CHAPTER	10
TITLE	Digital Studio as Method: Collaboratively Migrating Theses and Dissertations into the Technological Ecology of English Studies
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OVERVIEW	In this chapter, we address the role of English studies in developing and sustaining technological ecologies from the vantage point of a university pilot project to develop a new node in our institution's ecology: a digital collection of electronic theses and dissertations (ETDs). As part of this process, we discuss a co-authored and co-administered grant for a "Digital Literacy and Communication Studio," a design, development, and testing environment primarily for graduate students engaged in developing ETDs as part of e-portfolios to enhance their scholarly research and professional profiles. We enumerate ways that intra-departmental training and cyberstudio practices helped us challenge limiting cultural and institutional assumptions about knowledge creation and delivery within English studies. We focus on the specific case study of our institution's ETD pilot project, a project that initially seemed to unify programs within the English Department with the Graduate College, but instead ultimately led to divergence over different conceptions of what an ETD is or can be with multimedia components and amplified archival and retrieval capabilities. Finally, we outline how our Digital Studio "intervention" both succeeded and failed in re-articulating English studies' role in our institution's technological ecology.
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Digital Studio as Method:
Collaboratively Migrating Theses and Dissertations
into the Technological Ecology of English Studies

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Karen Fitts and William B. Lalicker's (2004) recent "Invisible Hands: A Manifesto to Resolve Institutional and Curricular Hierarchy in English Studies" documented how a wide range of English Studies publications describe the "crisis in English." English luminaries as various as Michael Bérubé and Cary Nelson (1995); Sharon Crowley, Linda Roberson, and Frank Lentricchia (1987); Nelson (1997); James Porter, Patricia Sullivan, Stuart Blythe, Jeff Grabill, and Libby Miles (2000); Bill Readings (1996); Susan Romano and Virginia Anderson (2005); and Robert Scholes (1998) have all detailed circumstances that pressure English departments to re-think the disciplinary formations that traditionally permit English scholars to continue their work. For example, in their overview of various aspects of "crisis" rhetoric, Fitts and Lalicker cited the "more amorphous and deeper cultural changes in literacy resulting from the displacement of print by electronically produced visual media" (p. 427). Undoubtedly, English Studies is under great pressure—philosophical, cultural, and technological—to reframe itself. One way to engage in this reframing is to explore how English Studies might contribute to developing new nodes and relations within institutional technological ecologies—including the formation and population of digital repositories and archives that redefine what it means to conduct and disseminate research, for current faculty and graduate students as future faculty—while continuing to preserve the academic values and objectives that shape and sustain our individual programs and larger institutions.

In this chapter, we address the role of English Studies in developing and sustaining such technological ecologies from the vantage point of two graduate programs engaged in a university pilot project to develop a new node in our institution's ecology: a digital collection of electronic theses and dissertations (ETDs). Faculty and graduate students in our Rhetoric and Writing Program and Scientific and Technical Communication Program at Bowling Green State University employed strategies for developing ETDs that combined cultural studies and rhetorical approaches of articulation theory and institutional critique to rearticulate our departmental programs in ways we hoped would help faculty and graduate students craft spatial, organizational, and material remedies to challenges we faced in transforming print theses and dissertations into ETDs. As part of this process, we co-authored and co-administered a grant for a Digital Literacy and Communication Studio (DLCS), a design, development, and testing environment primarily for graduate students developing ETDs. In this chapter, we also enumerate ways that intra-departmental training and cyberstudio practices helped us challenge cultural and institutional assumptions about knowledge creation and delivery within English Studies. We focus on the specific case study of our institution's ETD pilot project, a project that initially seemed to unify programs in the English Department with the Graduate College, but instead ultimately led to divergences over differing conceptions of what ETDs are or could be, with their multimedia components and amplified archival and retrieval capabilities. Outlining how our Digital Studio intervention both succeeded and failed in re-articulating English Studies' role in our institution's technological ecology, we acknowledge how our efforts may have deepened ideological boundaries that delineate conceptions of authorship and that seem to differentiate programs within English Studies. Finally, we pose some preliminary answers to the following questions: What happens when ETDs, as a new variable in an existing technological ecology, change the social dynamics of that ecology?

Furthermore, how can these dynamic ecological relations be sustained, while at the same time remaining open and responsive to change? How do our own efforts to create an educational space within our English Department help to foster and ultimately sustain ETDs as an emerging research genre?

CONCEIVING THE STUDIO IN RESPONSE TO INSTITUTIONAL CHALLENGES

Our Graduate College acknowledged the power of open access to research and information exchange that ETDs provide, and in 2004 created an Ad Hoc ETD Committee on which two of us participated as subject experts and graduate educators. After a year of reviewing university policies on ETDs, formatting guidelines, and deposit procedures, our university-wide committee recommended that several departments participate in electronic submission to the OhioLink ETD Center during the 2004–2005 academic year. Backed by this pilot ETD program, a rhetoric doctoral student submitted the department's first ETD in early November 2004, and based on that successful first submission and others that followed in that pilot year, electronic submission is now mandatory on our campus. The decision to form the Digital Literacy and Communication Studio (DLCS) resulted as much from institutional pressures and the new ETD initiative as from our common goals for graduate students in our programs. Not unlike other departmental initiatives, the studio was in part a direct response to our university's development of an academic plan that included among its long-term priorities the improvement of graduate education and the increased integration of new and emerging technologies. In a department meeting at which each program was asked to share its written response to the plan, we noted similarities between an existing educational technology assistance program in Rhetoric and Writing titled the Digital Language and Literacy program, and a growing interest in exploring the benefits of electronic theses and dissertations within the Scientific and Technical Communication program, suggesting an opportunity for collaboration across the programs. From the discussion at the departmental meeting, the two writing programs decided to rename and slightly refocus the Digital Language and Literacy initiative, renaming it the Digital Literacy and Communication Studio (DLCS).

To foster multimodal literacy acquisition, the DLCS serves as a meeting space in one of the Department's networked writing labs, with evening workshops for graduate students and faculty in the English Department. Initially, the studio focused on three specific components:

(1)   development of online curricula, including a fully online graduate certificate in International Scientific and Technical Communication (designed for professional domestic and international audiences), and a fully online master's program aimed at public school teachers, particularly those working in language arts in Northwest Ohio;

(2)   a graduate-level e-portfolio initiative to help master's and doctoral students develop digital technology skills vital to their professional development and marketing success; and

(3)   the pilot project introducing electronic theses and dissertations (ETDs) to our campus, thereby helping students better prepare to integrate the newest literacy technologies into their scholarship.

As we outline later in the chapter, a number of professional development forums, both face-to-face and online, have helped to develop and sustain these components. Overall, these Studio components presume the importance of educating students and colleagues about the ways technology impacts language, literacy, and communication practices and are thus a vital part of redefining graduate education and faculty development in digital teaching and research. For

the purposes of our chapter, however, we focus on the third component, the ETD initiative, as a case study of the successes and challenges of sustaining technological ecologies.

The opportunity to merge our two programs' common interests through the DLCS was also enhanced by a request for proposals from the Ohio Learning Network (OLN), the state's academic resource clearinghouse on teaching and learning with technology and distance learning. In May 2004, we were awarded a $20,000 learning community grant to establish the studio as an in-house technology and professional development program for faculty and graduate students in the department. The grant offered us the opportunity to create an imaginative framework and build material support (in the form of funded graduate student assistance, travel reimbursement, and faculty salaries) to host cross-program meetings and technological training forums. Equally important, the grant also allowed us as faculty from Rhetoric and Writing and Scientific and Technical Communication to work together to perform what Jay David Bolter and Richard Grusin (1999) have termed *remediation*—the process by which older and newer media are aligned to create new media forms and to remedy perceived shortcomings of older forms of expression. In this case, our grant provided the opportunity to remediate a traditional and central genre in the genre ecology of English departments—the print thesis or dissertation. Indeed, for scholars such as Clay Spinuzzi (2004), "genre ecologies are constantly importing, hybridizing, and evolving genres (and occasionally discarding them), and these dynamic changes in a genre ecology tend to change the entire activity" (online). The proposed migration of this traditional print text into the emerging technological ecology of our institution provided the department with an opportunity to play an important role in re-shaping the research and writing practices of future English faculty, shifting toward a more socially constructed view of the technological literacy practices that impact professional identity. We see the development of such an identity as key to sustaining both departmental and institutional technological ecologies while remediating a longstanding print genre.

To encourage graduate students and faculty to adopt new roles in our technological ecology, the Studio's major focus became promoting and directing the English Department's participation in our institution's ETD pilot program, in which English was one of three university departments to have students submit their theses and dissertations electronically to the OhioLink ETD Center. We saw ETDs as an opportunity to enhance the teaching of technological literacy not only as a set of skills that fall within the purview of particular programs, but also as a means to help graduate students and faculty join the technologically literate community of scholars and teachers across the university who participate, relate, and share information in our institution's technological ecology. With funds from the OLN grant, the digital studio provided training and guidance that enabled faculty and students to redefine their professional situations and identities by using technology to enhance the composition and presentation of their research through electronic publication of dissertations and scholarly articles. ETDs are currently transforming the information ecologies of institutions worldwide, and we felt it is particularly important that graduate education and graduate students themselves become part of the social network of our institution's information ecology.

CROSSING INSTITUTIONAL BOUNDARIES

The development of ETDs challenges traditional institutional boundaries in a number of ways, redefining the role of the scholar and also the impact of scholarship on the discipline through a philosophy of open, shared access to information. Moreover, the composition of ETDs suggests a more interactive, multimodal, and multivocal collaboration that moves away from the traditional forms of single-authored, print scholarship valued within English departments toward genres more social than individual, and that rely on a range of digital modes and means.

ETD collections at institutions such as the Miguel de Cervantes Library, which holds dissertations that incorporate continuing scholarly commentary, provide spaces where researchers can asynchronously interact through electronic postings, reducing the tension between "centripetal social needs, which call people together. . .[and the] centrifugal technologies that allow them to move apart" (Brown & Duguid, 2002, p. xix). These libraries and other forms of digital repositories demonstrate "the power of technology to create and deploy social networks" (p. xvii). However, as expanding electronic texts, they need not, as Brown and Duguid feared, "distract attention from the richer social roles that [paper] documents play" (p. xix). Conversely, as Bonnie A. Nardi and Vicki O'Day (1999) noted, "A diverse information ecology is a lively, human, intensely social place, even if it incorporates very advanced technologies" (p. 52). ETDs that incorporate scholarly commentary can form key nodes in technological ecologies, which afford increased participation in socially networked research and scholarship.

At our own institution, there have been successes and challenges to ETD implementation. While we have had success in moving to electronic filing, we have also experienced barriers typical to the sustainability of technological ecologies within the academy. For instance, although it is indeed possible to create and submit multimedia projects within the required portable document format (PDF), ETDs have been primarily word-processed documents converted to PDF with little if any multimedia component. This is due in part to the typical constraints upon technological integration, including an ecological phenomenon in which university policy about the range of file formats possible is far behind the composing affordances available across software applications, not to mention the all-too-common gap between technological access and training in multimodal literacy practices among faculty, who set the policies, and graduate students, who are actually composing the ETDs. Perhaps an even greater variable, however, is the ever-present privileging of the dissertation as an alphabetic text—an academic value judgment that without further institutional critique and articulation will continue to prevail. For example, during initial planning, we encountered heavy resistance to the suggestion that an alternative set of document format guidelines needed to be developed for multimedia ETDs; the existing guidelines were developed for print documents, and would be of limited use when students chose more innovative approaches to presenting their research. This suggestion was rejected, based on the belief that multimedia ETDs would be the exception rather than the rule, and that they could be evaluated on an ad hoc basis. We felt that the absence of such guidelines would discourage students from using multimedia because the perceived risk of submitting their work to be checked on an ad hoc basis by a single member of the Graduate College staff would be too high.

After browsing our institution's current ETD collection, we found static images, digital photos, and full-color graphics either embedded in and (more often) appended to the text, but no video, animation, or sound files. Music performance master's theses contained pages and pages of silent musical score, which admittedly may be quite meaningful in an educational context, but the document might become much richer and more appreciable to a global online audience if sound files were included along with the score. Clearly, by not having alternative options available, students and their faculty committees were reticent to explore the possibilities multimedia have to offer in presenting the results of their research. Developing and adopting a set of multimedia ETD format and presentation guidelines that can be applied across departments would reduce uncertainty and encourage innovation among students and faculty mentors. Without such guidelines, the sustainability of digital, multimodal work is hampered.

We also encountered barriers to the sustainability of global access to ETDs during early planning when representatives from the ETD Committee met with the Graduate Student Council to respond to their concerns. Many were confused about copyright and prior

publication issues; thus, our ETD Committee Report (2004) to the Graduate Council included the following paragraph:

> As has always been the case with print theses and dissertations, copyright remains with the author of the work. This does not change with ETDs. In addition, OhioLINK allows delayed submission for patent application and pending publication, when delayed submission is warranted. Some students submit abstracts only for a limited period of time, e.g. one year, during which time the full text ETD resides in the Graduate College in digital form. The University of Cincinnati hosts an Academic Journal Policy Database at its web site to assist students with questions about individual publishers regarding prior publication. (p. 2)

As we discuss below, despite our assurances of copyright protection, many graduate students and faculty committees still had concerns.

DIGITAL STUDIO FORMATION AS INSTITUTIONAL CRITIQUE AND ARTICULATION

Digital Studio as Institutional Critique

The project of migrating texts into sustainable technological ecologies at departmental, institutional, and inter-institutional levels inevitably shifts the dynamics of players within and across ecologies, subverting established academic values within both departmental and university-wide communities. One way to integrate faculty concerns over retaining these values while simultaneously working toward developing sustainable technological ecologies is to engage in the process of institutional critique. James Porter and his colleagues (2000) described a particular manifestation of this; according to Porter et al., the aim of institutional critique is to sensitize institutions to those who use them from within, so that the conditions of those they serve are improved. Institutional critique, they claimed, constitutes:

> a method that insists that institutions, as unchangeable as they may seem (and, indeed, often are), do contain spaces for reflection, resistance, revision, and productive action. This method insists that sometimes individuals (writing teachers, researchers, writers, students, citizens) can rewrite institutions through rhetorical action. (p. 613)

The writing space of the dissertation, both as a print document and as an ETD, is an institutional space for reflection on the value of graduate student research within the technological ecology of the university. Questions of purpose, audience, value to the scholarly community, and accessibility need to be addressed as the genre evolves within social and institutional networks. ETDs present rhetorical possibilities, such as the use of multimedia and hypertext, which can be used to argue for their own adoption. We feel the dissertation is also an example of what Porter et al. called "a local manifestation of more general social relations, nodal points in the rhetorical relationships between general social. . . processes and local practices" (p. 621). An ETD is a nodal point in the web of relations among disciplines, graduate programs, students, faculty, libraries, and the larger scholarly community.

An ETD is itself an example of institutional critique in that writers of ETDs enact alternative practices. By submitting an electronic document, ETD writers submit a text that embodies an institutional change in the content and format of the traditional print dissertation; at the same time, the text argues for such change. Similar to the institutional critique that Porter et al. called for, an ETD links "macro-level systems and more visible local spaces" (p. 621) through the demands that an electronic artifact exacts upon material practices. Electronic documents require a large assortment of material production and reception changes in what were formerly

settled arrangements of personnel, practices, and spaces. Long effaced and typically hidden textual sustainability practices—the isolated student, word processing in an apartment; the dissertation committee member, demanding a particular bibliographic citation style in a committee meeting; the underpaid college proofreader, pouring over a dissertation near deadline—all re-circulate and become contested sites as the issue of sustainability morphs from textual conventions into the new electrate and multimedia practices possible in ETDs.

As the space where faculty and graduate students met to work on ETDs, the Digital Literacy and Communication Studio became for us a form of institutional critique. Our Rhetoric and Writing and Scientific and Technical Communication programs used the DLCS grant to critique the limited extent to which programs within our English department acknowledge the impact of multimodal literacies on the production and distribution of scholarly information and the impact on the professional development of both current and future faculty. Very similar to the difficulties faculty development units and corporate training experts face in meeting the needs of a busy, overworked clientele, we had to establish a diverse model of professional development activities, both virtual and face-to-face. Based on several orientation- and need-assessment approaches, we developed three professional development forums:

(1)   a hands-on workshop series titled "Evenings at the Studio," featuring sessions on developing online pedagogies, Web design and usability, digital imaging, and video editing for use in ETDs and digital portfolios;

(2)   a house-call program where advanced graduate students meet in the offices of faculty and fellow graduate students to provide one-to-one technological consultation; and

(3)   a virtual professional development resource offered through a Blackboard course in which all English faculty and graduate students are enrolled, allowing them access to links and resources related to ETDs and other aspects of digital production.

These development forums are, we believe, crucial to sustaining ETDs as a working and usable node in our institution's technological ecology. For graduate students and faculty mentors, these approaches represent an institutional commitment to ensuring that new scholars know how to compose ETDs, and seasoned scholars know how to use them as tools of evaluating student research and writing skills.

Thesis and dissertation writers and their faculty advisors should have the opportunity to both theoretically and practically explore the extent to which various digital components of an ETD—for example, hyperlinks, images, video, and audio—are part of the data collection and representation process, thus contributing to knowledge construction and dissemination within the discipline. Admittedly, the limited technological knowledge and privileging of alphabetic literacy on the part of many faculty can limit the role of ETDs and other digital genres to little more than word-processing documents saved as PDF; yet, as Debra Journet (2007) chronicled, her experiences as a participant in the Digital Media and Composition Institute at Ohio State University and similar opportunities on her home campus (the University of Louisville) not only impacted her teaching and research, but also have allowed her to better acknowledge the need for digital literacy acquisition among senior colleagues, as well as among graduate and undergraduate students. As a result of her growing expertise in digital media, Journet suggested that her experience "can suggest productive avenues of conversation. . . with senior colleagues who are intrigued with multimodality" but who are concerned about switching from expert to learner and locating opportunities for professional development. Journet ultimately called for senior faculty to "not just leave digital media to the 'new kids'" (p. 108), but to be involved in shaping the role digital media play in teaching and

research. Spaces and programs enabled by such spaces as the Digital Studio can serve as important catalysts for faculty re-invention.

Digital Studio as Articulation

A space such as the DLCS is an application of articulation theory—the key cultural studies method for intervening in material and discursive formations. Here, articulation theory helps us to continually remediate what, where, and how we conduct research, and why we make choices in the interest of enhancing our departmental role in growing and sustaining our institution's technological ecology through ETDs. Articulation theory, as Stuart Hall described in an interview with Lawrence Grossberg (1996), allows for temporary and advantageous connections between seemingly different elements:

> An articulation is. . . the form of the connection that can be made between two different elements, under certain conditions. It is a linkage that is not necessary, determined, absolute and essential for all time. You have to ask, under what circumstances can a connection be forged or made? (p. 141)

More recently, in *Datacloud* (2005), Johndan Johnson-Eilola built upon Stuart Hall's use of articulation theory to carefully describe how articulation resists the two poles of environmental determinism and postmodern randomness:

> So while people are routinely constructed as ideological subjects without their noticing it, networks of social forces are never completely tied up; there are always little border skirmishes, forces pushing in opposing directions. . . While we do not frequently pay attention to these ongoing ideological conflicts, they are always present. Ideologies are structured like languages, always open to shifting in the ways that words shift from context to context and over time. And, like language, words cannot be simply redefined arbitrarily (particularly in larger communities). (p. 37)

The DLCS emphasis on ETD production has allowed us to explore and publicly discuss a need for curricular changes in our own program that other English Departments have initiated—North Carolina State's Communication, Rhetoric, and Digital Media PhD, the University of Central Florida's Texts and Technology PhD program, and Texas Tech's MA in Technical Communication Online and more recent online PhD, to name but a few—and the possibility that we might steer our department in similar directions. Such articulations also include Morgan Gresham and Kathleen Blake Yancey's (2004) discussion of the Pearce Center for Professional Communication at Clemson University; in their profile of "new studio composition" they addressed the linkages between physical, electronic, and curricular spaces to foreground "a model of pedagogy centered on learners immersed in communication rich tasks" (p. 9). Similarly, the DLCS foregrounds a space for faculty and students across the department to, as Gresham and Yancey contended, articulate their existing conceptions of literacy, and through collaboration and shared expertise among students and faculty, expand those conceptions. In our case, the DLCS enables rather than constrains the ways in which digital writing and research, particularly through ETDs, shape emerging technological ecologies.

Localizing the Potential of Electronic Theses and Dissertations

Locally, both the Rhetoric and Writing program and the Scientific and Technical Communication program value and teach a range of digital literacies, including interactive and

multimodal collaborative writing. These values and teaching strategies link our two programs in ways that have allowed us to collaborate via the DLCS to provide design and technical support for graduate students writing ETDs. Although the majority of submissions from our department have been limited to basic file format conversions from Microsoft Word to PDF, we believe the shift to electronic submission will further our curricular efforts by creating exigency and opportunity for multimodal literacy on the traditional research, data collection, and data representation processes in graduate-level research in English Studies. Overall, this shift will continue to create more of a shared responsibility between graduate student committees and the students themselves as they dialogue about the multimodal possibilities of ETDs.

But resistance to these multimodal possibilities and other benefits of ETDs arose almost immediately from the English Department's strongest program, Creative Writing. The privileging of single authorship that drives the Creative Writing program at Bowling Green foregrounds the opposing position that writing is socially constructed and always a public act. The Digital Studio has continued to provide a space for conversations concerning these issues, including how they conflict with or support the responsibility public universities have to make the knowledge and creative artifacts they produce publicly accessible.

When members of the DLCS involved in the campus ETD initiative volunteered the English Department to participate in the pilot program, resistance to placing Creative Writing student master's theses—which are original literary works—on the Web was immediate. Concerns included preserving authors' first rights to publication for any Web-based distribution and circumventing the "first publication" rights of publishers who might refuse to publish an author's work that appeared on the Web as an ETD. This concern continued as the success of the pilot project led to mandatory submission of ETDs across campus. The Creative Writing faculty in our department did an exhaustive study to prove that, as they claimed, literary presses and agents did indeed expect publishing poets and fiction writers to award first publication rights. Although this argument was compelling and accurate, it was not completely sufficient to sway our Graduate College, who continued to claim that because the MFA thesis was part of the degree program, it was considered public and not subject to permanent delay on release. Nevertheless, an initial compromise was made by the Graduate College to allow Creative Writing MFA students to delay public dissemination of their work for up to 5 years, a timeframe that continued to be a challenge for our creative writing faculty, who claimed that the rigors of literary publishing from revision to publication often extend beyond the 5-year point. Indeed, for our colleagues in this area, any public dissemination jeopardized the professional success of students and the national reputation of the Creative Writing program. Both the English Department and the Graduate College offered suggestions that included password protection and a move from a "thesis" to "project" model that would allow for private storage as opposed to online distribution, yet these options were perceived to negatively impact both student recruitment, publication, and eventual job placement. As a result, the program has since received an exemption from digital deposit to the OhioLink ETD Center, in part because of mobilization by the graduate students themselves and the larger endorsement of the Association of Writers and Writing Programs (AWP).

Given the connection between literary production and traditional paradigms of individual creative genius—despite the heavy emphasis on a workshop model within creative writing pedagogy—it is no surprise that these paradigms would directly oppose more social, communal aspects of textual production. In this sense, ideologies of academic and literary publishing, including presumptions about intellectual property, have not caught up with the technologies that can distribute or diffuse innovation in both scholarly and creative forms. Rather than unifying the English Department as we originally intended, ETDs, and the Studio's promotion of ETD production, admittedly reinscribed some of the ideological differences among our programs. This experience highlights the need for us to take seriously how academic philosophy, pedagogy, and values impact the migration of texts into digital

ecologies. Moreover, the question must be asked: How does the addition of ETDs as a new variable in an existing ecology change the social dynamics of that ecology? What follows are some of the answers we found.

SUSTAINING ELECTRONIC THESES AND DISSERTATIONS

ETDs are both a technological and an organizational innovation. As a technological innovation, they may redefine the content, structure, or audience of the traditional print dissertation; as an organizational innovation, they may redefine faculty, student, graduate school, and library perceptions of graduate student research and the purposes it serves within the information ecology of the university. As Nardi and O'Day (1999) noted, "an information ecology is marked by strong interrelationships and dependencies among its different parts" (p. 51). The activities of faculty, students, graduate schools, and librarians complement one another, and the technologies they use extend their work at the same time they increase their dependence on one another. Moreover, the adoption of new technologies can create profound uncertainty among users. For example, the inclusion of content in visual and/or audio form, the use of hyperlinks to provide alternative reading structures, and the potential broad accessibility of ETDs are all features typically not associated with the writing of dissertations, which have for many years been almost exclusively text-based.

As universities accept the challenge of accommodating students who choose to write ETDs—with content, structure, and audience choices previously unavailable to seasoned faculty—roles and relationships in the existing ecology will shift. For Nardi and O'Day (1999), "change in an ecology is systemic. When one element is changed, effects can be felt throughout the whole system" (p. 51). With the advent of ETDs, traditional faculty–student mentoring relationships may transform; students may achieve earlier notoriety within their fields; graduate schools will be faced with creating new standards for the presentation of research documents; programs may experience new and increased visibility; libraries will be charged with creating digital collections that showcase production of new research. Established norms within the existing information ecology may appear to be challenged, and indeed, "local changes can disappear without a trace if they are incompatible with the rest of the system" (Nardi & O'Day, p. 51).

As we have mentioned, representation of dissertation research as text has become a well-established norm within the academic community. Faculty mentors are familiar with it as a genre, because most were required to write one themselves, and they are generally comfortable in evaluating its effectiveness as a research report. However, most are not familiar with multimedia ETDs. Alternative structures and non-textual elements require changes in the evaluation process—changes that faculty at universities who already accept multimedia work from graduate students have only just begun to explore. Mentors may find themselves called upon to become students themselves as they follow and learn from doctoral candidates' attempts to include new content and structure in their work. This shift may be perceived by many faculty to be incompatible with established mentor–mentee norms within the university. Established norms governing the processing and archiving of dissertations will be challenged by the advent of ETDs. Graduate school standards for the presentation of dissertation research are all based on the assumption that dissertations exist in print. Formats for the appearance of these documents include requirements for content, organization, headings and subheadings, text font and size, line spacing, margins, page numbering, and references—all of which may not be appropriate outside of print text. Online, the writing space can evolve in nonlinear and visual ways that cannot be depicted within one-inch margins.

Understanding how academic norms and values are affected by the addition of ETDs to an institution's technological ecology is key to the survival of this new information species as it

continues to evolve. ETDs have clearly located an available ecological niche—the need for amplified access to cutting-edge research. However, for Nardi and O'Day (1999), "the social and technical aspects of an environment *coevolve*. People's activities and tools adjust and are adjusted in relation to each other, always attempting and never achieving a perfect fit" (p. 53). Thus we believe that the co-evolution of relations among students, faculty, research communities, libraries, and emerging technologies is required to sustain ETDs in their newly acquired ecological niche, notwithstanding the likelihood of an imperfect fit in the early stages of migration. One way we encouraged the co-evolution of faculty roles with emerging technologies designed to facilitate dissertation committee reviews was to invite Adobe's Education Specialist, Ali Hanyaloglu (2005), to deliver a presentation for our graduate faculty entitled: "Moving Beyond PDF Creation for ETDs." As Hanyaloglu noted, "Adobe PDF isn't just a useful electronic document format for submitting and viewing ETDs." His presentation demonstrated how the full potential of ETDs can be realized when PDF-creation software is used for the creation, preparation, review, and submission of research.

As we have also noted, the vast majority of ETDs originate as word-processing documents which, when reviewed by the student's committee and completed, are converted and submitted to graduate colleges as a PDF. Multimedia students include in the presentation of their research are typically appended as separate files, and thus are not presented (or considered) as part of the "real" dissertation, which is usually exclusively text. However, as Hanyaloglu (2005) demonstrated, multimedia ETDs can be created in PDF, which allows multimedia files to be quickly and easily embedded directly into the document. Moreover, the software's review and commenting capabilities can streamline faculty workflows and simplify collaboration among a student's committee members. We see a great deal of value in migrating faculty dissertation review workflows from print to digital. In the interest of further developing and maintaining the technological ecologies of both institutions and disciplinary research communities, dissertation committee work can and should co-evolve with the technical evolution of graduate student research presented as ETDs. To date, however, this workflow shift has not occurred in as systematic a way as we would have hoped, given that the ETD requirement is now 3 years old. We acknowledge that for some institutions, Adobe Acrobat Professional software may prove too costly for campus-wide availability. However, perceived limitations seem to be more ideological rather than technological in that a number of digital tools, from Google docs to wikis space and even local area networked server space can accommodate a digital-format approach. Another limiting factor is time, both in terms of faculty workload and graduate student time constraints; indeed, many graduate students are under pressure just to get "done" in time to graduate and take on their new roles as faculty, and, under such pressure, emphasis on digital media is often deferred indefinitely. For that reason, it is important to consider both faculty and graduate student professional development early in the dissertation process, providing the same type of training as, for instance, is provided to individuals seeking human subjects clearance (committee chairs and students must both be certified at BGSU), or other tools and resources, including statistical consultation and other forms of research support. Although we have attempted to provide such support within the context of the DLCS, such forums can and should also be part of the Graduate College; two of our authors have developed a workshop now being offered by the Graduate College staff.

CONCLUSIONS

Although it has not historically been viewed as such, the dissertation genre is an important space in the writing of professional identity. Within the university, the dissertation inscribes the identities of disciplines, departments, programs, graduate students, and faculty mentors. Changes in the dissertation, such as those ETDs make possible, will elicit changes in these various identities—changes consonant with the literacy required to participate in and sustain

dynamic technological ecologies. We have come to regard ETDs as a nodal point in the web of relations among disciplines, graduate programs, students, faculty, libraries, and the larger scholarly community—relations which, along with the texts that they inscribe and are inscribed by, are rapidly migrating to new spaces currently being mapped within expanding, multimodal technological ecologies. English Studies can and should play a leading role in educating graduate students to actively participate in this migration by designing ETDs that integrate text with multimedia objects in rhetorically effective ways.

As we have experienced, it is clear that the preparation of future faculty to use the new and emerging technologies of literacy—which will allow them to participate in populating the digital repositories of research and information rapidly being explored by universities and other research institutions at the global level—can and should be a collaborative, shared mission. With such reciprocity in mind, we offer the following recommendations and caveats for other programs and departments attempting to implement and sustain similar technological initiatives:

- Despite our call for multimodal features within ETDS, we recognize the need to treat technoliteracy acquisition as progressive. Not doing so can scare students and their committees; the perception may be that they must suddenly do more than workload, time, or skill sets allow, thus discouraging experimentation with viable multimodal possibilities.

- To explore such possibilities, students must have access to a range of ETD models, including those in PDF and HTML/XML, and those including a range of multimodal features embedded within the text, including video and audio.

- Part of the training process must include training about copyright and fair use, something often missing from most functional literacy acquisition opportunities.

- Because one of our greatest barriers to enhancing possibilities for ETDs is the Graduate College, which holds to a PDF-only model, faculty and graduate students must advocate for a range of formats through standard governance forums, including Graduate Student Senates and Graduate Councils. We continue to experience difficulty with our own Graduate College, which views the ETD more as a financial convenience and storage solution as opposed to an opportunity to employ multimodal research methods that contribute to shifts in digital scholarly publishing.

- For research to genuinely benefit from multimodality, it is vital to remember that technology must not be included for its own sake but for its contribution to research, data collection, and data representation. For this reason, dissertation chairs and committee members must be part of departmental and university forums about the shifts in literacy and professional development planning for both writing and reading digital research. These conversations should take place within the context of graduate programs as well, within seminars (particularly in research methods courses), as well as in other professional development colloquia.

- As with any professional development initiative involving technology, quality training depends on a range of formats: whole group, one-on-one, theoretical and applied, and post-training resources, including online tutorials and examples. We have had success with graduate students serving as consultants to others just beginning work with multimodal texts, either by showcasing their work or providing some basic tutoring with some applications.

Initiatives—in our case the Digital Literacy and Communication Studio—strengthen the position of non-literary programs such as ours in more traditional departments of English, and also shape the future of English Studies as a valuable contributor to the migration of texts, as well as the preservation of philosophies and values that contribute to the ecological sustainability of digital repositories. It will be increasingly important for us to consider the role that combined spaces—physical and virtual—will play in sustaining a local technological ecology in which we can train future faculty and workplace professionals in the design and delivery of digital writing research.

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