distance were expressions of Vietnam's place along the edges of global networks.

As a response to disconnection and distance, similarity and continuity were coterminous with the lived experience along the edges of global networks. Similarity and continuity consisted

of efforts to forge technical and social connections into global networks. This similarity and continuity contrasts with the transgression and rupture that undergirds the cultural economy of software within the centers of global networks. Transgression is a vital cultural logic for internet practice, exemplified in the social world of hackers (Coleman, 2012). Rupture serves an analogous logic to the social worlds of entrepreneurs. Notions of rupture are most evident among contemporary discourses of innovation-based entrepreneurialism in which creativity is seen as the primary engine of difference, producing novelty that successively supplants outdated forms, thus spurring economic growth and progress (Florida, 2002). At first blush, hackers and entrepreneurs seem at philosophical odds. Nevertheless, these two groups represent two sides of the same coin of difference. Difference in the world of hackers consists of an effervescent spirit of violation, law-breaking, a marked departure from mainstream politics, and what Coleman describes as an “audacious politics of pranking, transgression, and mockery” (2012:105). Difference among entrepreneurs similarly builds on an idea of disruptive change. Schumpeter depicts the figure of the entrepreneur as an individual agent embarking on novel economic activity, “as it is the carrying out of new combinations that constitutes the entrepreneur” (Schumpeter, 1934). Such novel acts of entrepreneurialism are attributed to the entrepreneur’s extraordinary capabilities, celebrated as a hero and economic savior who creates growth and prosperity (Bill, Jansson, & Olaison, 2010; Johansson, 2010). Innovation is thus a cycle of rupture and renewal, the never-ending result of hero figures pursuing destructive novelty, wealth, and economic momentum.

Through the dual idioms of transgression and rupture, difference forms the normative bedrock for the multiple worlds of software. Concepts of difference have expansive normative purchase across many domains of life, an unquestioned value that guides our thinking across

myriad banner-phrases such as creativity, diversity, knowledge, authorship, along with countless others. Difference in the worlds of software is most visible in the rhetoric of revolution and change and becomes the predominant prism through which we misrecognize similarity and continuity. Ferguson describes anthropological misrecognitions of African imitation.

For the late-20th-century anthropologist, the native who wanted "to become like you" had become not menacing, but embarrassing. The dominant anthropological solution to the embarrassment of African mimicry, I suggest, has been to interpret colonial- and postcolonial-era imitations of Europeans as some combination of parody and appropriation and to insist that such "mimesis" is therefore in fact a gesture of resistance to colonialism (Ferguson, 2002, 557).

In their commitments to difference, anthropologists are confused by African desires to be like them. Ferguson further argues that African desire for mimesis and similarity "is about claims to membership within modern society and negotiations of the rights proper to such membership" (Ferguson, 2002, 557). If one holds so dear the value of difference, to witness deeply held desires for sameness can only cause profound intellectual dissonance. The traditional emphasis on resistance and appropriation reveals a deep intellectual commitment to upholding difference above all else, even in the face of more complex demands for similarity and membership into global society. Similarity and continuity under conditions of difference represent deep desires for equality and recognition of mutual standing. The cultural politics of similarity and continuity thus not only include an affront onto values of difference but more importantly engender a recuperation of distance and legitimation of membership into global society. Similarity and continuity are entangled within this dynamic of recovering distance.

As such, similarity and continuity are expressions of Vietnam's place along the edges of global networks. Similarity and continuity are unthinkable outside of this experience of edginess. In Vietnam, conditions of disconnection provide the cultural valence for strategies for similarity. Additionally, ideals of continuity allow software advocates to strike a balance between

membership into global networks while maintaining national independence. Among the worlds of software, practices of copying, translation, and evangelism were important strategies to recuperate distance amid extended global networks. Copying, translation, and evangelism represented strategies to establish likeness and continuity within the broader global culture of software in which values of transgression, rupture, and difference pervade. Software represents an ideal global artifact through which people in countries like Vietnam aspire towards global participation and modern economic growth. Software embodies the desires and aspirations for membership to global society.

At the limit of networks

I propose a consideration for limits as a way to reflect on the concepts of hybrids and networks. Strathern (1996) states that hybrids and networks are Euro-American concepts. She argues further that

the rhetorical power of the hybrid rests on its critique of pure form, of which the archetype is the critique of the separation of technology from society, culture from nature, and human from non-human...the hybridized form appeals to a reality that pure forms would conceal (1996, 521).

The concepts of hybrids and networks were originally conceived in response to categorical rigidity. Hybrids and networks offered a theoretical antidote to the problems of purification and distillation that oversimplified the ontological heterogeneity of various phenomena like technology, society, culture, and nature. In turn, hybrids and networks offered a critique against the staid representation of these phenomena. Over time, these concepts have taken on moral certainty in the analysis of difference such that networks are celebrated as the culmination of strategies for difference. Escobar (2008) describes the network strategies of Afro-Columbian activists to argue further for the theoretical value of networks to accommodate differential

relations and emergent events. This whole-hearted embrace of networks challenges what Escobar describes as

binarisms, totalities, generative structures, preassumed unities, rigid laws, logocentric rationalities, conscious production, ideology, genetic determination, macropolitics (2008, 296).

Networks and hybrids instead celebrate

multiplicities, lines of flight, indetermination, tracings, movements of deterritorialization, and processes of reterritorialization, becoming, in-betweenness, morphogenesis, chaosmosis, rhizomes, micropolitics, and intensive differences and assemblages (2008, 296).

Lurking behind the curtains of hybrids and networks is a long-standing commitment to difference.

The concept of limits presented here offers a challenge to the undergirding logics of difference. First, the language of limits I propose here highlights the importance of place in digital culture more broadly. More specifically, the language of limits highlights the place of margins and edges along global networks to counter cultural homogenization narratives that often accompany portraits of globalization. Additionally, my attention to limits builds on studies of cultural appropriation in technology use. For example, Burrell's (2012) recent study of invisible Internet users in Ghana demonstrates the creative agency with which young Ghanaians render computers and the Internet meaningful for themselves. Her work sheds light on the how computers are tangled in the social worlds of religion, rumor, and scams in Ghana.

However, beyond identifying local and Vietnamese forms of software production, this dissertation interrogates the place of limits to challenge the prism of difference that often interpellates those on the margins. Difference has become the predominant moral frame through which we understand the value of work and knowledge. The language of hybrids and networks

shapes how we ask questions about life along edges and limits. Inadvertently, hybrids and networks reproduce the language of difference and further reify difference as a value to be achieved yet difference presents itself as a burden to overcome for those along global edges. The social worlds of software in Vietnam sit at the very limits of global networks. The logics of similarity and continuity within these worlds reveal the challenge of seeing difference everywhere to reveal the theoretical limits of hybrids and networks.

The idea of limits highlights the place of Vietnam along the edge of global circuits and networks. Moreover, I offer the idea of limits to redress the values of difference in network theories. The logics of similarity and continuity within the social worlds of copied discs and free/open source software in Vietnam pose a challenge to the values of transgression and rupture that support the moral authority of software in the global North. Both hackers and entrepreneurs understand themselves through the idioms of transgressions and rupture. Idioms of transgression and rupture support a broader ethos of difference in the global North. It is this ethos of difference that binds together the moral dyad of free and freedom in the stories we tell of software. However, neither disc shopkeepers nor F/OSS advocates in Vietnam subscribe to an ethos of difference. The logics of similarity and continuity we see here also poses a challenge to the values of difference, revealing the very limits at which values of transgression, rupture, and difference breakdown. This idea of limits leverages critical accounts of Vietnam and among the Vietnamese diaspora that identify Vietnam as unique place at the symbolic limits of how we come to understand freedom (Nguyen, 2012; Nguyen-Vo, 2008). Software in the place of Vietnam also represents the very limits of our theories of networks. Through consideration of the logics of similarity and continuity, this dissertation points to the limits of networks as theoretical frameworks as they seek to understand but simultaneously reify notions of difference. As

software continues to mediate the experience of globalization and modernization, the cultural politics of legitimate participation in global society are expressed around values of similarity, continuity, and difference. Along the edges of global networks, software condenses the conflicts and anxieties of Vietnam's proper place in a global hierarchy.

By introducing the language of limits in relation to cultures of software, this dissertation reveals the struggles of integrating into global networks and challenges connectivity as an already accomplished fact. The language of limits brings into relief the forms of breakdown, including the material breakdown of machines but also the moments of breakdown within networks. My main effort in this dissertation is to push the analysis of software beyond conceptions of difference and rupture and to consider seriously the work of producing similarity and continuity. Relocating software beyond its origins, this study inevitably invites questions of difference; that is, in what way is software different in Vietnam? My dissertation flips this question to consider instead how Vietnamese establish similarity. While the former question assumes a space of commonality against which difference is established, my dissertation inverts these assumptions to look closely at the conditions of disjuncture against which Vietnamese people worked to establish similarity and continuity. In this manner, difference is a barrier to overcome, not a value to realize. The two cases of software in Vietnam demonstrate the cultural politics of software as they are articulated around normative frameworks of similarity and difference. As software mediates the experience of globalization, the approach to software in this dissertation cuts past the assumptions of software's causal relationship to progress, growth, and development. Such an approach also challenges the narratives of technologically determined political liberation that have emerged in light of the recent political upheavals of the Arab Spring. This dissertation has thus revealed the social life of software at the edges of global

networks. This place of edge also reveals the very limits of the cultural logics of difference that sustain the dialectic of free and freedom in the global North. At this edge, this dyad breaks apart. Along the edges of global networks, software condenses larger conflicts over Vietnam's proper place in the global hierarchy of knowledge and work.

This dissertation contributes to the field of information studies in several ways. Empirically, it has studied the role of software in mediating affinities to global communities. This dissertation contributes a global and cultural perspective to existing bodies of scholarship that examine the intersections of technology, work, and knowledge. By looking at the distributed phenomenon of software across multiple sites in Vietnam, this dissertation contributes methodologically to information studies through a network approach to fieldwork. My approach to fieldwork in this dissertation has buildt on qualitative and ethnographic approaches to the study of information phenomenon and has extended these approaches to explore information and their technologies across myriad institutions, organizational boundaries, and private settings. This approach to fieldwork is deeply immersive and appropriate to my inquiry into the role of software in mediating membership into global society. Software in a place like Vietnam is an important site for the cultural politics of legitimation as Vietnamese people seek to close in on the distance they feel between themselves and the rest of the world. By looking at multiple forms of software in Vietnam through the lens of global legitimation, this dissertation contributes to network theories in several ways. First, through an analysis of forms of continuity and similarity, it identifies the forms of difference that uphold network theories. Second, through an analysis of the work of material repair in copied software discs and the work of establishing national connectivity in global networks among free/open source software advocates, this dissertation considers the ways that networks break down to examine where and how flows and connection

stop. My emphasis on breakdown and rupture in this manner explores the way connectivity is intimately tied to processes of legitimation in global networks. In turn, this dissertation brings a postcolonial perspective to information studies which examines the relationships between discourses of difference and forms of cultural legitimation (Chow, 2010) and also contributes to discussions of social justice, equity, and ethics in information studies.

Similarity, difference, universality, and particularity: Some theoretical propositions

This dissertation offers some theoretical considerations for the relationship between similarity and difference as moral regimes that shape global information technologies like software. The two social worlds of software studied here represent domains governed by cultural logics of similarity and continuity. In this manner, both the software shopkeepers and the software evangelists aspired towards affiliation and connection: shopkeepers wanted to demonstrate their similarity to other shops along the trade street while software advocates wanted to demonstrate their affinity to the international community of free/open source software advocates. These two social worlds differed with respect to a moralizing and universalizing quality. The community of free/open source software advocates believed in the universality of free/open source software. The Vietnamese software advocates, through their evangelism and translation, put forth what they viewed as a universal vision of morally appropriate software--- free/open source software in service to the technical, economic, and social development of the country. Universality, as a desired quality of their moral beliefs, was integral to the practices of evangelism and translation that defined this community. Both social worlds of copied discs and free/open source software share a broader ethos of affinity, understood as either similarity or continuity; however, they are differentiated with regard to claims to universality. The people

within the entrepreneurial community of the shop, however, neither shared such moralism nor such desires for universalism. As shopkeepers, they were concerned primarily with their ability to sustain their livelihoods and families.

As Vietnam becomes increasingly entangled into global circuits of capital, knowledge, and work, this pervasive shopkeeping entrepreneurialism is delegitimized and called into question. Such entrepreneurialism is increasingly depicted as “informal” by investors and CEOs, in spite its pervasiveness. Shopkeeping entrepreneurialism is lumped together with street merchants, who move throughout the city carrying and selling goods. This language of informality used to narrate the range of economic and entrepreneurial practices in Vietnam serves to delegitimize these practices in attempts to dismantle such entrepreneurial networks. Through this, proponents for neoliberal economic development differentiate these entrepreneurial practices from formal and legitimate entrepreneurial practices that conform to models of Silicon Valley-style start-up organizations. Proponents of neoliberal economic development in Vietnam share the same universalism and moralism of the free/open source software advocates; however, they differ in their views regarding the role of the State in the country’s economic development. Nevertheless, from the universalizing perspectives of free/open source software evangelists and start-up communities, the social worlds of shopkeeping in Vietnam constitute a form of illegitimate and thus pirate entrepreneurialism. As an anti-entrepreneurial figure, the pirate entrepreneurialism of the shopkeeper represents a particularly Vietnamese configuration which stands in contrast to the aspirations for universality among the advocates and neoliberal entrepreneurs. As a contrast to this universality, this pirate entrepreneurialism is seen as local and thus *particular* to Vietnam. As an anti-figure to this universality, pirate entrepreneurialism is interpellated as particular.

Such interpellation is only possible through the universalizing discourses of difference among Silicon Valley entrepreneurs as they seek to bring countries like Vietnam into the neoliberal global economy through the development of information technologies like software and mobile phone applications. These discourses of difference combine entrepreneurialism with notions of creativity, technical prowess, and progress. Difference, creativity, technical prowess, and progress conform to Schumpeter's vision of the entrepreneur, with the attendant discourses of rupture and renewal. Entrepreneurialism as seen through the lens of creativity and technical prowess amplifies this logic of difference. Entrepreneurial success is viewed as the penultimate expression of creative genius and technical acumen. In turn, this entrepreneurial success is naturalized, viewed as the objective result of demonstrable difference in the marketplace of ideas and products. This celebration and naturalization of difference is best captured in Apple's "Think Different" marketing campaign of the late 1990s. Posters for this campaign included this phrase alongside images of historical luminaries such as Mahatma Gandhi, Amelia Earhart, Pablo Picasso, Cesar Chavez, and many others. The ad campaign celebrated these people as mavericks, vanguards, and rebels. Difference was celebrated as "bucking the system," now works to create burdens for budding entrepreneurs, compelling them demonstrate and perform an aesthetic of authentic rebellion. This singular vision of difference—naturalized as based on merit, skill, and authentic genius—now forms the normative bedrock for universal claims of creative work throughout the world.

Across these myriad forms of software are different configurations of similarity, difference, universality, and particularity. These multiple configurations represent multiple and competing moral regimes that shape how people come to understand work, knowledge, and value in information technologies like software. These moral regimes bring together notions of

similarity, difference, universality, and particularity in different ways. By identifying these multiple configurations, this dissertation identifies the contemporary moment in which difference has taken on a universalizing tendency. Such universalizing is contradictory to the articulated moral claims of difference in theories of networks. However, in a climate of global circulation, difference as a universal claim presents itself as a dilemma in the face of desires for parity, similarity, and equality. In the face of global integration through the development of information technology industries, both the pirate entrepreneurialism of shopkeeping and the nationalism of free/open source software in Vietnam comprise efforts to establish connection into the global network. I neither view such efforts to establish connection—through similarity and continuity—as acts of resistance nor as acts of imitative false consciousness. The moral regime of universalized difference in the social worlds of Silicon Valley entrepreneurs stands in contrast to the celebration of local difference; that is, *particular* difference among invocations of indigeneity, tradition, and cultural authenticity within discourses of marginalization. This difference, as an expression of particularity and locality, contrasts with the universal difference promoted by the entrepreneurs of Silicon Valley. Table 6.1 summarizes the multiple configurations of moral regimes.

	Similarity	Difference
Universality	Free/open source software as nation-building	Silicon Valley entrepreneurialism
Particularity	Pirate entrepreneurialism	Ethnic authenticity, tradition, indigenous knowledge

Table 6.1 Moral regimes of similarity, difference, universality, and particularity

By identifying these moral regimes in the multiple social worlds of software, this dissertation offers new insight into the dynamics of legitimation as countries situated along the edges of global networks seek to bring themselves into commensurability with global circuits of capital, work, and knowledge. Such dynamics manifest in everyday struggles as aspiring Vietnamese entrepreneurs learn to perform the correct kinds of creative and entrepreneurial difference while learning to desire appropriate forms of wealth. These dynamics also manifest in consumer struggles to discern between the illicit and licit goods of pirate entrepreneurialism.

This breakdown of similarity, difference, universality, and particularity contributes to network theories since these moral regimes establish the frameworks that define legitimate membership and participation into contemporary global networks and in turn regulate and connection. These myriad moral regimes define the parameters and limits of networks and serve to differentiate, prioritize, and disambiguate certain nodes over others. The kinds of copying that help to connect those on the margins is increasingly delegitimized as piratical. This delegitimization represents an effort to cut and stop the traffic at these illicit yet pervasive and vital points. The entrepreneurial network of the shop and trade street serves media markets that

are often ignored by the large media corporations of the global North, representing market failures from the point of view of licit trade. Media companies are unable to sell their goods at designated profitable price points and thus ignore these removed markets altogether. The extant entrepreneurial communities of merchants and shopkeepers provide important and necessary services for consumers who otherwise have little option for media access. However, as Vietnam becomes increasingly entangled into global consumer circuits, the traffic and flow at the site of the copy shop along the computer trade street represents an extant trade network that is increasingly delegitimized as illicit and unauthorized.

The cultural logics of similarity and continuity identified here in conjunction with logics of difference, universality, and particularity. Together they provide the conceptual boundaries that shape the moral regimes within the social worlds of software along the edges and limits of global networks. By demonstrating how these moral regimes regulate traffic across networks and legitimate certain places over others, this dissertation brings a postcolonial perspective to network theory through careful attention to positionality and hierarchy. In Vietnam, the legacy of inequality under colonial regimes now intersects with persistent inequalities of neoliberal economic development along with the frothy exuberance of technological aspiration. The place of Vietnam is an ideal site to examine the intersection of these vectors. Through the prism of networks, legitimation is synonymous with connection. Such an understanding of the forms of differentiation, hierarchization, and positionality in networks is important as a critique of the overall language of flow and circulation. These theoretical propositions concerning over the moral regimes and configurations over similarity, difference, universality, and particularity offers a way to consider the politics of network breakdown, rupture, and disconnection.

Freedom in the worlds of software in Vietnam takes on renewed significance in the way

it is mobilized as a universalizing discourse both at the service of difference as well as similarity. Freedom is part of the moral regime of Silicon Valley entrepreneurs, working in concert with ideals of creativity and entrepreneurialism. Freedom is also a part of the moral regime of free/open source software advocates, working in conjunction with ideals of nation. The double inflection of freedom not only demonstrates its malleability but more importantly speaks to the importance of freedom in rendering commensurability in global networks, both through logics of difference *and* similarity.

These theoretical propositions regarding the configurations of difference, similarity, universality, and particularity as moral regimes not only contribute to theories of networks, but also directly contribute to other scholarly debates, identified earlier in the literature review. First, these theoretical propositions contribute to cultural studies of software more generally as an example of inquiry into the cultural politics of software in global circulation. This dissertation contributes an understanding of disconnection and breakdown in a supposedly fluid and connected world. Second, this dissertation also contributes to studies of piracy through a thick description of the entrepreneurial communities that sustain copying. Such thick description is especially urgent as piracy becomes the predominant framework for analyzing and thinking about copying. This dissertation thus offers an analysis of copying in a world where such practices are seen as morally viable. Third, this study also contributes to Vietnam Studies through an analysis of freedom through the intersecting vectors of neoliberal economic development and information technology. It specifically builds on prior analysis of the contradictions and paradoxes of freedom by analyzing how the discourse of difference is refracted through struggles over similarity, difference, connection, and inequality in information technology.

Future scholarship

This dissertation is part of much more extensive project into the social worlds of software in Vietnam. Along with copied software discs and free/open source software analyzed here, the larger project also considers the social life of iPhones to reflect on processes of jailbreaking and hacking as analytic frameworks for access and entry into authorized global networks. It also considers the nascent community of start-up organizations in Vietnam, which represent a particular configuration of work, capital, knowledge, and temporality. As part of the fieldwork, I spent several months working in a mobile phone application start-up company as well as working with organizers of the start-up community. My future work will analyze the work of building this start-up community as a process of becoming and connection with global networks. Software plays an important role in mediating Vietnam's connection and membership into global networks. It orients the moral regimes that shape how Vietnamese will come to evaluate work, knowledge, and money. Through software, the extant local entrepreneurial networks are increasingly hailed and interpellated as insufficient, inappropriate, and illegitimate. Such future work will continue to analyze the varying configurations of similarity, difference, universality, and particularity to identify the ruptures and connections as Vietnamese people navigate their membership into global society. Such a perspective of the ruptures and connections will offer a critique of technologically-driven neoliberal development. My future work will further explore the ways that differentiation within technology-driven neoliberal development is racially inflected. The history of racial differentiation played an integral role in the colonialization of Vietnam. As Vietnam renews its membership into global circuits in this moment of neoliberal integration, racialized notions of labor and knowledge will define the optics of legitimation and

recognition for young Vietnamese looking to modernize and join global society. Combining postcolonial approaches to the study of race with network studies will reveal the hierarchies and ruptures within global networks.

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Bibliography

- Agre, P. (2002). Cyberspace as American culture. *Science as Culture*, 11(2), 171–189.
- Agre, P. (2003). P2P and the promise of Internet equality. *Communications of the ACM*, 46(2), 39–42.
- Anderson, W. (2002). Introduction: Postcolonial technoscience. *Social Studies of Science*, 32(5-6), 643–658.
- Approving the overall project on application and development of open-source software in Vietnam in the 2004-2008 period. Pub. L. Decision No. 235/QD-TTg. Ministry of Science and Technology, Vietnam. (2004).
- Bakhtin, M. (1981). *The dialogic imagination: Four essays by M.M. Bakhtin*. (M. Holquist, Ed.). Austin, TX: University of Texas Press.
- Basso, K. (1996). Wisdom sits in places. In S. Feld & K. Basso (Eds.), *Senses of place* (pp. 53–90). Santa Fe, NM: School of American Research.
- Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. New Haven, CT: Yale University Press.
- Bill, F., Jansson, A., & Olaison, L. (2010). The spectacle of entrepreneurship: A duality of flamboyance and activity. In F. Bill, B. Bjerke, & A. Johansson (Eds.), *(De)Mobilizing the entrepreneurship discourse: Exploring entrepreneurial thinking an action* (pp. 163–179). Cheltenham, UK: Edward Elgar Publishing.
- Bowker, G., & Star, S. L. (2000). *Sorting things out: Classification and its consequences*. Cambridge, MA: MIT Press.
- Burawoy, M. (2000). Introduction: Reaching for the global. In M. Burawoy (Ed.), *Global*

- ethnography: Forces, connections, and imaginations in a Postmodern world* (pp. 1-40).
Berkeley, CA: University of California Press.
- Burrell, J. (2009). The field site as network: A strategy for locating ethnographic research. *Field Methods*, 21(2), 181–199.
- Burrell, J. (2012). *Invisible users: Youth in the Internet cafes of urban Ghana*. Cambridge, MA: MIT Press.
- Castells, M. (1996). *The rise of the network society* (2nd Edition.). Oxford, UK: Blackwell.
- Chan, A. (2004). Coding free software, coding free states: Free software legislation and the politics of code in Peru. *Anthropological Quarterly*, 77(3), 531–545.
- Chan, A. (2007). Retiring the network spokesman: The poly-vocality of Free Software networks in Peru. *Science Studies*, 20(2), 78–99.
- Chow, R. (2010). The postcolonial difference. In *The Rey Chow Reader* (pp. 20–29). New York, NY: Columbia University Press.
- Coleman, E. G. (2012). Phreaks, hackers, and trolls: The politics of transgression and spectacle. In M. Mandiberg (Ed.), *The social media reader* (pp. 99–119). New York, NY: New York University Press.
- Coleman, G. (2004). The political agnosticism of Free and Open Source Software and the inadvertent politics of contrast. *Anthropological Quarterly*, 77(3), 507–519.
- Coleman, G. (2005). NGOs in the developing world. In J. Karaganis & R. Latham (Eds.), *The politics of open source adoption* (pp. 60–68). New York, NY: Social Science Research Council.
- Coleman, G., & Golub, A. (2008). Hacker practice: Moral genres and the cultural articulation of liberalism. *Anthropological Theory*, 8(3), 255–277.

- Condry, I. (2004). Cultures of music piracy: An ethnographic comparison of the US and Japan. *International Journal of Cultural Studies*, 7(3), 343–363.
- Coombe, R. J., & Herman, A. (2004). Rhetorical virtues: Property, speech, and the commons on the World-Wide Web. *Anthropological Quarterly*, 77(3), 559–574.
- Day, R. (2001). *The modern invention of information: Discourse, history and power*.
- Deleuze, G. (1983). Plato and the simulacra. *October* (72), 45-56.
- Dent, A. S. (2012). Piracy, circulatory legitimacy, and neoliberal subjectivity in Brazil. *Cultural Anthropology*, 27(1), 28–49.
- Elyachar, J. (2005). *Markets of dispossession: NGOs, economic development, and the state in Cairo*. Durham, NC: Duke University Press.
- Escobar, A. (1995). *Encountering development*. Princeton, NJ: Princeton University Press.
- Escobar, A. (1997). Anthropology and development. *International Social Science Journal*, 49, 497–516.
- Escobar, A. (2001). Culture sits in places: Reflections on globalism and subaltern strategies of localization. *Political Geography*, 20(2), 139–174.
- Escobar, Arturo. (2008). *Territories of difference: Place, movements, life, redes*. Durham, NC: Duke University Press.
- Ferguson, J. G. (2002). Of mimicry and membership: Africans and the “new World Society.” *Cultural Anthropology*, 17(4), 551–569.
- Fish, A., Murillo, L. F. R., Nguyen, L., Panofsky, A., & Kelty, C. M. (2011). Birds of the Internet: Towards a field guide to the organization and governance of participation. *Journal of Cultural Economy*, 4(2), 157.
- Florida, R. L. (2002). *The rise of the creative class: And how it's transforming work, leisure,*

- community and everyday life*. New York, NY: Basic Books.
- Fujimura, J. H. (1992). Crafting science: standardized packages, boundary objects, and “translation.” In A. Pickering (Ed.), *Science as practice and culture* (pp. 168–211). Chicago, IL: University of Chicago Press.
- Gupta, A. (1998). *Postcolonial developments: Agriculture in the making of modern India*. Durham, NC: Duke University Press.
- Gupta, A., & Ferguson, J. (1997). Discipline and practice: “The field” as site, method, and location in anthropology. In A. Gupta & J. Ferguson (Eds.), *Anthropological locations* (pp. 1–46). Berkeley, CA: University of California Press.
- Haraway, D. (1991). *Simians, cyborgs, and women*. New York, NY: Routledge.
- Haraway, D. (1997). *Modest_Witness@_Second_Millennium. FemaleMan©_Meets_OncoMouseTM*. New York, NY: Routledge.
- Harding, S. (2008). *Sciences from below*. Durham, NC: Duke University Press.
- Harms, E. (2011). *Saigon’s edge: On the margins of Ho Chi Minh City*. Minneapolis, MN: University of Minnesota Press.
- Hayden, C. (2005). Bioprospecting’s representational dilemma. *Science as Culture*, 14(2), 185.
- Hine, C. (2007). Multi-sited ethnography as a middle range methodology for contemporary STS. *Science, Technology & Human Values*, 32, 652–671.
- Hội Tin Học Thành Phố Hồ Chí Minh. (2010). *Bức tranh các doanh nghiệp phần mềm và dịch vụ công nghệ thông tin*. Unpublished presentation slides. [Ho Chi Minh City Computer Association. *A picture of business software and information services*].
- Jackson, S. J., Pompe, A., & Krieshok, G. (2012). Repair worlds: Maintenance, repair, and ICT for development in rural Namibia. In *Proceedings of the ACM 2012 conference on Computer*

- Supported Cooperative Work* (pp. 107–116). New York, NY, USA: ACM.
- Jenkins, H. (2006a). *Convergence culture*. New York, NY: New York University Press.
- Jenkins, H. (2006b). Quentin Terentino's Star Wars?: Digital cinema, media convergence, and participatory culture. In M. Durham & D. Kellner (Eds.), *Media and cultural studies* (2nd Edition, pp. 547–576). Oxford, UK: Blackwell Publishing.
- Johansson, A. (2010). Innovation, creativity, and imitation. In F. Bill, B. Bjerke, & A. Johansson (Eds.), *(De)Mobilizing the entrepreneurship discourse: Exploring entrepreneurial thinking and action* (pp. 128–143). Cheltenham, UK: Edward Elgar Publishing.
- Johns, A. (2009a). Piracy as business force. *Culture Machine*, 10, 44–63.
- Johns, A. (2009b). *Piracy: The intellectual property wars from Gutenberg to Gates*. Chicago, IL: University of Chicago Press.
- Kagai, B., & Kimolo, N. (2005). FOSSFA in Africa: Opening the door to state ICT development agendas - A Kenyan case study. In J. Karaganis & R. Latham (Eds.), *The politics of open source adoption* (pp. 48–52). New York, NY: Social Science Research Council.
- Karaganis, J., & Latham, R. (2005). Introduction. In J. Karaganis & R. Latham (Eds.), *The politics of open source adoption* (pp. 1–6). New York, NY: Social Science Research Council.
- Kelty, C. M. (2008). *Two bits: The cultural significance of free software and the Internet*. Durham, NC: Duke University Press.
- Kim, E. (2005). F/OSS adoption in Brazil: The growth of a national strategy. In A. Karaglani & R. Latham (Eds.), *The politics of open source adoption* (pp. 53–59). New York, NY: Social Science Research Council.
- Larkin, B. (2008). *Signal and noise: Media, infrastructure, and urban culture in Nigeria*. Durham, NC: Duke University Press.

- Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. In W. E. Bijker & J. Law (Eds.), *Shaping technology/building society: Studies in sociotechnical change* (pp. 225–258). Cambridge, MA: MIT Press.
- Latour, B. (2005). *Reassembling the social*. Oxford: Oxford University Press.
- Lessig, L. (2004). *Free culture*. New York, NY: Penguin.
- Liang, L. (2009). Piracy, creativity and infrastructure: Rethinking access to culture. *SSRN eLibrary*. Retrieved May 13, 2013 from <http://ssrn.com/abstract=1436229>
- Liu, A. (2004). *The laws of cool: Knowledge work and the culture of information*. Chicago, IL: University of Chicago Press.
- Lockhart, G., & Lockhart, M. (Trans.). (1996). *The light of the capital: Three modern Vietnamese classics*. Oxford, UK: Oxford University Press.
- Marcus, G. (1995). Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Reviews in Anthropology*, 24(1), 95–117.
- Marcus, G., & Fischer, M. (1986). *Anthropology as cultural critique: An experimental moment in the human sciences*. Chicago, IL: University of Chicago Press.
- Marques, I. (2005). Cloning computers: From rights of possession to rights of creation. *Science as Culture*, 14(2), 139–160.
- McInerney, P.-B. (2009). Technology movements and the politics of Free/Open Source Software. *Science, Technology, and Human Values*, 34(2), 206–233.
- McNeil, M. (2005). Introduction: Postcolonial technoscience. *Science as Culture*, 14(2), 105–112.
- Miller, D., & Slater, D. (2000). *The Internet: An ethnographic approach*. Oxford, UK: Berg Publishers.
- Nguyen, H. T. (2002). *Economic history of Hanoi*. Hanoi, Vietnam: National Political Publishing

- House.
- Nguyen, M. T. (2012). *The gift of freedom: War, debt, and other refugee passages*. Durham, NC: Duke University Press.
- Nguyen-Vo, T.H. (2008). *The ironies of freedom: Sex, culture, and neoliberal governance in Vietnam*. Seattle, WA: University of Washington Press.
- Nguyễn, U.V. (1995). *Hà Nội: Nửa đầu thế kỷ XX [Hanoi: First half of the 20th Century]* (Vol. 1). Hanoi, Vietnam: Hanoi Publishers.
- O'Mahony, S. (2006). Community software in a commodity world: Designing a value in rational form. In M. Fisher & G. Downey (Eds.), *Frontiers of capital* (p. 237–266). Durham, NC: Duke University Press.
- Ong, A. (1999). *Flexible citizenship: The cultural logics of transnationality*. Durham, NC: Duke University Press.
- Ong, A. (2006). *Neoliberalism as exception: Mutations in citizenship and sovereignty*. Durham, NC: Duke University Press.
- Ong, A., & Collier, S. J. (2005). *Global assemblages: Technology, politics, and ethics as anthropological problems*. Oxford, UK: Blackwell Publishers.
- Pang, L. (2004). Piracy/privacy: The despair of cinema and collectivity in China. *boundary 2*, 31(3), 101–124.
- Philip, K. (2003). *Civilizing natures*. New Brunswick, NJ: Rutgers University Press.
- Philip, K. (2005). What is a technological author? The pirate function and intellectual property. *Postcolonial Studies*, 8(2), 199–218.
- Raymond, E. (1998). The cathedral and the dazaar. *First Monday*, 3(3). Retrieved May 13, 2013 from http://www.firstmonday.org/issues/issue3_3/raymond/

- Russill, C. (2008). Sublimity and solutions: Problematization in ICT for development perspectives. *Communication and Critical/Cultural Studies*, 5(4), 383–403.
- Schumpeter, J. (1934). *The theory of economic development*. New Brunswick, NJ: Transaction Publishers.
- Simone, A. M. (2006). Pirate towns: Reworking social and symbolic infrastructures in Johannesburg and Douala. *Urban Studies*, 43(2), 357–370.
- Star, S. L., & Griesemer, J. R. (1989). Institutional ecology, “translations” and boundary objects: Amateurs and professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39. *Social Studies of Science*, 19(3), 387–420.
- Strathern, M. (1996). Cutting the network. *The Journal of the Royal Anthropological Institute*, 2(3), 517–535.
- Suchman, L. (2002). Practice-based design of information systems: Notes from the Hyperdeveloped World. *The Information Society*, 18(2), 139.
- Sundaram, R. (1999). Recycling modernity: Pirate electronic cultures in India. *Third Text*, 13(47), 59–65.
- Sundaram, R. (2009). Revisiting the pirate kingdom. *Third Text*, 23(3), 335–345.
- Sundaram, R. (2011). *Pirate modernity: Delhi’s media urbansim*. London, UK: Routledge.
- Takhteyev, Y. (2012). *Coding places: Software practice in a South American City*. Cambridge, MA: MIT Press.
- Thomas, M. (2001). Public spaces/Public disgraces: Crowds and the state in contemporary Vietnam. *Sojourn: Journal of Social Issues in Southeast Asia*, 16(2), 306–330.
- Traweek, S. (1992). Border crossings: Narrative strategies in science studies and among physicists in Tsukuba Science City, Japan. In A. Pickering (Ed.), *Science as practice and culture* (pp.

- 429–461). Chicago, IL: University Of Chicago Press.
- Tuan, Y.F. (1977). *Space and place: The perspective of experience*. Minneapolis, MN: University of Minnesota Press.
- Turner, F. (2006). *From counterculture to cyberculture: Stewart Brand, the Whole Earth Network, and the rise of digital utopianism*. Chicago, IL: University Of Chicago Press.
- Turner, F. (2009). Burning man at Google: A cultural infrastructure for new media production. *New Media Society*, 11(1-2), 73–94.
- Vann, E. F. (2005). Domesticating consumer goods in the global economy: Examples from Russia and Vietnam. *Ethnos*, 70(4), 465–488.
- Weber, S. (2004). *The success of open source*. Cambridge MA: Harvard University Press.
- World Bank. (2011). *Vietnam Development Report 2012: Market Economy for a Middle-Income Vietnam*.
- World Bank in Vietnam. (2012). *Well begun, not yet done: Vietnam's remarkable progress on poverty reduction and the emerging challenges*. Hanoi, Vietnam.
- Xiang, B. (2007). *Global "body shopping": An Indian labor system in the information technology industry*. Princeton, NJ: Princeton University Press.
- Yurchak, A. (2008). Necro-Utopia. *Current Anthropology*, 49(2), 199–224.