DIGITAL TEMPORALITIES
TEMPORAL PLASTICITY IN THE AGE OF INTERNET

By

Cen Cheng

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

American Studies

2011

ABSTRACT

DIGITAL TEMPORALITIES
TEMPORAL PLASTICITY IN THE AGE OF INTERNET

By

Cen Cheng

The computer and the internet are taking an essential role in daily communication. The temporalities associated with them, or the digital temporalities are also taking shape as an element in one's daily temporal experiences. The paper sets out to explore digital temporalities and serves as a timely study in the emerging field. The paper discovers that the digital temporalities reflect the post-modernity and plasticity of the internet, which are further marked by their temporal features of timelessness, meaninglessness and the state of mix-up. The plasticity of the internet is also realized in the erosion of a series of pre-existing boundaries. The digital temporalities are also affected by the trend of convergence in the internet, which leads to the process of remediation and multiple mediation. Primary examples of discussion are the social networking sites (SNSs) which are most demonstrative of the temporal features of the internet, and special attention is given to Facebook which headquarters in the US and Renren which headquarters in China. The paper aims to demonstrate the theme by making comparative analysis between the two SNSs.

ACKNOWLEDGEMENTS

My sincerest appreciation goes to my committee chair, Dr. Ann Larabee, who has supported me with her invaluable guidance, generous advice and sharp comments along the way. Her dedication and patient nurturing have made the stressful process of writing a much more pleasant and rewarding experience for me.

My cordial thanks also go to Dr. Douglass Noverr, Dr. David Stowe, and Dr. Karl Schoonover, from whose continuous help I am benefiting every day. I know their encouragement and confidence in me will always keep me going.

I would also like to thank my family, my friends and Ronghui, who have simply become my bare necessities in life. Their unswerving support for my scholarship at a time of general hardship for academia is the best thing that could happen.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1 INTRODUCTION

Our sense of time has changed forever after the introduction of the computer and the internet. On the one hand, clock time has been substituted by “internet time”, or “absolute time” (Lee and Liebenaum 43), which suggests that people are expected to experience the same time once they are connected online and that the traditional geographically-based time zones have been much obsolescent. On the other hand, lived time has also been altered greatly with the new digital medium, since more and more time is spent online and on the computer. Nowadays, one could accomplish most of the daily tasks online: to read news, to perform work, to communicate with acquaintances via multiple pathways, to order food, to purchase goods, to make reservations, to bank, to listen to music, to watch films, the list could go on and on. The processes are expedited with the convergence of different media forms, such as text, images, cameras, radio, television, film, to name but a few. With the integration of all major media forms in the digital environment, the internet has the momentum to become the communication channel in the future.

The study is primarily interested in the features of the digital temporalities and the making of these features. The term digital temporalities refer primarily to the temporalities associated with the use of computer and internet, even though other media are also turning digital as well. In the paper, special attention is given to the statistical nature of the digital data, which could enable both a macroscopic and a microscopic perspective in the exploration of the topic and have a bearing in the discussion of the human relationship to history in the digital environment. Special attention is also given to the process of media convergence in the computer and internet, which is not only a primary feature of the

cyberscape and thus the timescape online, but also a loaded process if the computer and internet will be *the* communication tool in the future and media convergence will be *the* outlet for all media.

The primary examples of discussions will be the social networking sites (SNSs), for the advent of social networking sites (SNSs) ushers in a mature period in the age of internet, which is marked by the maturity of both the network communication model online and the features of a post-boundary world. The network communication model, which is a more complex communication model in comparison to the previous single-structure models, not only supports multiple layers of communication simultaneously, but also integrates all previous models effectively (Papathanassopoulos 118). The SNSs, as I will argue in the paper, are most representative of such a communication conglomerate and thus of digital temporalities in general. The two SNSs in focus will be Facebook, the world's largest SNS, and Renren, China's largest SNS. They represent respectively the leading communication trends on a global level and those on a national level. By comparative studies, the similarities and differences between them would shed light on our search for the universal features of the digital temporalities, while speaking of the national characteristics in the process.

In order to dissect the digital temporalities, the paper starts with a general account of the past scholarship related to the topics of interest. Chapter 3 lays out the three general features of the digital temporalities: their timelessness, meaninglessness and the state of mix-up due to the multiplicity of media forms integrated into the internet. Chapter 4 focuses on the process of media remediation and multiple mediation, which further marks the plasticity of the digital temporalities. In addition to theorization, the paper is grounded in

first person observations, which would add to the solidity of the paper. The paper also ventures in the philosophical realm in the exploration of the nature of history in the age of internet.

CHAPTER 2 LITERATURE REVIEW

The digital temporalities still remain a much untapped area of study. Besides Manuel Castells's chapter on timeless time from his volume *The Rise of Network Society*, where he explored the major changes in the nature of time from the whole spectrum of the postindustrial society, or the information age as he refers to, both the digital and the non-digital; there have only been one anthology and a couple of articles which directly deal with the temporalities associated with computer and internet.

Manuel Castells has proposed the concept of "timeless time" together with a few other concepts such as "flex-time" (Castells 467) and "eternal ephemerality" (Castells 497). For him, flex-time refers to the flexibility of time in a network society where clock time is no longer in control and 24/7 is one's time on duty for work and communication. Flex-time also signifies the non-linearity of time, which echoes my argument of the state of temporal mix-up later in the paper. Eternal ephemerality refers to his proposition that time is both eternal and ephemeral; it is eternal for it has been documented well and it is ephemeral for it may be present for only fragments of time, if present at all. For Castells, timeless time stands for the elimination of the biological and the social time, the time rhythms and the order of time. For him, death has been denied, or at least death as it is traditionally understood. Therefore, the boundaries between the living and the dead are being broken down.

Heejin Lee and Jonathan Liebenau have explored the digital temporalities in their piece "Time and the Internet at the Turn of the Millennium" in the journal *Time & Society* in 2000. In the piece, they have applied Lee's model of the "six dimensions of temporality in

business processes", which are made up of duration, temporal location, sequence, deadline, cycle and rhythm (Lee and Liebenau 50). They have discovered the nature of the online experiences to be "pseudo-instantaneous", which stresses the processing time needed in the accessing and downloading of the materials. They have reiterated the non-linearity and the lack of rhythm in the digital temporalities.

Susan Leong, Teodor Mitew and others have another piece on digital temporalities titled "The Question Concerning (Internet) Time" in the journal *New Media& Society* in 2009.Their analysis is based on the classic bifurcation of the clock time and the human time, and reapplied the bifurcation to the digital temporalities. Moreover, they proposed that instead of timeless time, people are experiencing "a multiplicity of times" which are the product of various elements such as the condition of the server, other related softwares or databases, among others; and reiterated the need of processing time in the undermining of an authentic simultaneous internet experience.

Robert Hassan and Ronald Purser have edited an anthology*24/7: Time and Temporality in the Network Society* in 2007. The contributors to the anthology come from a variety of disciplinary backgrounds and have approached the topic from various perspectives too. The pieces most relevant to the digital temporalities include Carmen Leccardi's "New Temporal Perspectives in the 'High-Speed Society'", where she proposed a "detemporalized present", a present that has been squeezed out of the fast pace of life and signifies the loss of reflective action for both the individual and the group; and Robert Hassen's piece "Network Time" where he argued that the network society bears no direction or control.

The erosion of boundaries, on the other hand, also remains to be a slowly emerging

area of scholarship. Past scholarship on social networking site (SNS) has covered a variety of topics, including those of identity performance, friendship formation, network structure, privacy issues, to name but a few. The first recognizable SNS came out in 1997, and was named Six Degrees (boyd and Ellison). Later, prominent SNSs such as Friendster, LinkedIn, Myspace, Facebook got established readily after one another. These SNSs vary in concept, purpose, structure and experience distinctly different fates. Facebook and LinkedIn are now world leading SNSs in their respective field of expertise – one in the personal and the other in the professional, though the boundary between them can be blurry, as will be discussed later. On the other hand, the two forerunners in the social networking enterprise, Six Degrees and Friendster, became obsolete relatively quickly. Similar to the US, the rest of world embraced SNSs pretty readily as well.

Early SNSs started with a focus on providing new opportunities to meet strangers online, such as the dating function in the case of Friendster, and slowly changed to a focus on reconnecting and managing acquaintances already made offline. They have discovered a shift from the online to offline trend to the offline to online as the basic orientation of the communication based on SNS. According to their study, the primary use of SNS is not for meeting strangers any more, but for connecting with their acquaintances already made offline. Therefore the overlap between one's online relationships and offline relationships grows larger and larger. And one's online social world becomes more and more similar to the offline social world.

Such a closing of the gap between one's online and offline communications has led to the collapse of the assumed boundary between the online and the offline, and thus

possibilities of the corruption of traditional boundaries, such as the boundaries between the personal and the professional, the private and the public, the physical and the virtual, to name but a few, is also on the rise. boyd and Heer recorded a story of a young teacher who had been connected on the SNS with both her personal friends and her students, and how she was trapped in a difficult situation when her students discovered her friendship with an alleged pedophile and drug addict and questioned her upfront (boyd and Heer).

The virtuality of the SNS gets tricky when an online profile/identity can be either true or false. According to the study by boyd and Heer, besides the real profiles, the SNS – Friendster in this case boasts of a variety of other false identities: Fakesters, who represent themselves as anything but their real physical identity; Fraudsters, who duplicate others' profiles and perform; and Pretendsters, who craft realistic looking profiles and act accordingly. Their alleged goal was to demonstrate that "none of this is real" (boyd and Heer). With the rising popularity of SNSs, the issue of identity authenticity has gained weight as well. The concern about identity authenticity may be a civil case in the world of SNSs; however, it can evolve into a criminal one when the online interactions leave loopholes for legal transgressors, such as the growing phenomenon of identity theft.

The public and the private is no longer a valid binary of the online communications on SNSs, according to Patricia Lange. In her study on the Youtube community and its social networking functions, she discovered two new ways of communications and privacy management: the "publicly private" and the "privately public" (Lange). The first category refers to the communications where the networker has revealed his/her true physical identity, but has also modified the accessibility of his/her online materials so that only a

selected group of viewers could access them. In this way, relatively private materials could be posted online without an impending danger of being accessed by total strangers or potential criminals. Therefore, the subject's privacy is protected, in a somewhat public way. The second category refers to the communications where the networker has set no limitation on the accessibility of his/her materials so that they are fully public; however, the networker's true physical identity has been concealed. Therefore the networker acquires full publicity of his/her expressions, only that the core of his/her privacy is protected.

As is common to the age of internet, the geographic boundaries no longer define the reach of one's cyber antenna. Except for the intentional firewall set up to block certain links in a certain area, once connected to the internet, each computer would be able to access every public webpage currently available on the World Wide Web, though the speed at which the linking can be realized is dependent upon individual situation. Therefore, without intentional blockage, people across all different continents can access the same web pages freely. Thus the internet has rendered the geographic boundaries obsolete. No longer is the internet a regional network supported by regional apparatus, nor does it acknowledge the national border willingly. Paul Virilio has an extensive discussion on the revolutionizing effects of the virtualization of the world in the age of internet. For Virilio, the traditional geographic concepts are no longer applicable; telecommunication has introduced a list of new concepts to take the place: "tele-localness" is to replace "localness" (Virilio 59), instead of a reference to geographic affinity, it refers to the state of synchronous being online; "tele-continents" is to replace "continents" (Virilio 9), which breaks down the physical regions and rearranges them based on their online presence. Virilio also updated the

concept of geopolitics to “chronopolitics” (Virilio 13), with an emphasis on the installing of the homogeneous world time—the universal synchronicity in our online community.

The invalidation of the geographic boundaries has posed a threat to the linguistic and cultural boundaries which are dependent upon the geographic ones. Would language persist as a barrier to cross-cultural communication, or telecommunication worldwide? The answer is no. Though regional websites which operate primarily in ethnic languages, such as some nationally leading SNSs, sometimes serve a larger role than the globally leading websites in national communities; the presence of foreign websites has been a fixture in the virtual life. Moreover, linguistic crossover is nothing unusual. According to boyd and Ellision, an English-language-only SNS has been dominated by Portuguese-speaking Brazilians after its launch in the US (boyd and Ellison). And it is more than normal for a globally leading SNS to secure a large user pool in nations whose native language is other than the operating language on the site, such as Hi5, Facebook, Windows Live Spaces, to name but a few.

The boundary between the legal and the illegal gets blurry as well. And the monetary factor often gains weight in the determination between the two. For example, inauthentic presentation is a regular phenomenon on the internet. As discussed above, “pretenders”, “fraudsters”, “fakesters” constitute a customary group of SNS users. These inauthentic identity presentations do not necessarily make themselves illegal; however, once money or interest gets involved, they would very quickly qualify as unlawful acts, such as that of identity theft. Wendy Chun has an extensive discussion of the flexibility of the legal/illegal boundary and particularly the factor of money on internet. In the case of cyber pornography, she discovered that the public’s fear of the pornography is intense; however, the public’s

approved regulation of it is interestingly dichotomous: the online porn which is accessible free of charge is categorized as illegal, and the porn which charges a fee to access is categorized as legal. Thus the boundary between the legal/illegal is intricately transformed into a divide between the commodified/uncommodified, which is dependent upon money and fairly flexible.

In addition to the spatial leveling, or "physical montage" as Lev Manovich terms it, temporarily, the realities which we are accustomed to live in are changing as well. "Temporal montage", or the mixing up of different time and time periods, is another commonality on the internet. Not only can one compose or integrate texts which apply to different times; once posted online, one can access and interact with these texts freely and at will. An extreme example of "temporal montage" would be the confusion of life and death in physical and virtual lives. It won't be as confusing when a physically alive person is nonexistent or not-so-alive in cyberspace as when a physically deceased person is still existent in cyberspace. In the case of Tyler Clementi, who committed suicide after being cyber-bullied by his roommate, according to a news report from *TIME*, he did not deactivate his Facebook account before his suicide but left on it the latest update of his status: "jumping off gw bridge (George Washington Bridge) sorry". What is at stake in the conflict between the discontinuation of his physical life and the continuation of his cyber life? Or should the cyberspace be regulated so that the physical deaths of its users are appropriately reflected virtually, in accordance with the physical world? The disorienting effect of internet in terms of time reference, the physicality and virtuality of things are all points of discussion in the paper.

The instability and flexibility of authorities are another revolutionary feature of the internet. The root of this feature comes from the advent of a complex communication model on the internet, instead of the simple communication models available in previous media. According to Gustavo Cardoso, there are four types of communication models overall—interpersonal communication, one-to-many communication, mass communication and networked communication. All the previous media are applicable to the first three models, which are simple single-structure communication models, such as the mass communication structure in the case of TV and radio; the one-to-one (interpersonal) structure in the case of telephone, cell phone and telegram. However, the networked communication model in the case of internet is not only a complex model, but also an integration of the three previous models. Take Facebook, the leading SNS, as an example. There are the one-to-one (interpersonal) communication structure available in the form of personal dialogue, the one-to-many communication structure available in the form of private information sharing (sharing with a specific group of Facebook friends), and the mass communication structure in the form of public information sharing such as online advertisement, public promotion, etc. There is no longer a single authority on the internet, but a multiplicity of authorities. Every one can have the chance to say and to challenge what has been said in the online community, via posting, blogging, commenting, voting, among other ways. Although most of the physically authoritative entities have their virtual equivalents online, such as news agencies, governmental organizations; no one can act as the one and only authority on the internet. Moreover, they can always be challenged by anyone who claims to hold some authority in the same field, which adds to the instability of

the authoritative on the internet.

CHAPTER 3 THE TEMPORALITY IN THE INTERNET

The structure of temporality in the internet is an eclectic one. Mary Ann Doane suggested that the structure of temporality in the internet resembles that of the cinema, which as she argued, has a legible, irreversible and timeless quality. Internet indeed proposes timelessness; however, the legibility and irreversibility of time may not be entirely applicable. Actually, cinema is not the only medium that has converged in the internet. Almost all previous media have been successfully integrated into this new digital format, and the rest which are not yet integrated can easily get mediated into the digital format, which will be discussed more in the following chapter. That integration and mediation have contributed to the temporal plasticity in the internet, as well as to its eclectic and complex structure of temporality.

The pursuit towards timelessness is an apparent trend of media development over the years. It is an attribute of modernization, and a driving force behind the media revolution. An overview of the development of media formats in recent media history demonstrates the lasting human quest for synchronized time, for a more powerful control over time, a control over longer periods of time, as well as the democratization or commercialization of that control power. The following is a simplified figure of some recent media development and their associated temporalities.

Media Formats	Associated Temporalities (Selected)
Text-based media	the possibility to record history or story in a textual form
Photograph	the possibility to copy the exactness of a particular moment and to restore it in paper form
Film/Sound film	the possibility to record a series of photos and to represent movement and live action; the capacity to make artistic creation out of film; and the capacity to be screened in a cinema (public place)
Television	the possibility to record continuous movement and live event; and the capacity to be employed as a medium to daily indoors entertainment (public and private place)
VCD/DVD Camera	the possibility to create individual cultural productions and expressions; the growing physical accessibility to various cultural productions from past and present (public and private place)
Internet	the possibility to create and publicize individual cultural productions in all formats; the non-physical (digital) accessibility to a vast number of cultural productions in all formats from past and present (public and private place)

Figure 1 Media and their associated temporalities

The progress from photograph – the copying of an exact moment, the sporadic capture of the ever passing time – to internet where any record of history or historic cultural productions can be posted and accessed, any individual cultural productions can be created and publicized constitutes a revolution in our media life. Moreover, time can be recorded longer, more frequently and more randomly by more people. Now any moment can be easily recorded into history. The Internet, together with computers, has become the biggest storehouse of records and data in human history, which is still growing at a considerable pace. Luciano Floridi, the pre-eminent philosopher of information, reported the phenomenal growth of data storage in recent years. Counted by exabyte (1 exabyte= 10^{18} bytes or 50,000-year-long video in DVD format), it is estimated that a total of 12 exabytes of data had been accumulated in the entire world until the commercialization of computers. However,

the total amount of data exceeded 161 exabytes in 2006 and 988 exabytes in 2010, much more than any individual could possibly process in his/her entire lifetime (Floridi 6).

- *Timelessnesss as post-modernity*

The pursuit of timelessness is the first hallmark of modernity present in the internet. A review of the ever-evolving media formats and the growing popularity of the new media gadgets (Figure 1) can reflect the trend towards the modern simulacra. There is an evident quest for the exact reproduction and the simultaneous experience of time. The process from photograph, film to radio and television is demonstrative of the desire to capture and represent time in a longer period of time, and to deliver time or its reproduction to a wider variety of audiences more freely. The sharing of temporalities has evolved into a 24 hour business, as in the case of radio and television; moreover, it has also been privatized, as the media can be accessed more and more from the household. In the age of internet, the sharing of temporalities is not merely a 24 hour business, but a complex networked 24 hour business. There is a multiplicity of media formats in which one can communicate, for example, text in the form of instant messaging, sound in the form of online chatting, video in the form of online video chatting, or any mix of them. The internet has connected the previous media together, and it is also building up the most sophisticated simulacra so far. The networked media can reach out to the entire online globe, and the previous hurdle of distance has been overcome – with the help of internet, text, calls and videos can be shared around the world in less than a second. Simultaneity is the goal; and networked communication is the answer. Though scholars have argued that real time communication

can never be achieved, it can be compared to the conundrum of Etienne-Jules Marey's chronophotography: moments of time can be captured, but cannot be broken down into a definitive unit (Lee and Liebenaum 51; Doane 60). Therefore, simultaneity can be approached, but cannot be fully achieved. In this way, physical distance is no longer an issue; every individual in the highly modernized and technologically advanced society is supposed to live with the same time. The relationship between the sun, the earth and the moon is no longer important, just as the concept of time zones is becoming obsolete. The invention of "internet time" by Swatch, the world-leading watch manufacturer, is claimed to have realized the "absolute time" for mankind (Lee and Liebenaum 43). "Absolute time", as Nicholas Negroponte suggested, means no more differences in the experience of standard time; a pseudo-simultaneous and pseudo-instantaneous world has thus been established. This is the first dimension of timelessness in the internet.

At the same time, with the advent of internet, history is now more easily accessible, as are historic cultural productions. According to statistics, the majority of the data in the exaflood is stored magnetically, primarily in hard disks (Floridi 6). With the trend of digitalization and online storage, more and more materials are available online. The internet promises immediate and easy access to a growing number of human records and materials, not only via a multiplicity of media formats (text, picture, video, etc.), but also from the full spectrum of human history. Materials from all past periods and ages can be accessed. Materials in popular culture, for example, can often be found via entertainment sites like the online video sharing community Youtube, where historical popular cultural pieces like one of the first films ever made, *Arrival of a Train at La Ciotat* by the Lumiere Brothers, can be

found alongside the most recent popular cultural releases. Although the quality, the aesthetics and the date of the original cultural artifacts may differ widely from each other, however, in the internet they can appear side by side without a definite order, which would lead to the temporal mix-up, as will be discussed more in the following sections. Materials in print format, on the other hand, would more likely appear in databases like Google Book and Proquest, where a lot of print records have been digitalized and duplicated; for instance, Proquest currently has an archive of the newspaper *New York Times* since its earliest publications in 1851. The internet as an open and limitless space enables the coexistence of all range of recorded and manufactured time. The cases of Youtube and Youku as the leading online video communities respectively in the US and China are good examples to consider. A huge number of videos from different historic periods coexist in harmony, and are equally searchable at one's will. The ability to access online materials immediately, especially those materials from a wide range of historical backgrounds, has constituted the second dimension of timelessness in the age of internet.

The third dimension of timelessness in the internet resides in its ability to provide equal access to all at any possible moment. Moreover, the particular moment of being online has nothing to do with the availability of the plethora of cultural information and materials. On the one hand, the online connection is a prerequisite for the emergence of "absolute time" for every cyber denizen; on the other hand, this equality of online access holds a great potential of empowering citizens by democratizing information and opening a brand new channel of information sharing. Internet connection can be realized from either a private or a public terminal; therefore, there will be very little time restriction on online

surfing, and much more usage of the internet can be developed and realized this way.

Moreover, the nature of networked communication in the internet has determined the pattern of online information sharing: it is not a one-way street, like in the case of radio or television; however, it is a multi-way street where information sharing can occur at any moment, any location and any direction. The information no longer comes solely from the authoritative institutions, but from a limitless number of sources. Similarly, the temporalities recorded and replayed no longer conform to the few standardized ones, but are reflective of a myriad of online sources. Therefore, the online temporalities have not only been emancipated from the few authoritative institutions, but also been individualized. In the case of social networking sites, for example, one's temporality is highly individualized – it is made up of the actions by one's friends and one's interactions with them. No two users' sites could ever be the same; thus no two users could have the exact same temporal experiences on the SNS sites either. Moreover, the site is constantly changing in response to the various updates and sharing actions of one's friends; no two moments would stay the same on the SNSs. Therefore, the constant accessibility of the internet is quite essential, so that one can access the website at any moment and catch the glimpse of the unique flash. The high individualization is the fourth dimension of timelessness of the temporality in the internet, which would also contribute to its plasticity.

The fifth dimension of the timelessness in the internet comes from the temporality of the invisible data interaction. As one may have overlooked, once the computer is connected to the internet, data interactions will not cease until the moment it is disconnected. Lisa Gitelman made a differentiation between data and metadata. While the former refers to the

information visible to the eye, the latter refers to the opposite, the invisible information (Gitelman 142). For the former category, there are letters, pictures, graphic designs and so forth; for the latter, there are the invisibly and mechanically associated information, such as the transaction time, location, duration, and such, which are well coded and concealed. Together, data and metadata have constituted the continuous record and recorded temporality online. An apparent example would be the transmission of computer viruses online, which is almost always invisible, well coded and unconsciously received. Wendy Chun went as far as comparing computer viruses to sexually transmitted diseases, with a highlight on their similarity in the pattern of contamination and reproduction (Chun 12). The invisibility of the metadata, which makes up a good portion of recorded temporalities online, is the fourth mark of the timelessness in the internet – unless one is educated on how to decode them, one will lose track of all the incidents and their hidden temporalities online.

The reason that the timelessness of the internet can only promise a pseudo-simultaneous and pseudo-instantaneous virtual universe instead of an authentic one lies also in the unpredictability of the online environment. Heejin Lee and Jonathan Liebenau, in their discussion of the aspect of duration of the temporality in the internet, attributed the "pseudo-instantaneity" of the online temporality to the "lag times in accessing and downloading sought-after material" which as they argued may generate frustration and expense (Lee and Liebenau 51). Besides that, however, a variety of other factors may also contribute to the disturbance of the ideal simultaneous virtual universe. Server fluctuation can be one major factor, as all websites are sustained by servers. Therefore, even though the internet per se does not have a deadline, individual servers may have. Without proper

maintenance and updates servers may experience glitches or even shutdowns, which are not uncommon. Facebook and Renren both have had temporary website shutdowns, as do a variety of other websites.

In addition to server fluctuation, websites or web-pages may become inaccessible due to intentional or unintentional changes. As argued by Lisa Gitelman, the internet is always transforming, and "Error 404 – file not found" is the most frequent error page one would encounter in one's virtual life. Scholarship has found that the average life span of a webpage is less than 100 days, though the exact number has not been agreed upon (Gitelman 132). A link may not always be accessible, or rather, it will quickly become inaccessible. Other factors which may have undermined the ideal simultaneity online include the type of one's network connection, the condition of one's computer, to name but two. In conclusion, the online temporality is not a straight and easy one; it is in fact always being negotiated. No one could dictate the internet or predetermine the online temporality. The room for negotiation also signifies the plasticity of the online temporality.

- *Meaninglessness of the digital temporalities*

With the flood of new data created and maintained in the internet, or the "exaflood", the volume of the internet seems boundless and promising. As each unit of data crystallizes and corresponds to a specific moment in history, the exaflood also implies a surplus of recorded time. *This is the second feature of the temporality in the internet: the overabundance of recorded time.* As Doane argued, it is the discontinuity of recorded time that enables and promotes history, while the continuity of it wipes out the possibility of

reflection and interpretation which are the prerequisites for history making (Doane 33). The overabundance infers a tendency towards more continuity of recorded time and less discontinuity. Therefore, it will be tougher to write history with the new exaflood. With the deluge of data and continuous data making, the exaflood diminishes the possibility of history and history making; in the meantime, it also overwhelms the individual capacity to process and maintain data. Thus, the immensity of data and the immensity of temporality in the internet become a burden for both the individual and the human history in general.

It has been assumed that digital data could render much convenience – numerous copies of files can be made digitally and accessed from different locations, so that the materials can gain a broader exposure with a variety of audience groups. For example, the "share" function in both Facebook and Renren is very popular. Users share all types of materials in a host of formats – texts, music, pictures, videos, to name but a few. And the range of topics of these materials is as unrestrained as the human imagination per se. The share function has become one of the most obvious indicators of the popularity of a specific material online. Many of the materials have a sign displaying the number of sharing activities accumulated so far, which has become a number of special significance in terms of its apparent relationship to popularity, promotional value, and marketing potential. The rise of alternative marketing strategies for businesses, including social media marketing, has also partly derived from the prevalence of these online functions. Renren has gone as far as developing a monthly ranking apparatus to recognize the users with the most frequent sharing activities – the top user would usually have shared tens of thousands of materials during a month, or hundreds of them on a daily basis. The promotion towards more sharing

activities is obviously a strategy to attract more users and boost the popularity of the site on the corporate side. The concern over excessive digital copies and immeasurable amount of materials, private or public, is usually absent, if not considered invalid altogether. No one has known or specified the limit of the data capacity in the internet yet. Moreover, the concern over the upsurge in the sharing of sensational materials, particularly those with sensational titles such as in the case of Renren, is a submerged topic as well. In other words, immoderate sharing activities have been greatly encouraged, rather than discouraged in many websites. However, the consequences – be it the contribution to the making of the exaflood, the redundancy of the same data, or the emergence of sensational materials – have not been fully studied yet.

In addition to the sharing activities, the bookkeeping and archiving function of the internet is another contributing factor in the making of the exaflood. The internet has as an immaculate impression and tracking apparatus; a record is generated in the associated support server for every action taken online, in either a visible or invisible fashion. Wendy Chun explains that most of these records stay encoded and concealed, which reflects the feature of numerical representation in the new media (Chun 169). The capture and the storage of online temporality are a comprehensive project; and the data and records can be stored in the databases for as long as the administrator wishes. Since each online record corresponds to an action at a past moment, the entire record is effectively the log of all past human online actions except for the ones intentionally deleted. Bygone time has been frozen with the actions made, and past temporalities have been numerized in the data. Once educated on how to reveal and decode the varied numerical representations, one will

understand the differences between artificial memory and human memory. Artificial memory takes account of each and every mechanical action faithfully and objectively, while human memory takes account of actions selectively, irregularly, and emotionally.

In the case of SNSs, there are plenty of noticeable and visualized records to demonstrate the feature of relentless archiving. Both Facebook and Renren archive all messages for their users. The messages are maintained in a chronological order, and are kept unless deliberately deleted. Both SNSs group messages by correspondents; therefore, a simple click can generate a "friendship check" that illustrates all of one's past interactions with a certain individual/online identity in terms of messaging, including the selected mechanical details – date, time, language used, response status, and so forth. Facebook has pronounced the social function of this visible archive display well through the "see friendship" button – the recorded temporalities in the messages stand for the total interactive time with the specific individuals, which supposedly build up your "friendship" with them. The more interactions there are, the better the friendship seems to be. Friendship has thus been quantified. The social significance of the archiving of temporalities is realized with the design of these SNSs. In addition to messages, the SNSs archive a variety of other on-site incidents visibly as well, such as comments, on-site emails, and the list of personal site visitors in the case of Renren. Recently, an article in *USA Today* has reported a possible new feature of Facebook – the Timeline feature, which could help display the entire history of account activity of a user ever since the account creation date, has reflected the fact that online records can and often are maintained very diligently.[1] The possibility of

[1] The news article by Michaelle Bond can be found in the Nov. 3rd, 2011 edition of *USA*

implementing the Timeline feature has also aroused much controversy and criticism from some privacy advocacy groups for fear of overexposure and other side effects. The article also quoted a Facebook user to reiterate the fact that in the internet "anything I put up is forever".[2]

It is tough to judge whether the exaflood, or the explosion of recorded temporalities, does more good to the human beings or more bad. Sometimes the making of the exaflood could stand for a form of empowerment, or what Clay Shirky argued to be the "political power of social media", in the cases where common people could utilize the power of social media like SNS in order to disseminate a political message or a civil call (Shirky). A well-known and well-publicized example would be one major political event in 2011: the Tunisian Revolution, or the Jasmine Revolution as some refer to, which involved the use of Facebook quite heavily. Considered to be a pioneering and cornerstone event, the Jasmine Revolution has not only educated global citizens, but also boosted their confidence in the power of new social media like Facebook. Ali, one key organizer of the anti-governmental protests and leader of a grassroots news room, was reported to remain primarily an online identity, or multiple online identities, whose major political activism was realized through the use of Facebook and Twitter (Giglio). People like Ali made up the group of cyber-activists who have performed an essential role in the transmission of critical information and the mobilization of the citizens. Data duplication and dissemination are evidently critical in their mission, for the government has been closely monitoring and censoring the online content and activities: their materials were constantly being deleted, their Facebook pages being

---

Today.

[2] Ibid.

blocked and cyber-activists being arrested. Only when the pace of duplication surpasses the pace of censoring can cyber-activists continue to make an influence on the public. Therefore, a case could be made for the value of data duplication in critical situations like this, for the data redundancy has been offset by its value in an environment where data and information could not flow freely. In other words, data duplication could be justifiable and meaningful on certain occasions.

Even though one may justify the act of limitless duplication for some occasions, the project of incessant archiving may be less justifiable or meaningful. If all media are converging with the internet and all mediated actions are being archived, the subject of history will be challenged. From the perspective of historicity, comprehensive and continuous records do exclude room for the writing of history, for every past moment will have been well documented. For the traditional purpose of keeping a historic record, little will need to be added, and nothing will need to be deleted. History would cease being an interpretation and start to become a matter of statistical management. Life would transform into a record of technical facts, and the formerly unpredictable future would turn into a promise of numbers as well – the actuary would be an even sexier career option.

This can be related to the Truman Show Delusion (TSD), a new type of psychological pathological state first introduced in 2006, which is argued by Mark Deuze to be one of the most symptomatic diseases of a modern denizen (Deuze 140). Tortured by feelings of distrust and fear, the TSD victims are reported to suspect their living environment to be totally artificial -- including all set-ups, all actions, all actors, etc. and that their lives/shows are continuously monitored and recorded. According to a feature article from the American

Psychological Association, Joel and Ian Gold, the two psychiatrist brothers who identified the disease have collected roughly 60 TSD cases worldwide and have attributed its pathological root to be the layout of our new media life:

> As for what's driving the trend, the brothers speculate that certain features of modern culture – warrantless wiretapping and video surveillance systems like the one in London, for example – may create a plausible backdrop for those with a tendency to suspect that others are watching them. In addition, widely accessible technology and media that foster the notion of instant fame or put one at the center of attention – reality TV show and MySpace, for example–square with the Truman Show's basic premise and with psychotic patients' delusions of grandeur, Joel Gold says.[3]

In the article, DeAngelis has also cited other sources in support of the brothers' argument that films like "Truman Show" have "reflected modern anxieties about being subsumed by large, ominous and impersonal forces" (DeAngelis 32). And the internet with its enterprise of incessant digital data making can definitely qualify to be one of the "large, ominous and impersonal forces". Deuze has specifically suggested that it is the blurring of the boundaries between the physical and the virtual that has triggered the onset of this new psychosis (Deuze 141). Apparently for these victims, excessive mediation and data generation are not only unnecessary, but nerve-racking, which is probably comparable to the feeling of uneasiness one gets when one is consciously being video-recorded. Video does not let go of any detail in the frame, and neither does the internet of any virtual actions online. The overload of details and records has posed a challenge not only to some individuals' conceptual capacity, but also to the limit of the individual knowledge base and

---

[3] DeAngelis, Tori. (2009). A New Kind of Delusion? A Growing Number of Psychotic Patients Believe They Are The Stars of Reality TV Shows. *APA Monitor on Psychology, June, URL*, (consulted November 2011): http://www.apa.org/monitor/2009/06/delusion.html

the human archivability in general.

As discussed earlier, in 2010 there is a total of 988 exabytes data globally, which entails a storage size equivalent of roughly 7,311,200 Libraries of Congress. On a personal level, as the amount of data at the Library of Congress equals to at least 6,000-year-long video which well surpasses a human's possible length of life, the exaflood also reiterates the limit of an individual's knowledge capacity. Moreover, it is also a signal of the somewhat aggravating impossibility of acquiring the complete human knowledge or information in one's lifetime, no matter how hard one tries. For an individual, the rest of the information outside of his/her knowledge capacity would be proven useless in the end. The immensity of the newly generated data and information would reflect the meaninglessness of the majority of them, for both the individual and the human history. The growing meaninglessness of data and the associated temporalities is another hallmark of post-modernity.

- *the temporal mix-up in the internet*

In *Always Already New*, Lisa Gitelman argues that every new medium has a root in the old media, and that it is not entirely new. In the case of internet, it is not only an extension of the tradition – its newness is dependent upon previous media, but also an integration of the tradition. It is actively integrating the other media into itself. It is worth noting that the convergence of media has happened over time, especially after the invention of computer and internet. Initially the internet was only text based, but beginning in the 90s there were pictures and photos present in the internet, and later music, film, videos, among other media formats. Thus the internet has become an aggregate medium, integrating

almost all previous formats of media in human history. Nowadays one can read books, newspapers and magazines online, listen to radio stations online, watch film online, and communicate with each other online – via instant messaging, online calling, or video chatting. The internet seems to promise a conclusive destination for the development of telecommunication media; on the other hand, the traditional media formats seem to be under serious assault and on the verge of disappearance, such as in the case of traditional/physical dictionaries, newspapers, music albums, to name but a few.

The internet has undoubtedly contributed to the making of "a large, connected community". As Gustavo Cardoso stated, a new model of communication – the networked communication has been introduced with the advent of the internet (Papathanassopoulos 118). Previous media – such as print media, radio, television, telephone and cell phone, to name but a few – have made up three other communication models: the interpersonal model, the one-to-many model and the mass communication model, which have enabled the transmission of information to a variety of audiences in good numbers. However, they are confined in their own separate networks without interconnections. Print media, for example, cannot integrate materials from radio or television stations unless transformation of files has been performed; radio, on the other hand, cannot integrate materials from print media or television unless intentionally modified or mediated. The real and thorough convergence of media did not start until the birth of the internet. The new networked communication has connected more people together than ever before; moreover, it has unified all previous media formats effectively.

The mingling of various media formats has also lead to a mingling of various

temporalities specific to those media. That has also contributed to the non-linearity of temporality in a network society that Castells has proposed (Castells 468). Text-based media, such as books and newspapers, have a less stringent and free temporality – there is no specific length of time recorded with the text, and the audience will be able to plan and allot their own time around reading and thinking. Photographs have a frozen temporality – the medium captures only one single moment, and the audience is at their own will to study and dissect the encapsulated moment. Radio, film, and television, on the other hand, have a designated broadcast temporality – there is a specific length of time recorded with the media, and the audience is subject to compliance with the temporality if he or she is to consume the cultural products via these media. The internet, as a conglomerate of all these media, thus does not possess a particular temporality of its own. On the contrary, it offers agglomerate temporalities for its users. That defines the plasticity of the temporality online.

One's experiences with online temporality vary from site to site, as websites differ much from one another in the preferred media formats to use. In the case of social networking sites, the mix-up of temporalities is very distinctive. For both Facebook and Renren, the basic media formats are texts and photos, since both expect their users to create an account with a name and a photo. Other media formats allowed in the two sites are videos (including television or film excerpts), audios, and computer games, among others. The programmed usage with these media formats is different on the two SNSs. For example, Renren offers an option to add background music to one's personal wall, while Facebook does not. Nonetheless, multiple media formats do coexist on these two sites so that varied media temporalities get effectively mingled together. The main page—news page

of the two sites is always so versatile that the only predictability would be its unpredictable layout. Rarely would a news page be in a singular media format, but more than often it would turn out to be pretty eclectic in terms of media variety. Materials in all formats would make an appearance—texts, photos, videos, etc. The temporalities are also competing with each other: photos seem more concise and less time-consuming, which would accommodate a busy net surfer; videos seem better-framed temporarily and involve less associative or creative thinking, which may suit a tired net surfer; and texts as the most abstract medium format seem most free temporarily and involve a certain amount of brain activity, which would be a good fit for a refreshed net surfer. On a personal level, if a user is not actively selecting one medium format in favor of the others, then he/she will be jumping back and forth from one type of temporality to another, consciously or unconsciously making necessary adjustments along the way, in an unpredictable and chaotic temporal environment. The user, in turn, would have been trained to be flexible enough in the process of daily practice, which makes up the plasticity in the users themselves.

The state of chaos in the online temporality does not derive solely from the mixing up of varied media formats, but also from the chronological disorder of the materials. As discussed earlier, the absence of an absolute authority in the internet has affected the online temporality by way of allowing the coexistence of multiple communication sources. Though authority can be established and preserved in particular websites or domains; however, no policing force is in place to maintain a specific order of all online data. This has affected the online temporality for no single order could prevail in the internet. In the case of a SNS like Facebook or Renren, the present, past and future tenses would be disseminated randomly

and at will. One could be discussing the best restaurant in town at one point and then the beauty of Cleopatra at the next; or one could be chatting instantly at one moment and respond to a comment posted months ago at the next. In conclusion, no online temporality is predetermined or stays consistent. In the internet, the post-modernity of the temporality is characterized by its timelessness, meaninglessness, and chaotic state, which constitutes the plasticity of the online temporality which users experience on a daily basis.

CHAPTER 4 REMEDIATION, MULTIPLE MEDIATION AND THE PLASTICITY OF DIGITAL TEMPORALITIES

In 2000, Jay Bolter and Richard Grusin proposed the concept of remediation as new medium's attempt to refashion or repurpose the previous media, which as they argue is common to all media. Though the capacity of remediation is not unique to computer or internet, they have argued that computer and internet demonstrate "aggressive remediation", which bespeaks the exceptional capacity of the internet to gather and integrate other media (Bolter and Grusin 46). Their analysis focuses on media effects, which primarily centers on media transparency/immediacy that betokens media's attempt to achieve absolute realism, and, on the other hand, media opacity/hypermediacy that betokens media's efforts to embellish the mediated representation. However, there has been very little discussion on the temporal implications of media remediation. Moreover, Bolter and Grusin's major arguments have revolved around the interrelationship between a pair of two media, such as the internet and television, rather than a possible line of interactions among a variety of media formats. This chapter will center on the temporal implications of media integration and convergence present in the internet, as well as the process of multiple mediations possible in the complex media environment today.

The trend of media convergence is sweeping the world. In the electronics industry, tides of new electronic products come one after another. And one of their major selling points would always be some new type of application or function that could incorporate another medium, such as the capacities of the cell phone to play music and videos, to connect to the internet, to name but a few. In the meantime, the winner of the trend is

undoubtedly the internet; not only because the internet boasts of a large number of voluminous databases that could host an unparalleled amount of data, but also because it enables the best network communication networks so far. Practically every digitizable medium has been integrated in the internet. Media integration requires a transformation process, which Bolter and Grusin referred to as media remediation; and the processes vary from one medium to another. Media remediation has definitely made a difference for internet users. Users are enabled to utilize and experience a variety of media formats, as the internet is constantly altering users' relationships with other media. The effects on other media, however, can be either positive or negative. A negative example could be the situation of traditional print dictionaries, some of which may be out of print in the future, such as the Oxford English Dictionary. The related news reports have explicitly identified the internet as the culprit for the possible cessation, which can be detected from the title of one article –"Oxford English Dictionary Could Go Out of Print Thanks to Internet"; they have also expressed concerns over the viability of the print industry in general.[4] The movie theaters, on the other hand, still remain a robust and profitable sector in the film industry; even though most of the films can be accessed online. And movie screening in cinemas has not been affected much by the proliferation of personal access to the internet, the online movie screening application, or online movie piracy.[5] As shown in both examples, questions still

[4] In 2010, two major UK newspapers, *The Telegraph* and *The Huffington Post* have reported the possible cessation of the printing of the Oxford English Dictionary. Consulted in Nov. 2011 from http://www.telegraph.co.uk/culture/books/booknews/7970391/Oxford-English-Dictionary-will-not-be-printed-again.html and http://www.huffingtonpost.com/2010/08/30/oxford-english-dictionary_1_n_698588.html.

[5] According to official statistics reported by the Motion Picture Association of

remain as to what constitute the temporal and other differences generated in the process of media remediation, and how they affect the temporality in the experiences with media and media content. The following sections will attempt to answer these questions.

- *texts in the internet*

To read a book from the internet is not the same as reading from a physical book, from physical, cognitive and aesthetic perspectives. Texts abound in the internet in a host of forms such as windows illustrations, text documents, webpage content, books, to name but a few. In the process of internet remediation, though many new issues would arise, most notably and typically the copyright related issues, such as lawsuits against one major free online book reader –Google Books; they will be discussed more extensively in the following sections. In this section, the focus is on textual representation and language content.

One significant feature of these online texts is their programmed style, including the standardized fonts and their associated visual design. Although the standardization of letters or characters was introduced as early as the start of the print enterprise, it has not been so omnipresent in the daily usage until the personal computers became ubiquitous. Handwriting, on the other hand, is less frequent and gradually grows out of sight. Major magazines like *TIME* and *Philadelphia Magazine* have begun to mourn the "death of handwriting" in recent years.[6] Standardized fonts and formats supposedly save readers'

America(MPAA), the number of movie admissions in U.S. and Canada has only decreased 1% in 2010 compared to 10 years ago. Consulted in Nov. 2011 from http://www.mpaa.org/Resources/93bbeb16-0e4d-4b7e-b085-3f41c459f9ac.pdf.

[6] Claire Suddath's article in *TIME* and Sandy Hingston's article in *Philadelphia Magazine* are consulted in Nov. 2011 respectively from

time, since standardized styles should be readily familiar while individualized styles take time to recognize and get accustomed to. Here individuality is discouraged and standardization reigns. One needs to look no further than the movements in testing to get a picture of the general trends.[7] For instance, TOFEL, the American standard English test for foreign language speakers, has gradually transitioned from paper-based test to computer-based test and internet-based test. Moreover, even for the paper-based test, the answer sheets have also evolved into a standardized, computer-readable format – a mark-only answer sheet where no letters but filling-ins of the systemized spaces are permitted. The fact is that only when symbols and language are "understood" by the computer can the data be swiftly collected and managed, and thus transported and communicated freely (in the internet). Similarly, emails gradually replace snail mails, online blogs gradually replace diaries, and keyboards gradually replace typewriters. Handwriting is slowly growing obsolete; it could even amount to a mark of unprofessionalism in daily business and some educational practices – a resume is almost always expected to be well typed, formatted and submitted, the same applies for a cover letter as well, while any other style would trigger a danger of being considered deviant or bypassed by the automatic selection apparatus altogether. In other words, language representation has undergone a further transformation with the advent of computer and internet, where systemized formatting rules. Here the remediation of text has strictly regulated our experience with text; differences previously presented in individual handwritten text can no longer be detected in online remediated text. The

---

http://www.time.com/time/magazine/article/0,9171,1912419-2,00.html and http://www.phillymag.com/articles/the_death_of_handwriting/.

[7] Interestingly, Suddath's article has also attributed one reason of the death of handwriting to the structure of testing.

exploration of individualized scribal styles and formatting has been disabled, so has the temporalities associated with them, including the feelings and memories associated with a particular style of handwriting. On the other hand, the sameness of textual style and formatting in specific contexts, no matter from which terminal one accesses them, such as those in the social networking sites, has enhanced the sense of simultaneity and omnipresence of the online universe. The options of textual style and formatting pretend to offer individuation, but have instead offered a limited number of mechanical categorizations. The authenticity of handwriting stands strong, as can be detected in the use of handwritten signatures, as long as electronic signatures remain mechanically duplicable. Handwritten text is not impossible to exist in an online environment; however, either translation or transportation will be required. In other words, the handwritten text would require a further mediation – to be processed as an image in order to be transported, or to be "read" by a software in order to be translated, which constitutes multiple mediation as will be discussed later in the chapter.

The effects which textual remediation has had on language do not dwell solely on textual representation. Language content has been dramatically influenced as well. It has been discussed in the previous chapter that once connected, terminals would start exchanging information and data automatically, sometimes illusively as in the case of metadata, in a specific system of symbols which is referred to as programming language, or sometimes as computer language. Programming language is an artificial language which negotiates every computer activity; however, it is not the essential communication language for regular internet users. It is a language for the computer professionals to learn and master;

at the same time, it is also an embodiment of the hidden labor and their associated temporalities. Besides this new language, the internet also boasts of its prowess in the usage of hypertext. Though hypertext is not an invention specifically for the internet, the popularization of the access to internet has introduced hypertext to the general web surfers. Today, a general internet surfer should be able to tell the implication of an underlined text, or somewhat differently designated text, which changes cursor's shape if his/her mouse points to it. That is a signal for hypertext, or the link (hyperlink) to another location, another site or possibly another medium. An example could be www.facebook.com or www.renren.com. Interestingly, Office Word recognizes the hyperlink as a single word, no matter how long it is or how many traditional words there are embedded. It has become an embodiment of the promise of the possibility and freedom to experience limitless links and exploration online. The proliferation of hypertexts in the internet bespeaks the yearning for ever more information, communication and newness.

The layouts in the two SNSs are very representative of the ubiquity of hypertext. The central page, the news page, will always be saturated with the "latest updates". Each update has a limited space to present itself; it could never go too long, otherwise it will be partially hidden, in order not to compromise the room for all the other updates, which almost never fail to represent the plenitude and eclecticism in terms of the variety of media formats the sites could support. Each update consists of many hypertexts/hyperlinks, the name and the portrait link to the personal site, the picture/photo or video or audio will link to its version in the original environment, any designated titles will link to their content, any other hyperlinks will lead to wherever they are supposed to… Therefore communication is indeed networked;

at least the hypertexts are widely dispersed so that one could always go to a connected site. Texts are no longer just texts in the internet; once they are programmed and transformed into hypertexts, their temporalities also change. Here, texts not only narrate, but also signify a possible departure point which would usher in a different view, a different story and probably a different medium as well. In addition to potential temporal departures, the hypertexts also serve as environmental stimuli, where related or unrelated desires construct another temporal dimension. The prevalence of online advertising bespeaks the success of these stimuli; and the enterprise of customized advertising aims to consolidate the achieved success. One is constantly lured by other hypertexts and reminded of other media together with their associated content and temporalities, which does not apply in traditional textual forms such as books or newspapers. This is an essential feature of the online text, which may be argued as a factor contributing to cyber-slacking, or online procrastination (Lavoie & Pychyl 432).

Language content has witnessed another trend – the proliferation of internet slang, or chat acronyms as some refer to them. The rise of online communication is not the only cause behind the trend, text messaging via cell phones is justifiably another cause. However, both of them can be categorized as a drive towards even quicker responses and faster communication. Therefore, telegraphic online texting suggests a temporality that is accelerated and hot-tempered. It feels almost mandatory to take the time to learn the new internet slang terms when they come up, in order to stay in the loop, which are usually not easily comprehensible at first sight. Thus time needs to be invested before it can be saved in online communications. A specific website has been established to help expedite the process:

www.internetslang.com has claimed to be the conclusive and up-to-date catalogue of these new terms. However, one needs not remain only as a passive recipient of internet slang, one could actively create new ones and utilize them at will. In fact, the website in question also has a hypertext – "add an acronym" which gives one the option to suggest a newly coined or newly encountered acronym. With the invention of internet slang, one is granted the freedom to change the appearance of one's online text by utilizing them. Text can now be displayed either in its original length or shorter, thus the processing time required from the readers is being altered accordingly. Therefore, the invention of internet slang has enabled the users to frame the temporalities of their own online text; in turn, the popularity of these slang terms has helped shape the web surfers' experiences, temporally and otherwise, with the online text.

Once entered into a computerized and connected environment, texts become data which can be activated, programmed and made interactive. The human-computer interface, as a paradigm for much online interfaces, is argued by Wendy Chun to have employed a special semantic to structure one's view of the human-computer relationship – for example, many Windows interfaces use a proprietary language to designate different drives and spaces: "My Computer", "My Documents", "My Music" and so forth, no matter whether the user does own the device or not (Chun 21). Similarly, both Facebook and Renren employ a similar tone in their programmed user interfaces – Facebook tends to use second person address such as "your photos", "your experiences"; while Renren tends to use first person address like "my information" and "my photos". The semantic features would have affected one's interactivity with the computerized online texts, and the process of the interactions

per se.

Textual interactivity has more dimensions than the semantic. The searchability of text is another dimension; and it is an invention in the age of computer and internet. In previous media formats, text was not mechanically searchable. However, its searchability has become an important function in the online context. The searchability signifies one's manipulative power in a sea of data in the digital environment. Similar to the effects of hypertext, it also entails a possibility of locating and connecting to another text or medium, thus realizing a temporal jump or transportation. Nowadays, almost all web pages support the search function; moreover, many web pages would have a specific search box for on-site searches. Since the volume of online data is growing exponentially, traditional reading and scanning may not work effectively in all situations. For example, a search for a single word, such as for a common English first name "David" or a common last name "Wang" for the Chinese ethnic group, in Facebook and Renren would both turn out an incalculable number of results – partially due to the popularity of adopting English names among the Chinese as well as the large number of Chinese users on Facebook. Even a search for the combination, "David Wang", does not seem promising in both SNSs. Therefore, to pinpoint an individual by searching his/her name may not guarantee a good result. The SNSs would knowingly suggest the user to try advanced searching, in which case different filters could be utilized to narrow the search and pinpoint the target. The same applies to searches for different texts as well. The immensity of online data has transformed the undertaking of searching into a statistical problem. And one's efficiency in online searching could also translate into one's skills in the management of time. It is worth noting that many educational institutions and especially

their libraries would offer the students specific instructions on the skills of online information searching. Obviously, the belief is that an investment of time early on would be repaid in one's future contact with the online resources, which is unlikely to be infrequent. The searchability is the empowerment entitled to a modern web surfer in the middle of the overabundance of data and information online; otherwise he/she will be left entirely inundated by the data exaflood, unable to manipulate it or to manage his/her own time around it.

Besides text searchability, there is more to the human-machine interactivity in the online textual environment. Artificial translation would be another one. Here the power of connected databases has partially realized the fantasy of artificial intelligence – the machine may be "taught"/programmed on how to perform one of the most complex and sophisticated human tasks! The enterprise of language learning, which has been quite time-consuming in the past, seems to be challenged. Google Translate, for example, is one of the major free online translation providers; which supports the "instant" inter-translation of over fifty languages. Though the volume of their language database would be larger than the linguistic knowledge base of an average person[8] and the fast speed of computer processing supports pseudo-simultaneous online text translation, the quality of the online translation is not yet comparable to that of the human's. Mistakes are bound to occur in even simple sentences. For example, the previous sentence, when translated into Chinese, would incur a duplication of verbs. Partially due to the multiplicity of meanings per word, partially due to

[8] In one of the most linguistically diverse regions in the world – EU has endorsed a survey in 2005 which claimed that around 50% of EU citizens do not speak a second language.

the complexity of grammar in some languages, the artificial intelligence still seems to remain as rigid and inflexible as numbers.

With the above being said, text in the internet does make many alterations in one's temporal experience with it, especially in comparison with text in previous media. Text, in the process of being computerized and digitized, has undergone a series of transformations and adaptations. The ubiquity of hypertext online, the searchability as well as a number of other human-computer interactivity rendered by online text have all contributed to a more dynamic, responsive and mobile textual environment in the internet.

- *images in the internet*

As long as computers and the internet are expected to be spaces of interest, they must maintain their multimedia capacity and thus the existence of photos/pictures is inevitable. It goes without saying that photos and pictures no longer transmit in hardcopy in the internet; for today everything transmits in softcopy online. Similar to online text, online photos and pictures have also been specifically programmed, regulated, and standardized. In contrast to the traditional forms of photo, which is the result of light play and registered on film; in the age of internet, photos are completely digitized. Digitization entails a process of numerization, where each photo or picture becomes a statistical record. It is also termed pixellation, pixel being the unit of statistical management which also signifies the level of image resolution. Therefore, instead of dealing with fragile physical materials, one is dealing with (theoretically) durable electronic data. Once being digitized, photos/pictures and computer screens seem to be subtly interdependent. As for photos and pictures per se,

computer screens will be the necessary windows for the appropriate representation of the associated data. Even though the electronic photos/pictures can be transformed into hardcopy representation as well, through the use of electronic printers for example, the daunting amount of online data, the countless duplication and the meaninglessness of most of them all contribute to the resistance against doing so. There is also something about the pursuit of simultaneity, or timelessness, in the internet which seems more compatible with digital data, rather than hardcopy files. After all, all physical materials deteriorate and only the digital ones can be maintained as timeless subjects. Therefore the temporality of viewing digital photos/pictures agrees more with the online temporality in general. The experience with viewing photos/pictures in the internet is thus inextricably linked with the condition of a two-dimensional screen. The temporality in the involvement with the physicality of stuff is thus replaced with the temporality in the involvement with the virtuality of stuff. The screen which represents the content of the internet, be it a computer screen, a cell phone screen or that of another device, has thus accrued great significance in the remediation of online photos/pictures. That has also been demonstrated in the industrial facts and trends, where the evolution of screens stays dynamic and the frenzy of Apple serial products reaffirm the internet surfers' intimacy with screens.[9]

Meanwhile, the online photos/pictures are regulated in a variety of formats. There are hundreds of different digital image formats, among those the most commonly used ones are JPEG, TIFF, BMP, PDF, to name but a few. In other words, the rules governing the statistical management of the photos/pictures differ from one format to another. Moreover,

[9] Wendy Chun has more discussions on the intimacy between screens and computer users, see Chun's chapter on cyberporn in *Control and Freedom* (2006).

the formats are not always compatible with a specific web browser or graphics software. Therefore unlike traditional photo/picture files, in cyberspace, it is more about file compatibility rather than file accessibility. The pseudo-simultaneity in online communications has promised the fastest method to access a digital photo/picture. What seems to be more imperative in the viewing experiences of online photos/pictures is the decoding of the formatted files, since the traditional hurdles for accessing files – the physical distance between the files and their potential viewers, the issue of ownership of the master copies (will be discussed more in the next section), the maintenance considerations of the file copies, among others have obsolesced much in the age of internet. Therefore compared to previous photos/pictures, in the online context more time will be spent untangling the compatibility of media formats, while less time will be spent on how to access the data. The same applies to online audios and videos as well, as will be discussed in the next section.

The greatest difference between online photos/pictures and photos/pictures in previous media is the degree of manipulation that can be rendered onto them. This is another major significant feature of the computerized and online remediation of not only photos/pictures, but also text, audios and videos as well. The digitized and numerized data embedded in the files have enabled the statistical manipulation at a degree un-thought-of previously. To begin with, the total amount of data for a specific photo/picture can be adjusted to an expected number. Larger data usually stand for higher resolution of the photo/picture with better pixellation; while smaller data usually stand for lower resolution of the photo/picture with less exquisite pixellation. The size of the photo/picture is highly flexible as well; but it does not directly correlate to the data amount. In other words,

photos/pictures can be adjusted to fit the data storage capacity.

Moreover, the emergence of graphics editing softwares like Photoshop has dramatically changed the nature of photos. If traditional film-based photos represent reality with its representation of light, then computerized photos/pictures represent reality only to the extent of one's loyalty to the original data. Now, each datum in the photo/picture can be changed: the color of each spot can be altered. There is nothing in the digital photo that cannot be modified: the curve, the line, the color, the light, the size, the structure, to name but a few. The credibility of digital photos is thus undermined. Special effects are also programmed and available for utilization in Photoshop: the shadow effect, the mosaic effect, the watercolor effect, the crayon effect, among others, are further challenging the concept of digital photos. Once again, the digital world is bridging out to the previous media: convergence is key, and simulation is the backup plan. Even data from external sources can be transported and merged into the photo – the addition of a previously non-existent object or human, for instance, would constitute the making of "fake photos". Fake photos, however, would be hard to define and to differentiate from modified or enhanced photos: to what extent would the modification of the photo amount to fakery? Both modified photos and fake photos abound in the internet. The photos in advertisements, for example, are most likely already modified; for there is the issue of better representation, or beautification. Similarly, other photos that are designed to represent, such as the profile photos in social networking sites (SNSs), are also likely to be modified in order to achieve a better self representation. Therefore, the dependability of digital photos which one encounter on a daily basis is open to question. The temporalities associated with the labor put into the

modification process may be discernible, and the extra time put into the discerning process is also a feature in one's temporal experience with online photos. The varying level of modification in a photo and its associated temporal engagements also signify the plasticity of online temporality.

The intimacy between online photos/pictures and text is also worth noting. Online photos/pictures are also searchable, which is realized by their association with text. Similar to text's relationship with hypertext, photos/pictures are often bonded with text too. An obvious example would be the icons for browsers and websites. Almost all major web browsers and websites have their own graphic icons, which always accompany the text or hypertext to constitute an organic entirety. The icons for the two SNSs, Facebook and Renren, for example, both take the first letter/character of their name and make a graphic icon, which stay quite consistent and appear on each of their internal web page. The synchronicity of the text and the graphic is designed to implement a stronger visual impact, which serves as a proof of the entrenched multimedia doctrine in the internet. In the century of optical illusion, the demand for a multimedia environment in the internet would only increase every day. As Paul Virilio loudly announced, the 21 century would be "the century of optical illusion"; for him "visualization is the defining aspect of what is generally known today as virtualization" (Virilio 29). Therefore, the importance of audios and videos goes without saying. The following section would explore one's temporal experiences with audios and videos online.

- *audios a videos in the internet*

The remediation process on audios and videos in the internet is quite dynamic as well. First of all, the audio and video data have been digitized and numerized too. Compared to the previous media formats which held audio and video data – vinyl records, cassette tapes, videocassette tapes, compact discs, film, among others, which manipulated physical signals to store and represent data – digital audios and videos data, on the other hand, depend directly on numbers to do so. The virtualization of the data in the computerized and internet environment, therefore, is once again a process to abandon the physical in favor of the statistical. One's temporal experience in contact with the audios and videos, in turn, has transitioned from an engagement with the physical medium to an engagement with a non-physical statistical data. The transition, in the meantime, has eliminated the immediate bond between the data and their physical media carrier, which has also nullified the inevitability of physical decay of the original media carrier in previous media forms– with the digital media, data are more statistical than physical, and thus relatively independent of media carriers. However, that does not mean the digital audio and video data can be represented without any physical device. As discussed above, the computer/digital screen has become the omnipotent window for the display of the decoded digital data. The screen has become necessary for the visual representation of the digital data; nonetheless, there is no particular relationship between the screen and the digital data. The loss of physicality of the digital media, in turn, has undermined the sense of being together with the data, especially for the online audios and videos, where the accessibility is always dependent on the connection with the internet, always a click away and always in another space. Moreover, the loss of physicality of the digital media has prevented the digital data from being worn

down in the passage of time, as opposed to the data in traditional media, which echoes the feature of timelessness in the age of internet.

Similar to digital photos and pictures, the compatibility of the digital audio and video files with one's device remains to be an issue. There are also a variety of formats which help regulate the statistics inside an audio or video file. Some of the common formats are MP3, MP4, WMA, WAV, VOB, RM, FLASH, among others. The multiplicity of file formats could offer many choices; however, it could also lead to the incompatibility of a random online file with one's device. This incompatibility, in turn, would disrupt the expected smooth temporal flow of one's online experience. The unpredictability of this incompatibility would prove to be a serious challenge to the ideal of a simultaneous online community, since extra time must be rendered to remedy the incompatibility.

Another possible disruption of the ideal flow of online temporality is the loading time, which is the primary culprit against the fulfillment of a fully instantaneous online environment. The loading time, or the buffering time, is the time needed for downloading and decoding a large file accessed online, which applies to all online media formats – audios/videos, pictures/photos, and even text in some cases. The greater the size of a file, the greater the chance it will pose a challenge to the capacity of statistical interaction between one's terminal and the internet server. Apparently, the internet does not automatically promise a high speed connection. In fact, the connection speed depends on various factors: the type of connection, the quality of the service provider, the quality of the interacting servers, and so on. Up till now, the average connection speed has not been high enough to well surpass the data transfer load in all internet actions, particularly in accessing

online audios/videos, since they usually have the largest data size. Therefore, hiccups often occur and web surfers commonly experience "waiting periods" in their virtual life. The virtuality of online data – the lack of the physicality of data, especially in comparison with more traditional media – has contributed to the lack of instantaneity which could be guaranteed only by being together with the data that are physically inscribed in a specific medium. As discussed above, the online data are always a click away; unless they are downloaded to one's terminal and no longer serve as online data. The waiting period, in turn, becomes a specific phenomenon in the online environment, which again warns us that excessive data may do harm and that the ideal of instantaneous online communication may not be achievable if the data size continues to increase.

Another factor affecting the free and instantaneous accessibility of online materials is the protection of copyright. As discussed in the previous section, the issue of ownership of the master copy has much obsolesced in the age of internet, since digital reproduction does even a better job than mechanical reproduction in the exact replication of data. However, the issue of ownership has not entirely evaporated in the internet. Copyright still rules the cyberspace, at least in theory. Meanwhile, the breaking of these traditional boundaries – the copyrighted vs. the non-copyrighted, the original vs. the duplicates – has been dynamic. Efforts at different levels are made to approach the ideal of a fully accessible cyberspace. A movement has surfaced known as "copyleft", where copyright has been fully or partially revoked in favor of unhindered accessibility to others' materials. Both Open Source Initiative (www.opensource.org) and Creative Commons (www.creativecommons.org) are non-for-profit organizations dedicated to the mission that digital creations should be made

freely accessible in order to benefit human beings even more.[10] In the educational front, many initiatives have also been made to promote free online accessibility of a variety of resources, such as the HighWire Press from Stanford University, the Yale Open Courses from Yale University, the PubMed Central from the U.S. National Library of Medicine, to name but a few. On Youtube, the leading online video sharing community, for example, countless cases of copyrighted materials are regularly posted and viewed; such as television shows, film, music videos, among others, even though sometimes the audios/videos are pirated and display a compromised data quality, or the piracy aesthetics as some would argue.[11] Similar to Google Books, Youtube has also aroused much controversy in its involvement and tolerance with copyrighted materials, and faced some lawsuits. The state of copyright protection varies from region to region. Different nations apply different levels of surveillance and control on copyrighted materials. The U.S., for example, exerts much stricter control on them than Mainland China. On the Chinese equivalent of Youtube – Youku, one of the leading online video sharing communities in China, many more audios/videos can be posted and viewed, including recent Hollywood productions like the Kung Fu Panda series, whereas on Youtube only the trailers or short clips of the series can be found. The different levels of regulation, in the meantime, have resulted in the breaking of parallelism in the online experiences of web surfers from different regions. If some user in the U.S. attempts to access an online audio/video on Youku considered illegal in the U.S., for instance, blocking would be executed and an error sign which reads "Sorry, this video can only be streamed

10 For more discussions, see Lawrence Lessig's *Free Culture* (2004).

11 A film scholar, Brian Larkin, in his article "Degraded Images, Distorted Sounds" (2004) has reviewed the aesthetics of pirated video in his discussion of the Nigerian video market and the phenomenon of piracy.

within Mainland China" would appear on the screen. For the Chinese diaspora in the U.S., this situation would repeat itself often; and also in their experiences with the native social networking sites like Renren, since the sharing of audios/videos abounds in SNSs. The unparallel online experiences have led to the unequal temporal experiences with the online materials among locals and national diasporas. Therefore, even though the geographic boundaries have been much diminished in the virtual world, they remain plastic for they can always be negotiated and reinforced by the controlling forces.

- *multiple mediation*

As discussed above, internet remediation does not stop at medium-medium adaptation; it could go further to multiple rounds of remediation, which is referred to as *multiple mediation* in the paper. Multiple mediation applies to the situation where a previous medium needs to undergo multiple rounds of transformation in order to fit the computerized online environment. One example would be the representation of handwritten text online. Handwritten text per se could not be preserved in a digital textual format, since computer and internet only work with standardized and numerized text. However, once transformed into an image format, either as a photo or as a picture via the programmed drawing board, the handwritten text could be represented and preserved.

Cases of multiple mediation abound in the digital environment. Contrary to the handwritten example where text needs to be mediated into image before mediated into the cyberspace, sometimes image is in need of textual mediation as well. Optical character recognition, or OCR, is a process of mechanically recognizing texts in images; in other words,

a process of textualizing an image file. It is especially useful for people with optical disabilities, since they would rely on the mechanical recognition of text, rather than of images, to help identify and understand computerized data. OCR could also enable the searchability of text in an image file, which greatly increases one's manipulative power over digital time. In Google Books, for example, the text is formatted as an image, which protects the copyrighted materials from being freely selected and duplicated; however, the searchability of the text is retained, which much expedited one's contact with digitized books: an entire book does not need to be read at all, for the targeted results would turn out in a second after a search has been made. To summarize, multiple mediation can be realized in different directions; and it can help accommodate different needs and functions in the online environment.

Multiple mediation enables varied media formatting for the same materials; in the meantime, it also brings up opportunities to have varied temporal experiences with the same materials. For instance, it is different to read a newspaper article from its website and to read the same article from an online photo of the newspaper. The former would be in a textual format while the latter would be in an image format. Moreover, the reading of the latter would be a simulation of the reading of the original article in print, since a photo would capture faithfully the structure, the color and the details of the print copy; while the article from online would have been reformatted and reprogrammed – the latter would feel more traditional and classic while the former would feel more digital. And that is probably the reason why certain newspaper agencies would provide both a news website and an electronic image version of the newspaper to the web surfers at the same time. The same

content could have multiple representations in the internet; and the web surfers are also granted the freedom to select which representations to share in their own social networking sites. The web article would most likely result in a hyperlink, and the article in a photo would likely lead to an image. The viewers of these sharing would in turn have a varied temporal experience: a hyperlink suggests an external site and temporality whereas the image should have already presented an immediate and internal temporality. In summary, the choices over different media formats would result in differences in one's temporal experience.

In conclusion, the convergence of various media formats in the internet has led to a process of remediation for each of them, which has also altered the temporalities originally associated with them. Moreover, multiple mediation, which stands for the situation where multiple rounds of mediation have to be undertaken before the desired state of data representation can be achieved, is a phenomenon with growing frequency in the internet.

CHATPER 5 CONCLUSION

Digital temporalities have emerged with the advent of computer and internet. With the growing scale of the use of computer and internet in one's regular communication, digital temporalities have transitioned from a novelty to an important stakeholder in one's daily temporal experiences. On the other hand, studies on computer and internet related temporalities are only slowly developing. Scholars have approached the topic primarily by applying previous analytical models in the new investigation of the digital time, and by way of bridging digital temporalities to other topics of interest, such as digital memories, online procrastination, among others. The unique features of the digital temporalities, however, still remain a field to be explored more extensively. This study attempts to dissect the digital temporalities and to name their primary features directly, and to make a timely contribution to the scholarship on the topic.

The study concludes that the defining features of the digital temporalities include the digital pursuit of timelessness, which also marks their post-modernity, the meaninglessness of the digital temporalities, which is a result of the exaflood, and the temporal mix-up in the internet due to the convergence of different media forms in the internet. Another significant feature of the digital temporalities is their plasticity, which is a co-product of the previous features and also a signal for the erosion of boundaries in the internet. The formerly stringent boundaries – such as the geographic, the public versus the private, the physical versus the virtual, the living versus the dead, the legal versus the illegal, to name but a few – have all been greatly compromised over recent years of the development of computer and internet. Moreover, the plasticity of the digital temporalities is also realized in the process of

media remediation and multiple mediation, during which the data of culture have been refashioned and repurposed to stay compatible with the new digital environment. Text, images, audios and videos have all successfully converged in the internet; and their associated temporalities have also been affected in the process. The digital temporalities, therefore, are quite flexible and eclectic.

The study is not a definitive one on digital temporalities, but an early endeavor on the topic. The scope and the depth of the study are limited, but have opened up many directions for future scholarship. Discussions on the erosion of boundaries in the internet, such as the living versus the dead, the legal versus the illegal, among others could all be extended into a topical discussion. Topics on the affects and the emotional implications for the digital temporalities could also be explored. Text and content analysis could be employed for a detailed investigation of one's conceptualization of the digital temporalities. The list can go on for more than the conclusion could hold.

The digital temporalities are changing our daily experiences. As we are starting to understand them, we will start to better understand ourselves and our being in the digital environment.

WORKS CITED

WORKS CITED

Bolter, Jay D, and Richard Grusin. *Remediation*. Cambridge, Mass: MIT Press, 2000. Print.

Bond, Michaelle. "Your Facebook Account on Display?" *USA Today* 3 Nov. 2011: 3B . Print.

boyd, danah, and Jeffrey Heer. "Profiles as Conversations: Networked Identity Performance on Friendster." In Proceedings *of the Hawai'I International Conference on System Sciences* (HICSS-39), Persistent Conversation Track. Kauai, HI: IEEE Computer Society, 2006. Web. 1 Jun. 2011.

boyd, danah, and Nicole Ellison. "Social Network Sites: Definition, History, and Scholarship." *Journal of Computer-Mediated Communication 13*.1 (2007): n. pag. Web. 1 Jun. 2011.

Castells, Manuel. *The Rise of the Network Society*. Malden: Blackwell Publishers, 2000. Print.

Chun, Wendy H. K. *Control and Freedom: Power and Paranoia in the Age of Fiber Optics*. Cambridge, Mass: MIT Press, 2006. Print.

DeAngelis, Tori. (2009). "A New Kind of Delusion? A Growing Number of Psychotic Patients Believe They Are The Stars of Reality TV Shows." *APA Monitor on Psychology* 40.6 (2009): 32. Web. 1 Nov. 2011.

Deuze, Mark. "Media Life." *Media, Culture* & Society 33.1 (2011): 137-148. Print.

Doane, Mary A. *The Emergence of Cinematic Time: Modernity, Contingency, the Archive*. Cambridge, Mass: Harvard University Press, 2002. Print.

Ellison, Nicole, Charles Steinfield, and Cliff Lampe. (2007). "The benefits of Facebook 'friends:' Social capital and college students' use of online social network sites." *Journal of Computer-Mediated Communication 12*.4 (2007): n. pag. Web. 1 June 2011.

Floridi, Luciano. *Information: A Very Short Introduction*. Oxford: Oxford University Press, 2010. Print.

Fuchs, Christian. *Internet and Society: Social Theory in the Information Age*. New York: Routledge, 2008. Print.

Giglio, Mike. (2011). "The Cyberactivists Who Helped Topple a Dictator." *Newsweek* 15 Jan. 2011: n. pag. Web. 21 Jan. 2011.

Gitelman, Lisa. *Always Already New: Media, History and the Data of Culture*. Cambridge, Mass: MIT Press, 2006. Print.

Gozzi, Raymond. “A Brief History of Internet Time.” *et Cetara* 58.4 (2001): 470-476. Web. 1 Nov. 2011.

Haraway, Donna. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." in *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991. Web. 1 Mar. 2011.

Hassan, Robert, and Ronald E. Purser. *24/7: Time and Temporality in the Network Society*. Stanford, Calif: Stanford Business Books, 2007. Print.

Hingston, Sandy. “The Death of Handwriting.” *Philadelphia Magazine* Jul. 2011: n. pag. Web. 1 Nov. 2011.

Hoskins, Andrew. “Digital Network Memory.” *Mediation, Remediation and the Dynamics of Cultural Memory*. ed. Astrid Erll and Ann Rigney. Berlin: Walter de Gruyter, 2009. Print.

Ihde, Don. *Technology and the Lifeworld: From Garden to Earth*. Bloomington: Indiana University Press, 1990. Print.

Kim, Kyung-Hee, and Haejin Yun. “Cying for me, Cying for us: Relational dialectics in a Korean social network site.” *Journal of Computer-Mediated Communication 13*.1 (2007): n. pag. Web. 1 Jun. 2011.

Lange, Patricia. “Publicly private and privately public: Social networking on YouTube.” *Journal of Computer-Mediated Communication 13*.1 (2007): n. pag. Web. 1 Jun. 2011.

Larkin, Brian. “Degraded Images, Distorted Sounds: Nigerian Video and the Infrastructure of Piracy.” *Public Culture* 16.2 (2004): 289-314. Print.

Lavoie, Jennifer and Timothy Pychyl. “Cyberslacking and the Procrastination Superhighway.” *Social Science Computer Review* 19.4 (2001): 431-444. Print.

Lee, Heejin, and Jonathan Liebenau. “Time and the Internet at the Turn of the Millennium.” *Time & Society* 9.1 (2000)：43-56. Print.

Leong, Susan, and Teodor Mitew, et al. “The Question Concerning (Internet) Time.” *New Media& Society*, 11.8 (2009)：1267-1285. Print.

Lessig, Lawrence. *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity*. New York: The Penguin Press, 2004. Print.

Liu, H. “Social network profiles as taste performances.” *Journal of Computer-Mediated Communication*, *13*.1 (2007): n. pag. Web. 1 Jun. 2011.

Manovich, Lev. *The Language of New Media*. Cambridge, Mass: MIT Press, 2002. Print.

McLuhan, Marshall, and Quentin Fiore. *The Medium Is the Massage*. New York: Random House, 1967. Print.

Papathanassopoulos, Styliano, ed. *Media Perspectives for the 21st Century: Concepts, Topics and Issues*. New York: Routledge, 2010. Print.

Rui, Jian. *Intercultural friendship formation and development: A survey study based on an all-Chinese sample about the role of Facebook in the friendship between Chinese and American students*. MA thesis. Michigan State University, 2009. East Lansing: UMI, 2009. Print.

Sandbothe, Mike. "Media Temporalities in the Internet: Philosophy of Time and Media with Derrida and Rorty." *Journal of Computer-Mediated Communication*, *4*.2 (1998): n. pag. Web. 1 Jun. 2011.

Shirky, Clay. "The Political Power of Social Media: Technology, the Public Sphere, and Public Change." *Foreign Affairs* 90.1 (2011): n. pag. Web. 30 Jan. 2011.

Suddath, Claire. "Mourning the Death of Handwriting." *TIME* 3 Aug. 2009: n. pag. Web. 1 Nov. 2011.

Virilio, Paul. *The Information Bomb*. London: Verso, 2000. Print.