Situated Literacies, Digital Practices, and the Constitution of Space-time

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> A good part of our cognitive activity consists in helping us find our way among the multitude of different worlds which we navigate. We must quickly determine the topography and axiology of the new spaces in which we participate, distinguish systems of values, understand and interpret the ways in which situations develop. (Lévy, 1997)

In this paper I consider the problem of the situatedness of digital literacies, and propose a provisional methodological model for studying digital literacies as embedded within and productive of multiple situations. My interest in situation follows a tradition of theorizing the relationship between communication and context, present, for instance, in the ethnography of communication work dating back to the early 1960's (Hymes, 1964). More specifically, the development of methodology discussed in this paper is motivated by a desire to understand how emerging digital literacies are related to the production of youth identities. Just as the meanings and purposes of communicative texts are greatly dependent upon their relationships to contexts, so are identities recognized and enacted through contextual relationships. Thus, the specific set of relations I am concerned with may be represented as the triad of literacy practice--context--identity.

In their recent review of research on in-school and out-of-school literacy practices, Hull and Schultz (2002) note the problem of setting up a false dichotomy

between literacy practices that is based upon physical space. Recognizing that "school" is located not only in school buildings, but rather, in broadly enacted practices (Street & Street, 1991), creates a number of problems for research that is based upon the premise that contexts are readily and materially apparent. At the same time, many researchers are unwilling to toss out the physical space context with the bathwater of practices that traverse physical space. In literacy research the ethnographic imagination is informed by the place-based community literacies of Shirley Brice Heath's (Heath, 1983) Roadville and Tracton, and by the social-material contexts of thousands of documented literacy classrooms. If practice theories of literacy, such as those developing within the New Literacy Studies (Barton, Hamilton, & Ivanic, 2000; Gee, Hull, & Lankshear, 1996; Knobel, 1999; Street & Street, 1991) are invested in understanding literacy in its "cultural, historical, economic, and political contexts" (Hull & Schultz, 2001, p. 586), then how might such practice-context relationships be traced? What dimensions of context matter? Further, how do digital literacy practices complicate current notions of the embeddedness of *literacy in context* as well as the production of *context through literacy?*

This paper is intended to offer a partial response to problems of practice-context--identity in digital literacies by proposing a provisional model for interpretive research. This provisional model is being developed for a current research project (**Syn**chrony, briefly discussed following). I use the term "model" reluctantly, as I do not believe that our practices in research can be clearly and unproblematically modeled. I also do not believe that any such research model can be cleanly mapped onto other inquiries and contextual networks. At the same time, my hope is that stabilizing our own activity with a

provisional model may be helpful for furthering dialogue about methodology and theory for researching digital literacies.

Problems of Situation for the Study of Digital Literacies

Most of the relatively small body of work on the naturally occurring digital literacies of youth is associated with the New Literacy Studies (Alvermann, 2002; Lankshear, Gee, Knobel, & Searle, 1997; Lankshear & Snyder, 2000). The NLS are in many respects a project of relocation, a project designed to "locate literacy in time, space, and discourse" (Barton, Hamilton, and Ivanic, 2000). Perhaps the most apparent move of the NLS to relocate literacy from isolated, observable activities and texts to widely dispersed practices is realized in analyses that trace the production of Discourses (Gee, 1990). In such work, often informed by Critical Discourse Analysis (CDA), the state, the institution, the school, race, etc. are traced as they are enacted and recognized (Gee, 2000) in particular literacy events. Literacy practice is evidenced as everywhere ideological and as co-constructive of identities/subjectivities. With broad strokes, this move collapses or at least softens micro/macro distinctions, tracing Discourses in their flows across and within situated events. However, beyond this compression of space-time (Harvey, 1996) that laminates Discourses with local events, the NLS presently has a limited conception of the relationships between literacy practice and context. Multiple definitions of context, folk theories of context-as-setting, and uni-directional trajectories (where context influences practice, but not the reverse) are often present in the NLS. While NLS theorists critique binaries (e.g., in-school/out-of school, self/other, discursive/material), we do not appear to have well-developed means for locating literacy practices, or tracing how practices themselves produce locations.

Elsewhere, I have considered how space-time theories, as developed in human and cultural geography (Crang, 1998; Harvey, 1996; Lefebvre, 1991; McDowell, 1997; Soja, 1989, 1996) may serve to critically reframe practice-context-identity relations . Presently, while informed by geographical theories, I turn primarily to the practical, methodological problems of researching digital literacies as a productive starting point for reconsidering context. I begin by framing these problems with a set of related claims about closely related dimensions of space-time context. In the second part of this paper, these claims are translated into a provisional methodological model.

Dimensions of Space-time Context Relevant to Research on Digital Literacies

1. People networks. The physical space-time locations of individuals in literacy practices, and their access to and moments among these locations, are a significant dimension of context for the meanings of practice and identity. These dimensions of context include physical "place" and "path."

2. Digital networks. Here, the focus is on the socio-technical networks formed and used through online practices. It is critical to separate actual socio-technical networks used (e.g., a specific news group or chat room) from potential networks available (e.g., the Internet as an Information Superhighway).

3. Textual networks. Not only do people form socio-technical networks among themselves through literacy practice, but texts form networks as well. Understanding the networked locations, intersections, and paths of texts is pivotal for practice-context-identity relations.

4. Online/offline co-constitution and embededdness. In research, online literacies and identities cannot be separated from offline literacies and identities *a priori* (Hine, 2000;

Miller & Slater, 2000; Wakeford, 1998). Rather, research should trace how participants create boundaries and blur their online and offline practices and identities. Every online interaction is embedded in some physical space-time. Conversely, offline literacies and identities may be contextualized in relation those practiced online.

5. <u>Multiple interactional contexts.</u> Interactions involve the continual negotiation of context; participants are not simply "speakers" and "hearers" but take up a wide range of dynamic "footings" including speaking as principals, animators, and authors, and hearing as by-standers, overhearers and ratified participants (Goffman, 1981). The mutiplicity of and negotiation among footings is radically complicated in online literacy practice, where participants may be involved in multiple IM sessions, while surfing the web and completing school assignments, among other forms of concurrent communicative activity (Lewis and Fabos, 1999). Other literacy processes relevant to the study of contextual production include referential practice (Hanks, 1990) and contextualization cues (Gumperz, 1982).

6. <u>Discursive constructions of context within interaction.</u> Instant Messages, e-mail, MOO-based interactions and other forms of digital literacy do not merely occur in context, but are also productive of context, invoking particular textual time-spaces or chronotopes (Bakthin, 1981) and imaginary geographies constructed in discourse (Gregory, 1994). A key problem for research on digital literacies involves developing method for interpreting the multi-modal (Kress & Van Leeuwen, 2001) production of context (and identity).

7. <u>Discursive reifications of context.</u> People do not simply participate in situations, rather, they produce and relate Discourses about these situations. The Internet, for example, is socially shaped through interactions within it and also through Discourses about it. In

other terms, the Internet and other social spaces of interaction are shaped as practices and also as reified artifacts (Hine, 2000; Wenger, 1998).

The above dimensions of context continually invoke and recast two assertions of context-practice relationship that are under-explored in literacy studies, and yet seem especially critical for the analysis of digital literacies. First, multiple space-time contexts are routinely at play in any literacy practice. Asking how a particular interaction or practice is situated should anticipate not one but multiple responses. Questions about situatedness thus evolve from "What (single) context is relevant here?" to "How are multiple contexts articulated, juxtaposed, and more or less foregrounded in this practice or interaction?" The constitution of a single relevant context in the study of online interaction would then be seen as an aberration rather than the norm. Secondly, (digital) literacy practice is both *dependent upon* and *productive of* space-time context (Harvey, 1996; Lefebvre, 1991; Soja, 1989). While it has been common to think of literacy events as embedded in some context (e.g., school, home, the workplace), less frequently have we considered how textual practices are involved in the ongoing production of space-time. The ability of online and offline literacies to generate context is critical for a number of reasons. Among them, while the analysis of contextual embeddedness is prone to emphasize how practices and identities are socially structured, analyses of contextual production provide openings for agency, imagination, and improvisation.

Toward a Provisional Model for Researching Online Literacies

In this section of the paper I outline how the dimensions of context outlined above are taken into account in the design of an ongoing research endeavor. Prior to this discussion, I offer a bit of background on the Synchrony research project.

Background of Synchrony

Synchrony, or "**S**tudying **Y**outh **N**etworks across Time-Space," is a new research project that two research assistants (Beth Aplin-Rollins and Amanda Gildark) and I have recently initiated. The project is funded by a Spencer Foundation Small Grant and by Peabody College. The research is ethnographic, documenting the practices of six to ten key adolescents and their extended social networks. Case studies developed from this study will trace how these adolescents use new information and communication technologies (ICT's, including instant messaging, chat, e-mail, searching the Internet and building web sites), and how this ICT use is related to face-to-face literacy practices in school, home, and informal peer contexts. Key informants are currently being chosen through a process of surveying and screening interviews in public and private middle schools. The research will proceed as a series of case-based ethnographies, but will move beyond cases of individuals to consider the key informants' social networks as cases.

Contact with potential key participants has been initiated within school settings, yet much of the actual data collection will occur beyond school settings. Two schools are involved in the study,"Tyler Middle School" and "Ridgeview Academy." Tyler Middle School, for students in the 7th-8th grades, is located just outside a small town (pop. 6,000) in north central Tennessee. The school population is currently 770 students; 75% are White European American, 16% are African American, 6% are Latino/a, and 3% are Asian. 25% of the students at Tyler Middle are on free or reduced priced lunches. Tyler Middle is part of a small school district of four schools. The school district has a commitment to networking all of the classrooms, yet in most cases only one computer (typically near the teacher's desk) is available in each classroom. Students at Tyler also have access to a computer lab during their free hours, when teachers arrange for visits for

special projects, and when they take a computer class during their 7th grade year. Our research at Tyler is focused within the "Panther" team at the 8th grade level. The Panther team, which is the more diverse of two groups of students (racially, socioeconomically, and according to academic testing levels) is instructed by 9 teachers, 4 who are Special Education teachers. Approximately 30 of 145 students on the Panther Team are in Special Education.

Ridgeview Academy is a private, non-religious school for girls in grades 5-12, located on a 38-acre campus in a suburban area of a large city in Tennessee. The student population of the school is 554 students; 5% of the students are minorities (exact racial and socioeconomic data not yet available). Five years ago, motivated by the leadership of two school librarians and a former administrator, Ridgeview began a program of developing a wireless network in the entire school, which is currently completely functional and relatively stable. Three years ago, the school began to require parents to purchase laptops for their daughters attending the school. All students currently carry these laptops to their classes and homes daily. Laptops are maintained by a computer maintenance office on campus and are set up with a common set of software. Students in each class are required to have the same PC laptop, although students who entered the school later than others have newer models. Computer use within the class varies widely; in some classes there is little "official" use of technology for pedagogical purposes, while in others students regularly research and present with technology, and submit all assignments electronically. Our research is focused upon the 9th grade class at Ridgeview, which is comprised of 85 students, instructed by 7 teachers.

The following discussion returns to the dimensions of context introduced above. However, here I have reorganized these dimensions into three categories that index

different forms of research activity. This organization does not assume that these categories or dimensions would be held apart for within participant activity or for analysis; rather, the following organization is a research heuristic, a self-guide about where to look, where to go, and what data to gather. The first category involves the circulation of bodies and texts across space-time. In the second category I consider interactional contextualization and means by which data reflecting the dynamic construction of multiple contexts might be gathered and analyzed. The third category involves discursive contextualization, positing a methodology for analyzing how texts and textual ensembles construct and reify particular contexts and context-identity relations.

Designing Synchrony I: Tracing the Circulation of Bodies and Texts

A shift from place-based to "traveling ethnography" (Clifford, 1992) involves tracing the space-time paths (Hägerstrand, 1975) of individuals. Practically speaking, we have designed this study to following key participants across classroom settings (in particular, English and social studies), informal peer settings (e.g., extra-curricular activities, hang-outs, shopping malls) and home contexts. Of course, we will only be able to get a sampling of literacy activity in these settings, given our limited research time and participants' limited desires to be constantly followed. Besides direct participant observation in the literacy-related activities of youth across settings, we will also have key participants keep literacy journals that record their literacy practices over 1-2 day long periods of time, interspersing such self-data collection throughout the study. As identity is conceptualized in this study as a relational construct, we are particularly interested in gathering data on how literacy is used to form and maintain different kinds of social networks. For example, discussions in classrooms will be periodically audio-

recorded in order to gain a better understanding of how such discussions are related to social networks outside of the classroom and variously mediated by ICT use. Related to the flow of bodies across material space, we will also gather data on how material spaces are parsed or regionalized. We assume that technology access and surveillance is carried out by the placement of computers in particular rooms in homes or schools. Therefore, the home space (school, etc.) cannot be simply considered one unified context, but the creation of boundaries and openings between spaces will be documented.

What it means to engage as a participant observer in online interaction is currently a topic of much discussion and debate in social science research. Relevant practical and ethical problems of this work include how access is gained, whether or not online community relations will be fundamentally changed by the presence of researchers, and the difficulties involved in determining the legal identities of individuals for the purposes of consent (and even analysis). For these reasons and others, the research on digital literacies, and particularly that involving youth, has included very few online interactional texts (e.g., e-mail, IM's, chat room interactions), with the exception of more public or semi-public texts (web pages, newsgroup postings, zines). Much of the research has relied on the self-reports of participants concerning their online activity. The design of this study involves attempting to move beyond the limitations of self-reports, while at the same time being highly aware of our problematic positions as researchers in online youth spaces. We have currently addressed the practical, institutional (IRB), and ethical dilemmas presented by such work through different means of gathering data. First, we will conduct periodic direct participant observation of youth who are engaged in online activity. Participants will be interviewed, during interaction, regarding their literacy practices and social networks. Secondly, we will be using Spector Pro software, which is

a monitoring software that automatically records various forms of Internet-based activity. We will set up the software to gather logs of Instant Messages, chat room interactions, web browsing, and MOO-based interactions (if applicable). While Spector Pro is designed as a form of snooping software, designed to run invisibly (for corporations, or romantic couples who suspect one another of unfaithfulness) it is also possible to set the software up such that the computer user can turn it on or off at will, and will visibly be reminded when the software is operating. (The software also uses up hard drive space quickly, and as such can only practically be used periodically). E-mail interactions, which are much less difficult to capture as they are non-synchronous, will be gathered by having participants copy (after selectively sorting and deleting) messages from in and out-boxes.

For group interactions, such as public or semi-public chat spaces, our plan is to engage as participant observers in the interactions themselves. While participating, we will record the communications of key informants, their friends who have given consent to participate, and their "e-friends" (persons that key informants know only in online contexts). If the communications of others, who have not given advance consent, are deemed important for the study, post-hoc permission will be sought from these individuals for the use of their electronic postings as data. Because of the public nature of chat, MOO or MUD spaces, and bulletin boards, to protect the identities of participants, and to minimize the interference with naturally occurring communication, we will not reveal the nature of our research-based identities and relationships within these fora. Obviously, this non-disclosure of researcher identity runs up against ethical principles used in other forms of ethnographic research. In online research, though, this ethical dilemma is not so straightforward. Against the value of full disclosure of research activity we would position the value of maintaining the integrity of online networks and

identities. Additionally, in any online interaction, from an emic perspective, there is no guarantee of the offline identity and purposes of any interactant. (Perhaps a few years hence entire groups of middle-aged literacy researchers will meet in chat spaces and gather data on one another as adolescents.). A parallel set of dilemmas involves gaining consent for the use of online interactional data from those known only to us (and to our key participants) through electronic media ("e-friends"). On the one hand, one might argue that the same standard as face-to-face consent ought to apply, such as a signed parental permission form (or perhaps even a tougher standard if one considers that persons online are sometimes prone to disclose personal information about themselves more than they would in offline interaction). On the other hand, online users do not always have personal and geographical information about one another accessible to them and in fact use non-disclosure as a form of self-protection. As such, we have designed the research such that consent from e-friends is given electronically (and does not require parental permission), through a web-based consent form (http://www.vanderbilt.edu/litspace/Synchrony/index.html). Like the key participants in the study, we have no fixed knowledge of the offline identities of these e-friends, such as the real names of parents or addresses that would be gathered in typical legal consent processes. At the same time, withholding this information from ourselves offers some protection to the e-friend participants. While this type of consent is not technically "legal consent," it has been approved by our local IRB as a solution to a practical and ethical dilemma of the research.

Tracing the circulation of texts is obviously closely tied up with following the paths of adolescents online as described above, as these paths are textually mediated and inscribed through hyperlinks, e-mails sent and received, textual MOO spaces, and other

textual mediations. Yet, the emphasis in this case is not the person-in-activity and his or her relative extensibility across space-time, but rather the identity-related text and its circulation among social networks. In an important early analysis of the networking of texts in ethnographic work, Hine (2000) has traced how information and advocacy web sites in the Louise Woodward trial became arranged as more or less central or marginal. While the number of web sites associated with the case grew very rapidly (from 165 to over 700 in a week's time), and some of these sites deemed themselves as "official" and authoritative, Hine analyzes how the Official Louise Campaign for Justice site became the key site. The centrality of this site--its flow across the entire network--is analyzed by considering not only the number of hits to the site, but also how the more peripheral and amateur sites repeatedly featured prominent links to it. Hine also argues that the offline physical location of the site was critical in constructing its centrality amidst the flow of interactions:

> The official site was considered authoritative and up-to-date due to its proximity to the campaigners in Elton, and through them to Louise herself. The counter on the official campaign site told of the many visitors who found their way to the centre . . . The connection between the offline location of the village and the online location of the website was strongly rendered. It is clear that while space might be expressed as connectivity rather than distance on the WWW, this space is far from homogeneous, and it is not independent of physical, distance-based space. (p. 107)

Thus, while "flow" may be at first glance more cleanly associated with online than offline practices, Hine's (1999) research suggests that we need to carefully consider how flow is an achievement of relative spatiality with disparate resources across socio-material networks, connecting the global and the local, material and symbolic centers and margins (related to the

discussion of embedded practices, below). Other circulation-related practices would include a broad range of ways of constructing extensibility and attention-getting through media, including the presence of incoming and ongoing links in a website, the practices of registering websites with search engines (including the payment for some registration services), posting personal website addresses within e-mail signature files, and even handing out business cards with web site addresses (Hine, 2000, p. 106).

A relatively small but significant theoretical tradition that we draw upon for considering the circulation of texts and dynamics of networks is Actor Network Theory, or ANT (Latour, 1987, 1988a, 1994; Law, 1991). Actor network theory affords us a number of productive ways to theorize circulation in the ethnography of literacy practices. First, as with a range of other spatial theorists, Latour does not interpret time and space as independent, a frame in which things move, but as the result of the interaction among things (Latour, 1987). In Latour's work, space and time are less important than are "spacing" and "timing" (Bingham & Thrift, 2000). More uniquely Latourian is the way in which objects of all sorts--actants--are brought into circulation, including people but also (in his analysis of Einstein's work) trains, clouds, men with rigid rods, lifts, marble tables, mulluscs, clocks, and rulers (Latour, 1988b). Central to Latour's insight are not simply the circulations among human and non-human actants, but analyzing the transformations, traductions, and translations among actants. Thus, Latour historically has a keen interest in the function of texts in scientific work, and the manner in which texts are immutable (fix particular facts and forms of knowledge), are combinable, and are mobile (Latour, 1987). Latour's actor network theory may be considered a "prepositional" approach, as it seeks to specific how the relations between actants (e.g., orientation, directionality, proximity) are worked out in circulation (Bingham & Thrift, 2000). While I am not entirely comfortable with the seeming equivalence of persons, texts, and material objects in

ANT, I do believe that the networked relations among texts is vastly understudied in literacy research, and is particularly relevant to projects (such as the present research) concerned with the relations between identity practices and literacy.

Inspired by a Latourian perspective on flow, the study of literacy practices shifts back from a fixation on isolated texts, authors, and isolated textual practices to consider how such texts are related to actual readers, desks and workspaces, writing technologies, classroom rules, clothing, school lunches, calendars, and a whole host of material, symbolic, and human actants that are active in the construction of social space. In this sense, "circulation" describes a process that is not unique to particular technologies, although certain forms of circulation are afforded by some technologies and practices more than others. Lewis and Fabbo (Lewis & Fabos, 1999), for instance, note that one possible reason students might be bored with the pacing and sequence of writer's workshop could be that the students are "used to a kind of thinking and writing that juggles many purposes, audiences, and writerly stances at once" (such as found in IMing, p. 12). One means of getting at a deeper interpretation of the transitions that students are making in their literacy practices is to follow routine forms of textual circulation, including institutional practices of meeting in response groups, handing in assignments, getting response, publication, etc., function as forms of circulation within and across offline and online literacy practices. Hence, in this design we intend to bring the network metaphor to bear upon tracing the flow of material texts (e.g., student papers, books, self-initiated writing) within and beyond classrooms.

Designing Synchrony II: Interactional Contextualization

Understanding how communication is contextualized interactionally poses a number of methodological problems for research, which multiply when we consider the embeddedness and blending of online/offline interaction. While I discuss some possible approaches in this section,

I also make evident that I have many more questions than solutions, and that new methodologies need to emerge from research practice. Much of our communication offline depends on non-verbal cues. How does online communication exist effectively without these embodied cues? The important limitations of written text in online communications is emphasized by Yates (Yates, 1996):

> The text which appears on the computer screen must provide all available information about the communication as well as being the communication. It has been both location and social context. It must carry the social situation, it must also carry the participants' relationship to the situation, their perception of relationships between the knowledge and objects under discussion. (p. 46)

Yet, to what extent does Yate's claim about the text providing "all available information" apply to the online interactions of youth? This type of claim, informed by a perspective on online communication that emphasizes reduced contextualization cues (e.g., diminished paralinguistic cues such as shifts in posture, facial expressions, sub-vocalizations), is likely focused on imagining online interaction as the only context within which persons regularly communicate. However, a limited amount of ethnographic research (Lewis & Fabos, 1999), a good deal of anecdotal evidence, and the early surveying and interviewing in the Synchrony project suggests that youth frequently, or even most frequently, use online interaction to support offline relationships. Thus, we might assume that in many interactions that contexts would travel, or that entire contextual frames might be called up with oblique referential practices (Hanks, 1990). Following how such contexts and related identities are indexically made to travel (or are held apart) across online and offline interaction is critical to analysis. Secondly, Yate's (1996) claim may well be based upon a model of online interaction that assumes it is done as a solitary practice. Yet, initial evidence suggests that many youth engage in online practices as embodied

collectives--gathered around computers in two's and three's, constructing meanings and social relations together.

At the same time, if shifting part of the burden of carrying the social situation (as indexed in Yate's (1996) claim) does not suggest that the relationships among social situations are not profoundly transformed in the material practices of online literacy. For example, Goffman (Goffman, 1981) argues for greatly complicating the notion of speaker and hearer in his analysis of multiple footings and participation frameworks. This work has been taken up in literacy research (e.g., Larson, 1999) to consider how students and teachers assume dynamic positions with respect to one another as authors, animators, overhearers, etc. Yet, Goffman's strength as a materialist theorist of face-to-face interaction is also somewhat problematic for online interaction. A key problem lies in the constitution of some primary "floor" of interaction, in relation to which speakers and hearers may be said to be "ratified" or "unratified." Do parallel IM windows and interactions "by-stand" one another? How are online production formats produced and parsed? What strategies do young people use to maintain floor positions in multiple interactions that would not be possible in online communication? (A small example of such a strategy involves using very short lines in a chat room such that the "turn" will not pass to another.)

Another assumption that complicates the analysis of online interaction is the notion of the turn and transition relevance place (TRP), as developed in conversation analysis. Since online interaction does not involve a temporally constrained competition for the floor, it would appear that there are either no TRP's (Thorne, 2000) or that TRP's function significantly differently in online interaction. For the collection of data of online interaction, issues such as transition relevance present particular problems. For, even if log files of chat or instant message sessions are gathered, the on-line pacing and decision making of interactants cannot be gathered

from such logs alone. Such log files collapse silent spaces and do not reflect the retrospective interpretations of previous interactions that participants are forming, perhaps invisibly, while online. One approach to capturing such online activity would be to videotape participants (and computer screens) during online activity (Lewis & Fabos, 1999). In this study, due to complications of consent, we have not elected to use this approach. Rather, in addition to electronically capturing selected interactions as described above, we will ask questions during online interactions and audiotape responses. We also plan to use periodically use think-aloud protocols by participants while they are online. To record something of the embodied social relations around computers, in the Synchrony study our plan is also to use digital still photos along with field notes.

Designing Synchrony III: Discursive Contextualization

While we might believe that the material organization of space-time (e.g., buildings, territories, or access to computers as machines) is the primary means of organizing space, Lefebvre (1991) argues persuasively that conceptions of space have the dominant role in shaping its organization. While Lefebvre emphasizes the potential openness of spatial practices, which can move radically beyond such conceptions (or material perceptions) and open up third spaces (Soja, 1989; 1996), he nevertheless reminds us of the importance of the work of designers, engineers, artists and the like in the design of social space. Social space is discursive. Following this lead, we might begin to imagine literacy practices as not merely socially situated, but as directly engaged in the design of social space. The analysis of textual chronotopes, as discussed by Bakhtin (1981), provides one approach to the study of time-space as instantiated within texts. Bakhtin argues that we should look not only to the action and characters of texts, but to

the narrative ground upon which textual action is played out. While chronotopes open multiple possibilities of space-time construction, a primary interest for Bakhtin is how genres, through history, are saturated with associated chronotopes producing distinct relations between events in space-time, character agency, and development. In the analysis of discursive chronotopes we might ask, for instance, what degree of agency characters are given within a text, and how character actions and social spaces co-emerge (Leander, 2001). (It is noteworthy that despite a very large presence of work on Bakhtin-inspired genre theory in literacy and writing studies, that relatively little attention has been given to the chronotope, despite the fact that Bakhtin (1981) insisted upon the chronotope as one of the most important elements of the speech genre.)

As we draw upon and expand a theory of the textual chronotope in this research, a particularly difficult challenge involves moving toward a multimodal interpretation of the chronotope. While Bakhtin compares print-based narrative structures, such as the Greek Romance and the epic poem, in online literacies (as well as offline literacy practices they are influencing) complex relations among images, diagrams, fonts, narrative structures, and the like are routine. Many texts involve time-space hybridizations, or collections of time-spaces, functioning as heterotopias (Foucault), museums of generic motifs rather than clear instantiations of genre. How time-space is organized in the text as pastiche and hypertext is an important area for further study and poses difficult problems for the analysis of context and identity. One area of promising work in this regard is that of Ron Scollon and colleagues in the area of "geosemiotics," the study of the social meaning of the material placement of signs and discourses and of our actions in the material world" (Scollon and Scollon, forthcoming). Additionally, Gunther Kress (Kress & van Leeuwen, 1999; Kress & Van Leeuwen, 2001) and colleagues have been building a research

program on the multimodal interpretation of texts and textual processes that could prove helpful for the focal analysis of the discursive production of space-time.

Michelle Hine (2000) discusses at length how it is critical, in studies of online activity, to take into account how the Internet is also shaped by representations of Internet-based activity in traditional media such as newspapers, film, fiction, and television. In other terms, the Internet is a discursive object or artifact. As part of analyzing how space-time contexts are shaped within interaction, in this research we will attend to discourses about the Internet, about particular locations on the Internet, and about other contexts of interaction including particular classrooms and home spaces. Within participant interview data and within the texts that participants create, we will attend to the reflexive ways in which particular contexts are discursively shaped. We have noted, for instance, that in the early surveying stage of the research that many students at Ridgeview Academy have insisted that they do not communicate in chat rooms. Some students have even responded to the survey with statements ending in exclamation points, such as "I do not talk to people I don't know!" We are interested in how discourses about online and offline practices function to regulate these practices, to shape some as taboo, and to create boundaries such that some forms of literacy are considered to be more or less "school-based." Valentine, Holloway, & Bingham (2002) analyze how three case study schools constructed different discourses concerning technology, including "ICT for all" (including the wider community), "ICT as a life skill," and "ICT in terms of academic achievement" (p. 312). These discourses helped to structure different types of access and surveillance of ICT practices in and out of school. Holloway and Valentine (2001) document how discourses of the "child in danger" and "the dangerous child" (Oswell, 1998) are appropriated (and sometimes resisted) by

parents and schools in efforts to regulate Internet content. Relations to these discourses suggest how identities of "the child" and "the adolescent" are produced in relationship to computers and other non-human actors. This work also makes evident how research on technology and literacy must not only follow local practices, but the ways in which these practices are mediated by discourses about the Internet, literacy, and the life trajectories of youth.

Mapping Social Spaces

I have argued thus far that for the research of digital literacies we are in need of developing a dynamic and multiple perspective on situatedness that takes into account how multiple contexts are enacted, related, and more or less foregrounded in literacy practice. Yet, while the dimensions of context considered above suggest methodological and analytical means to consider the production of context and the multiple relations among contexts, these dimensions are not intended to describe how one produced context is qualitatively different than another. For example, drawing upon Bakhtin (1981) we might analyze how a particular stretch of interaction is discursively contextualized according to "adventure time," or the stripping away of activity and character development from the time-space of local situation. Bakhtin (1981) develops the notion of adventure time from an analysis of the Greek Romance, analyzing how Greek heroes move across social landscapes that are disconnected from individual agency and are relatively interchangeable. While adventure time can be used to qualitatively describe the narrative ground of a stretch of discourse (Hirst, in press; Leander, 2001, 2002), this construct could also be used to describe particular circulations of bodies or texts. We might imagine, for instance, student texts written for school-based or other purposes that

are made circulate among disparate time-spaces and audiences, traveling like diminutive heroes across these space-times, with little relationship to them and with no effect upon them. Adventure time may be thus achieved within the discourse of the text, and also through the circulation of the text. Alternatively, the space-time of time management has been analyzed by Hirst (in press) in her study of LOTE (Languages Other Than English) classrooms in Australia. The time-management space-time is structured according to the logic of the market, ensuring the packaging and flow of instruction and students according to efficiency models for the smooth flow of goods and services. While Hirst (in press) focuses upon the discursive construction of this space-time within classroom interactions, we might readily imagine how the time management chronotope could be mapped across the control of interactional footings, the circulation of bodies, or the discursive reification of contexts.

In these two preceding examples (chronotopes of adventure time and time-management) text-based discourse analysis provides clues of how to analyze the production of space-time across other dimensions of context. Following Harvey (Harvey, 1996), however, we can posit that any "moment" of social life (e.g., discourse/language, social relations, material practices, beliefs, values and desires) may provide an opening to interpreting other moments in the construction of social space (p. 78). A key movement for the analysis across contexts is not to take contexts as necessarily qualitatively differentiating practices--not to end with the question of situatedness as informed by researcher and participant location--but rather to trace how configurations or planes of social life are differentiated across multiple contextual dimensions and practices. One means toward such a movement for researching digital literacies is to overlay a methodological model engaged in polycontextual data collection and analysis with an

interpretive approach capable of tracing the dynamic relations of space-time, identity, and literacy practice. To suggest such a movement, I briefly turn to the work of Pierre Lévy (1997). While some might be hesitant to turn to Lévy because of his utopian vision of digitization, his philosophical and sociological work is generative for reconsidering the relationships of space-time, semiotics, and identity.

Lévy's Four Spaces

Like a number of other theorists more directly associated with cultural and social geography (Crang, 1998; Harvey, 1996; Lefebvre, 1991; McDowell, 1997; Soja, 1996), Lévy considers lived or social spaces to be relativistic:

> We live in thousands of different spaces, each with its own system of proximity (temporal, emotional, linguistic, etc.) such that a given entity can be near us in one space, yet quite distant in another. Each space has its own axiology, its own system of values of measurement. An object that is heavy within a given space may be light or marginal in another. (Lévy, 1997, pp. 144-145)

Such spaces are organized around semiotic and material mechanisms. Lévy argues that four anthropological spaces extend to the "whole of humanity" and structure other spaces (p. 145). These spaces are not to be understood as "strata" or as "abstract dimensions of analysis," but rather as processes that are continually renewed, as "frequencies" (p. 146) within the social spectrum. Lévy defines the four spaces as The Earth, Territory, The Commodity Space, and The Knowledge Space. In the outline to follow, I briefly sketch the spatial and temporal contours of these spaces, their constructions of identity, and their semiotics.

The earth. This space is least well developed by Lévy, but involves the earliest space of humankind, organized around the earth itself as a figure of space and time. Invention, as part of this space, is a form of reminiscence about the earth; the past is always with us and time is immemorial (p. 174). Identity as shaped within the social space of the earth is related to bloodlines, lineage, the name. Names themselves are important as the semiotics of this space does not assume a separation of signs and beings; rather, "earth, beings, signs, and things interconnect as rhizomes" (p. 164). Words and other signs have power, radiate energy, carry particular qualities.

Territory. The territory space is qualitatively differentiated from the earth in that it is a space of foundation, closure, and borders. Lévy argues that history, as we understand it, is created by spatial enclosure--the storage and arrangement of meaning in linear discourse. The territory "secretes" the linear time of history (p. 177). Time is deferred and "slowed" through separation and the storage of meaning. Territory-inscribed identity is described as a movement from man (sic) on earth (man as microcosm) to man as "micro polis," or man as internalized politics, the small state (p. 153). Identity relationships are now constructed around the house, city, province, or country; identity is constructed in relation to bounded locations rather than in relation to the name/bloodline. The semiotics of the territory space is intimately tied up with the advent of writing, through which signs can be separated from their authors and the things they represent. Lévy sees such semiotic divisions as becoming institutionalized and as functioning for the propagation of institutional through those which mediate the relations of signs to things (e.g., scribes, hierarchies, p. 165).

The commodity space. For Lévy, this social space is best described by speed and flow:

> The commodity space lives entirely within its circuits: on the highway or train, not in the landscape we cross, in the airplane, not in the village near the airport. It is the intensive space of moving objects, a movement-space in which we take pleasure in velocity, acceleration, ubiquity, instantaneous contact . . . Objects in motion within objects in motion combine their velocities, exchange messages, intersect a moving, relativistic space, in which everything moves in relation to everything else, where distance means nothing and speed everything. (Lévy, 1997)

Thus, the commodity space is characterized by rapid movement in real time rather than enclosure and storage for linear history or repeating narratives indexical to the earth. Commodity identities are related to one's "position in the circuits of consumption and exchange (p. 153) rather than to territory or lineage. Lévy discusses a paradox of commodity identity: while capitalism accelerates social processes and circuits, it also limits the extent of identity, which gravitates around "family, work, and money" in the commodity space (p. 154). The (ever shrinking) individual within the commodity space is no longer the microcosm or micro polis, but the micro oïkos, or small house, as the household and family is the key site of the commodity identity. The commodity identity is associated with the semiotics of the media space. Reminiscent of Baudrillard (1983), Lévy discusses how in this semiotics of illusion, media reality is created without referent; reference refers only to the "mediasphere" itself (p. 167).

The knowledge space. Lévy makes clear that the knowledge space does not yet exist, but is rather a socio-technical utopian vision of what could exist. The knowledge space is a collective subjectivity of minds coming together in a technically mediated emerging order. Rather than being structured around real time or linear, historical time,

the knowledge space is changes the reference system to the "internal time" and rhythms of its participants (p. 180). The relation of space to time in the territory is reversed within the knowledge space. Here, individual acts in time map and make visible emergent spaces or "strands of subjectivity," rather than temporal subjectivity being pressed into spatial borders, hierarchies, and structures (p. 183). Lévy imagines identity or subjectivity within the knowledge space as constructed and reconstructed through virtual worlds, organized around dynamic images. Identity is cast through non-linear and non-hierarchical images:

> The individual becomes a molecular vector of collective intelligence, multiplying his active surfaces, complicating his interfaces, circulating among different communities, simultaneously enriching both his own identity and theirs. (p. 160)

Identity in the knowledge space, in one sense, is even more restricted than in the commodity space, as man is "nothing more than a brain" (p. 156). However, this sign-engaged brain, together with other brains, builds and participates within a polycosm. Lévy imagines a semiotic system that escapes the separation of territorial space and the illusions of commodity space. He suggests that the world of signs in such a system must become more like physical spaces (and yet more malleable), which can be entered, navigated, explored, touched, and changed (p. 169). Individual and collective subjectivities (and the relations among them) are produced through such a semiotic. An example of such a semiotic that Lévy references is his work with mathematician Michel Authier (Authier & Lévy, 1992) to develop the "tree of knowledge," a dynamic, interactive ideograph of the collective and individual skills of a community. The branches of such a tree do not represent traditional disciplines or diplomas (as in the academy), rather the emergent relations among knowledge and persons from study and experience.

Relations among the four anthropological spaces. Lévy emphasizes the complex interpenetration of the four anthropological spaces. While positing a model of the historical development of four spaces (Summarized in Figure 1), Lévy imagines these four as cumulative and co-present rather than as replacing one another in social practice. Newly developing spaces serve to organize and subordinate old spaces, but do not abolish them. Lévy is clear that such spaces are "worlds of signification" and fixed analytic categories for social phenomena, a given event can occur in several social spaces at once (p. 149). The image that Lévy offers of the complex relations of social spaces in any phenomena is that of four sheets of paper (for each of the four spaces), wadded in a ball and stuck through with a needle:

> Shredded, torn, crumpled, pierced with holes, inextricably folded within one another, earth, the territory, capital, and the virtual space of knowledge coexist everywhere differently. (p. 150)

Lévy's refusal to engage in a discourse of replacement is a critically important alternative to some constructions of digital activity that have imagined Internet-related practices as relatively stripped away from other semiotic and identity practices. Rather, even prior to the advent of the Internet, Lévy anticipates the future need to understand online/offline social articulations (Authier & Lévy, 1992; Hine, 2000; Miller & Slater, 2000; Wakeford, 1998). Lévy forecasts the multiplication of spaces and insists upon their complex interrelations across the "anthropological spectrum" (p. 149). Interpreting an everyday digital literacy practice (e.g., an e-mail message) in relation to these four spaces (Figure 1) would not involve simply placing the practice within a space-as-domain (itself a spatial practice of territory), but considering how such a practice indexes and constructs multiple spaces. For example, the e-mail message, embedded in a string of such

messages, could function within a knowledge space as a type of collective becoming of text and both individual and collective identity. Concurrently, the message could engage the participant and the text of the e-mail into circuits of exchange and distribution. Alternatively, the message may be internally marked (by a signature file), externally tagged (by the e-mail address) with the space of territory. Moreover, the territory space and commodity space may be interleaved by way of an automatic filter that places the e-mail message in a mailbox signifying "this kind of identity" and "this kind of project."

Concluding Thoughts

In the introduction of an important collection of essays on the relations of context and language, Charles Goodwin and Alessandro Duranti (Goodwin & Duranti, 1992) argue that a key constituent of context is the way in which people become contextual environments for each other. Each move within a given interaction "modifies the existing context while creating a new arena for subsequent interaction" (p. 5). Moreover, interactants strategically shape contexts, and also "invoke organizational patterns (e.g., genres) that have an existence that extends far beyond the local encounter" (p. 6). Goodwin and Duranti maintain that the following the novel creation of context "increases the complexity of the events being analyzed immeasurably" (p. 5). It seems important to note that this immeasurable complexity of interaction discussed by Goodwin and Duranti, and the authors represented in their edited collection (Duranti & Goodwin, 1992), involves interactions that in most cases are less complex than are digital literacy practices (e.g., face-to-face interaction, spoken and written story telling, medical interviews and the like). I raise this thought in concluding not as a critique of this remarkable collection (likely drafted in the late 1980's), but as a way of affirming again the need to rethink

context in relation to digital literacies and digitally mediated identities. In this paper, I argue that such rethinking will rely upon developing methodologies to collect data across multiple dimensions of offline and online contexts, as well as tracing the synchronous realization of contexts, practices, and identities. While drawing upon earlier traditions that analyze the interactional construction of context (Duranti & Goodwin, 1992), ethnographic methodologies for tracing digital literacy practice ought also consider material circulations (bodies and texts) and discursive constructions of context. I have proposed a provisional model of how these dimensions of context may be engaged in (re)situating digital literacy. At the same time, I have attempted to shift the discussion beyond a structural vision that would impose a fixed analytic practice--a territory--upon the organization of contexts and practices. Drawing upon Lévy (1997), I have considered how the production of qualitatively differentiated spaces traverses multiple contexts, traverses material and semiotic mediational means, and traverses historical categories of identity. Moreover, such spaces are continually evolving through the dynamic evolution of social practices and technologies.

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Figure 1

	Earth	**Territory**	**Commodity Space**	**Knowledge Space**
Point of irreversibility	Relationship to the cosmos	Relationship to the territory	Relationship to production and exchange	Relationship to knowledge in all its diversity
Identity	"Microcosmos" Affiliation Alliance	"Micropolis" Property Address	"Micro Oïkos" Skills, Employment	Distributed and Nomadic Quantum Identity
Semiotics	Presence Mutual participation Correspondences	Absence Division and articulation between sign, thing, being Representations	Illusion Break between sign, thing, being Propagation	Semiotic productivity Involvement of beings in world of signification Mutations
Figures of space and time	Footprints Memory-space Immemorial	Closure Foundation History, "Slow" time, deferred time	Networks, Circuits, Real time, Uniform clock time	Metamorphic spaces of collective becoming, subjective temporality

Adapted from Lévy, 1997, p. 175