CHAPTER	7
TITLE	Sustainability and Digital Technology: Program Analysis Via a "Three-legged" Framework
AUTHOR	Patricia Ericsson
OVERVIEW	This chapter introduces and analyzes the interdisciplinary Digital Technology and Culture (DTC) program at Washington State University (WSU) through a lens of sustainability. This analysis considers the challenges that come into play when an interdisciplinary major conceived at a small branch campus and designed to meet the real needs of the technology-rich work-world moves to a century-old land-grant campus. In addition to considering the challenges inherent in establishing such a program, I explore the long-term challenges of sustaining a technology-rich, interdisciplinary degree program. Beyond analyzing an existing program, this chapter illustrates how the tenets of sustainability can be a valuable tool for program analysis. I conclude the chapter by offering four sustainability-anchored recommendations for those considering or developing technology-rich programs.
TAGS	administrator*, Brundtland Report, conflation, Digital Technology and Culture, director, DTC, ecology, economic, faculty, interdisciplinary, knowledge ecology, media, Patricia Ericsson, program, social, state-wide, sustain*, sustainable development, technolog*, three pillars, three-legged stool, Washington State University, WSU, WSU-V
AUTHOR BIOGRAPHY	Patricia Freitag Ericsson is an assistant professor at Washington State University where she coordinates the Digital Technology and Culture program and teaches undergraduate and graduate courses in digital technology and culture and rhetoric and technical communication. Her research interests include techno-rhetoric, technical writing, and the intersections of technology, education, and agency theory. Ericsson's current research concerns digital communication technologies and transnational families. Her work has appeared in *Computers and Composition*; *Kairos: A Journal of Rhetoric, Technology, and Pedagogy*; *English Education*; *Journal of Teaching Writing*, and several edited collections. She is the co-editor of *Machine Scoring of Student Essays: Truth and Consequences* (Utah State University Press, 2006).
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Sustainability and Digital Technology:
Program Analysis Via a "Three-legged" Framework

A Report on the Development and Sustainability Efforts of the
Digital Technology and Culture Degree

Patricia Freitag Ericsson

Two intersecting interests fueled my interest in this collection—the first being my overall interest in the rhetorics of sustainability. The second was a curiosity about whether a sustainability framework might be used to analyze an academic program and what such an analysis could uncover about that program. The program I was interested in analyzing was the Digital Technology and Culture (DTC) degree program at Washington State University (WSU) in Pullman. I became the director of this technology-intensive interdisciplinary major when I arrived at WSU in fall 2003 and found that part of my job description was to "grow the DTC degree." I knew little about the degree, which had become a stand-alone degree program in spring 2003 (just before I arrived), but found a handful of students who knew about DTC and were ready to take courses. We immediately found challenges—challenges that writing this chapter helped me understand better. The analysis has also convinced me that we have grown a sustainable program—one in which balancing the social, economic, and the ecological pieces is tricky, but possible.

This chapter begins with the rhetorics of sustainability. The first section of the chapter defines sustainability and sets up an analytical framework specifically designed for considering technology-rich academic programs. In the remainder of the chapter, that framework is used to analyze the DTC program. Concluding the chapter, I provide four recommendations that come directly from the sustainability analysis outlined in this chapter. Despite the overuse and misuse of the term *sustainability*, the process of writing this chapter has led me to believe that considering academic programs through a carefully considered sustainability framework can help us to understand and build better academic programs.

DEFINING SUSTAINABILITY

In 1993, environmental historian Donald Worster was concerned that the popular use of "sustainability" was beginning to wear thin, and that the ideal of sustainability was presenting us with a "bewildering multiplicity of criteria" that needed sorting. Worster also complained that each disciplinary field had its own "peculiar" notion of what sustainability is. In the early 21st century, the term sustainability is wildly popular, carelessly tossed about, and used for describing widely different situations—from the Dow Jones Sustainability Index, to individual lifestyle choices, to the kind of peace the Bush administration sought in the Middle East. In attempting to use the term sustainability in any critical approach, care must be taken to avoid the primary pitfall that Worster identified more than 15 years ago—in its wide acceptance as a laudable goal, sustainability might well have lost any "real substance" (p. 133).

An important and often-cited definition of sustainability emerged in a 1974 document published by the World Council of Churches (WCC). The definition, drafted by the WCC's Conference on Science and Technology for Human Development, sets out four criteria necessary for a sustainable society:

First, social stability cannot be obtained without an equitable distribution of what is in scarce supply or without common opportunity to participate in social decisions. Second, a robust global society will not be sustainable unless the need for food is at any time well below the global capacity to supply it and unless the emission of pollutants are well below the capacity of the ecosystems to absorb them. Third, the new social organization will be sustainable only as long as the use of non-renewable resources does not out-run the increase in resources made available through technological innovation. Finally, a sustainable society requires a level of human activities which is not adversely influenced by the never-ending large and frequent natural variations in global climate. (qtd. in Dresner, 2002, p. 29)

According to *Principles of Sustainability* author Simon Dresner (2002), this definition was "proposed by Western environmentalists in response to developing world objections to worrying about the environment when human beings in many parts of the world suffer from poverty and deprivation" (p. 1). The WCC definition has a significant anthropocentric focus, weighing heavily on the value of human beings, with nature's worth "derived primarily from its capacity to serve human ends" (Satterfield & Kalof, 2005, p. xxii). The environmental movement of the 1960s and early 1970s had been criticized as lacking interest in humans, with critique often focused on the advocates of "deep ecology." The deep ecology approach to environmentalism, first outlined by Norwegian philosopher Arne Naess, has been characterized as radically biocentric: a position that "respects all living organisms; because nature is alive, it is regarded as 'good' in its own right and thus deserving of moral consideration" (p. xxiii).

According to Worster (1993), the idea of sustainability came about as some environmentalists were looking for a "less intimidating way" to make needed environmental changes. In addition, scholars like Lester Brown (1981), author of *Building a Sustainable Society*, argued that "the survival of civilization depends on pragmatic, not ideological, responses to the forces now undermining it" (p. 350). Most scholars agree that the sustainability movement's prominence began in 1987 with the United Nation's World Commission on Environment and Development publication of *Our Common Future*, usually referred to as the Brundtland Report. In this report, sustainability moves from a single-word idea to a two-word concept: no longer is it simply sustainability that is defined, but *sustainable development*:

- development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of "needs," in particular the essential need of the world's poor, to which overriding priority should be given, and

- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs. (World Commission, p. 43)

Despite criticism, refocusing sustainability as sustainable development certainly qualifies as pragmatic rather than ideological, and most recent definitions of sustainability grow out of the Brundtland Report. In *Technology and the Contested Meaning of Sustainability*, Aidan Davison (2001) wrote that the report "arguably remains the manifesto for sustainable development policy" (p. 12).

Since the early 1990s, the sustainable development paradigm has become the mainstream understanding of sustainability, with definitions regularly positing a three-part definition of the term.[1] For example, in 2002, the Scottish Environment Protection Agency articulated this three-part definition on its Web site:

> A simple way of picturing sustainable development is to think of it as a stool with three legs, representing the environment, the economy and society. If any leg is more or less important (i.e., shorter or longer than the others, the stool will be unstable—but perhaps still usable—at least for a while). If any leg is missing, the stool simply will not work. But if all three legs are the same length (i.e., environmental, economic and social considerations have been given equal weight), the result will be a well balanced stool which will serve its purposes indefinitely—a sustainable stool. (online)

In another example, in 2005 the Canadian Commissioner of the Environment and Sustainable Development provided a gloss of the Brundtland Report's contents, stating that it was focused on three pillars of human well-being:

- Economic conditions—such as wealth, employment, and technology;

- Socio-political conditions—such as security and democracy; and

- Environmental and resource conditions—such as the quality of our air and water and the availability of capital in the form of natural resources. (Office of the Auditor General of Canada, online)

Disagreements about the appropriateness of the three-legged stool model have been many. In 2003, conservation biologists Neil Dawe and Kenneth Ryan argued that the three-legged stool metaphor is faulty because "humanity can have neither an economy nor a social well-being without the environment. Thus the environment is not and cannot be a leg of the sustainable development stool" (p. 1459). Dawe and Ryan argued that the environment is the "floor" or the "foundation" of well being. This position is often taken by those who hold a more biocentric ideal that harkens back to the earlier environmental movement. Economists tend to believe that the economic leg is the most important and the foundation of any sustainable development. In 2005, agricultural economist John Ikerd claimed that all three of the legs of the stool were essentially economic ones and that sustainability is a "long-term, people-centered concept." Ikerd admitted that this is an "anthropocentric interpretation of sustainability" and argued that even though "we are concerned *uniquely* with sustaining the human species [that] does not dictate that we are concerned *exclusively* with sustaining the human species" (pp. 122–123).

Despite some differences, most mainstream understandings of sustainability in 2008 consider it a dynamic process in which the social, economic, and ecological are interrelated. This chapter will consider the three elements of sustainability as relatively equal in importance and look at each one in some detail.

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[1] Although conflating sustainability and sustainable development might be an arguable step, for convenience it will be done in the rest of this chapter.

SUSTAINABILITY IN THE CONTEXT OF HIGHER EDUCATION:
AN OVERVIEW OF THE THREE LEGS

Although not often conceptualized through the lens of sustainability, university degree programs are dependent on the economic, the social, and the ecological, and program administrators face the tricky task of keeping them in balance—keeping that three-legged stool well-supported. To make this framework as clear as possible, a more detailed analysis of each element of sustainability and how those elements apply to higher education is needed. Using this three-part taxonomy is productive, but I admit that taxonomies are limited tools; there are inevitable overlaps in categories, blurring of boundaries, and seemingly capricious choices about what belongs in which category. But for purposes of analysis, taxonomies are helpful and can provide insights that looking at something in its entirety cannot.

Leg 1: The Economic

Beginning my analysis of a sustainable university program with the economic piece of the triad doesn't indicate any hierarchical value. The three-legged stool metaphor demands that no one element be placed above or below the other. The economic leg, however, might seem a bit easier to analyze because it is largely based on quantification. In sustainability jargon, "economic viability" is commonly used to describe this leg. In other words, for any element in an environment to be economically viable, the quantified costs and benefits must result in a system that has the capacity to be profitable and survive. Even though universities are not typically for-profit institutions, economic viability is still a powerful consideration in decisions about degree programs. To be economically viable, a program has to have enough administrative, faculty, and student support to be cost effective for the university. New programs must prove that there is economic need for graduates in the program area. With a program like DTC, technology is an important, but sometimes glossed-over economic element. For instance, even though sufficient technology might be in place at the beginning of a project, replacing and upgrading technology is too often given little attention, causing economic sustainability problems as the program grows.

The idea of growth is integral to the concept of economic sustainability (especially the idea of sustainable development). Growth is typically measured though a benchmarking process. According to sustainable community management expert Douglas Porter (1997), "benchmarks establish broad goals and objectives" and can also create "numerical targets that will allow measurement of progress toward achieving those goals" (p. 279). When growth is a central focus, the concept of sustainability becomes more complicated. In the case of a university degree program, pressures to "grow" a major may result in an increase in the number of students enrolled in the degree and a resulting shortage of instructors, room space, technology access, or administrative services for those majors.

Leg 2: The Ecologic

In most sustainability analyses, the natural ecosystem is the ecology considered. For this chapter, however, the university will be considered in terms of an ecology of knowledges. Knowledge ecology advocates argue that "knowledge exists in ecosystems, in which information, ideas, and inspiration cross-fertilize and feed one another" (Por & Spivak, 2000, online). A more complex conception of the university as a knowledge ecology is offered by Catherine Odora Hoppers (2006), who posited that the university is a "fomalised ecology of knowledge" that results in tensions between stakeholders due to a range of institutional factors (pp. 56–57).

In this chapter, the ecology of knowledges leans heavily on the concepts of interdisciplinarity. Interdisciplinarity pushes against the polarities of disciplinarity and the privileging of one form of knowing over another. Interdisciplinary scholar Lisa Lattuca (2001) argued that disciplinarity provides "the rationale for the departmental structure of U.S. colleges and universities and strongly influences faculty appointments; hiring, promotion, and tenure practices; teaching assignments; student recruitment and enrollment; and even accounting practices" (p. 1). This claim is common knowledge to those on the inside of the university bureaucracy. Defining *interdisciplinarity* as "the interaction of different disciplines" (p. 78) ties it closely to the concept of knowledge ecology and allows for analysis based on a goal of moving the university toward an interdisciplinary knowledge ecology.

Leg 3: The Social

In most considerations of the social leg of the sustainability stool, the terminology used is "socially just." In a socially just society, all people and groups would have the same basic rights, security, opportunities, obligations, and social benefits. In this chapter, the concept of a socially just university is founded on the ideals of a socially just society—one in which individuals and groups are given fair treatment and a just share of the benefits of society. It follows that the goals of a socially just university are to provide access to a diverse student population, to provide that students of all types have the opportunity to succeed within the university, and to equip students with the background and knowledge to succeed outside of the university.

HISTORY OF DTC AT WSU-V

A brief history of Washington State University and the Digital Technology and Culture (DTC) degree will help to contextualize this chapter as well as provide for a sustainability analysis of the degree from its inception. The degree was conceived at Washington University's Vancouver (WSU-V) campus, which is one of three WSU branch campuses established in 1989 to serve growing education needs across the state.[2] These campuses offered upper-division courses leading to BA and BS degrees. Founded almost 100 years before the branch campuses, WSU's main campus in Pullman was established in 1890 as the state's land-grant institution. Pullman, on the eastern border of Washington, is about 350 miles from DTC's birthplace at WSU-V.

DTC at WSU-V: The Economic

Seeking to expand its enrollment in the early 1990s, WSU-V began general studies interdisciplinary degrees in social science and humanities. In the mid-1990s, Tim Hunt, a faculty member and administrator in the early days of WSU-V, was acutely aware of the need to increase enrollment beyond what the interdisciplinary degrees could provide and also to better serve the needs of the Portland/Vancouver metropolitan area.[3] Hunt proposed a

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[2] The other branch campuses were established at Tri-Cities and Spokane. In Fall 2006, Vancouver admitted 157 first-year students—its first freshman class. Tri-Cities will enroll first-year students in Fall 2007. Fall 2006 enrollment on the Pullman campus is 18,432; Vancouver 2,329; Tri-Cities 1,076; Spokane 1,580.

[3] Information about the history of the program at WSU-V was provided by Tim Hunt, now chair of the English Department at Illinois State University. Hunt was at WSU-V from 1990 to 2003.

Language, Culture, and Cognition option in the general studies program that would meet the regional and national need for more broadly educated graduates in technology and multimedia areas. The initial proposals for the option carefully laid out the economic particulars and included numerical data from national surveys as well as Oregon[4] and Washington economic development statistics. In addition, Hunt demonstrated that the program could be instituted with current WSU-V faculty, thus insuring that the initial costs of the program to the university would be small. In these initial documents, the technology and classroom infrastructure was characterized as "already in place."

DTC at WSU-V: The Interdisciplinary Knowledge Ecology

Hunt's proposal laid out the interdisciplinary knowledge ecology facets of the proposed general studies option, outlining it as a multi-disciplinary program in which students would:

  a) explore the interaction of language, technology, and society (including the history and impact of earlier technologies of language, such as writing and print) to develop a critical understanding of these new practices;

  b) develop expertise in computer-based multimedia authoring; and

  c) learn both how to conduct research electronically using such resources as computer databases and the Internet and how to manage, assess, and synthesize the results of their research.

Courses in the option would be drawn from anthropology, communications, computer science, English, graphic design, history, political science, psychology, rhetoric, and sociology.

Hunt's early memos explained that "cultures experience profound reorganizations when their modes of transmitting and storing language change," and predicted that "the emergence of electronic media and computing… will likely turn out to have been the most fundamental reconfiguration or our means of learning, enacting, transmitting, and storing language since the massification of print (perhaps since the emergence of writing)." Because of this fundamental change, Hunt believed that the university should prepare students who understand how language, culture, and cognition interact and who would be positioned to contribute to education, government, business, and communication industries, and various other areas. Students coming from an interdisciplinary program, Hunt claimed, would "be able to contribute new and productive models to the institutions that employ them."

Certainly, the original Language, Culture, and Cognition option that Hunt proposed fits Lattuca's (1991) basic definition of interdisciplinarity as "the interaction of different disciplines" (p. 78). In addition, the option works well when considered as a knowledge ecology in which "knowledge exists in ecosystems, in which information, ideas, and inspiration cross-fertilize and feed one another" (Por & Spivak, online). The tenets of an interdisciplinary knowledge ecology were not hard to imagine at a campus like WSU-V—a small campus of just a few

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He provided me with memos, proposals, and the opportunity to ask as many questions via email as I wanted. We also talked about the program in a long telephone call during which Hunt provided a more nuanced view of the program than one can glean from the written documents.

[4] WSU-V is located just across the river from Portland, Oregon, and serves a metropolitan population of over 750,000.

hundred students with faculty who often functioned as one-person units.[5] The walls of disciplinarity were low at WSU-V; faculty in disparate disciplines walked the same halls, shared the same coffee rooms, and, by necessity, were committed to the university-wide success of WSU-V. The elements considered by many of those who study interdisciplinary work—shared spaces, time for interdisciplinary research, and communication among those steeped in different disciplinary traditions—were part of the day-to-day realities at WSU-V.

DTC at WSU-V: The Social

The third leg of the sustainability analysis, the socially just university (one that presents access and opportunity to diverse populations and provides students with the opportunity to succeed in the university and beyond) was a consideration at the beginning of the general studies option as well. The history of WSU as a land-grant university lends itself to the goals of a socially just university. According to Martin Jischke, who has served as president of two land-grant universities (Purdue and Iowa State), "the land-grant university is a uniquely American idea, defined by a commitment to the land-grant values of access and opportunity, combining practical and liberal education, conducting basic and applied research, and reaching out to extend the university to serve the people of the state" (cited in Charles, 1997, online). The land-grant university is historically well-positioned to act as an agent for social justice. The founding of WSU-V as a branch campus of a land-grant university was based largely in an effort to provide university access to a largely underserved region of Washington State. Hunt's proposal also addressed this issue, noting that there were hundreds of well-qualified students awaiting the opportunities that this option would provide them—the opportunity to work in the many jobs the degree would qualify graduates for. These students were not traditional college-age students, but non-traditional, returning students from the Portland/Vancouver metropolitan area. The option included a stated goal of providing the work world with graduates whose approach was not narrowly bounded by specific expertise in computer science, business or the like, but graduates who have the analytical, expressive, and organizational abilities that a liberal arts degree can impart, along with a deep awareness of technology's influences on contemporary communication.

DTC BECOMES A STATE-WIDE PROGRAM

The program Hunt proposed was in place by spring of 1997 as a general studies program option in Electronic Communications and Culture (ECC). Shortly thereafter, Hunt and others at WSU state-wide looked to establish a stand-alone degree program in Electronic Media and Culture (EMC) that would be available at the Pullman and Tri-cities campus as well as Vancouver.[6]

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[5] Although faculty at WSU-V have always been considered a part of the larger WSU departmental community and are tenured into WSU units, the distance between the Pullman and Vancouver campuses has made the everyday working conditions of WSU-V quite different from those at the Pullman campus.

[6] This chapter does not include information about the DTC degree at Tri-Cities. The complications of moving the DTC major to that campus were substantially different from those encountered in the move to the Pullman campus.

Economic Considerations of the State-wide Program

The proposal for the major had many of the same economic justifications found in Hunt's original proposal: statistics for the number of jobs were available at the state and national levels; assurances that faculty already in place at all campuses would be able to teach the courses; claims that all campuses were "adequately staffed to launch the program"; and an additional assurance that all campuses had the technology needed to begin the degree program. However, the specifics for how technology needs would be met as the program grew were not addressed. Overall, these particular economic sustainability concerns were glossed by a statement that "the initial cost of the program is minimal, since it primarily provides an additional pattern for utilizing existing (in Pullman) courses or courses that are already budgeted in Vancouver to generate new FTE." Vancouver student enrollment was projected to be 100 students by the fifth year of the degree's existence.

Interdisciplinary Knowledge Ecology Issues and the State-wide Program

By the time the EMC degree was proposed, interdisciplinary knowledge ecology concepts were well articulated. The proposal characterized the degree as including a "multidisciplinary, liberal-arts-based investigation of the epistemological, political, and educational implications of computer-based technologies." This degree would "provide students the opportunity to: 1) investigate computer-based technologies historically and critically; 2) develop the analytical, expressive and organizational capacities that we traditionally associate with liberal arts curricula; and 3) acquire a set of employable skills." Participating disciplines were also articulated more fully; the EMC curriculum would draw upon

> investigations that the development of computing is driving in such areas as language and culture (anthropology, writing, the history and theory of rhetoric, linguistics; cognition and learning) psychology, linguistics, education; language and society (anthropology, sociology, communications, rhetoric, political science); design and visual communications (fine arts); and information science.

Socially Just Considerations of the State-wide Program

In documents written to propose the degree and extend it, the goal of the socially just university to expand access to diverse populations was partially articulated. Because the land-grant mission of the entire WSU system is still strongly evidenced in WSU's tradition and literature, the assumption that the EMC degree would promote socially just goals is not unfounded. Faculty Senate documents characterize WSU as responsive to the demands and needs of its constituencies in today's society. To meet such demands and needs, the university instructs in both the liberal and practical arts "to develop responsible citizens and to provide professional and technical skills needed within the state and in the larger society." In a specific nod toward the university's responsibilities for promoting social justice, WSU's goals include broadening "the intellectual scope of its students by fostering an understanding and appreciation of diverse cultures and sociopolitical systems both domestically and internationally. The university environment promotes intellectual curiosity, integrity, a high sense of responsibility, and moral values" (WSU Faculty Senate, 2006, pp. 1–2).

ROADBLOCK: THE INTERDISCIPLIANRY KNOWLEDGE ECOLOGY

At this point in the history of the EMC degree program, the economic and social justice elements of the sustainability analysis temporarily fade into the background. Most of the roadblocks that advocates for the degree encountered in their quest for sustainable program development were the high disciplinary walls of a 100-year-old university. In most cases, those disciplinary walls were in the form of departmental structures. According to Lattuca (1991), higher education history in the U.S. has "been one of increasing disciplinary specialization and organization" (p. 6), with the first academic departments established in the 1820s. The Morrill Act in 1862 led to the development of land-grant universities that provided "access to specialized training in professions such as nursing, education, and engineering" (p. 6). WSU, a relative late-comer the university world, was founded as a utilitarian, land-grant university in 1890. The fledging university established five colleges: Agriculture, Mechanical Arts and Engineering, Science and Arts, Veterinary, and Home Economics; and four schools: Mines, Education, Pharmacy, and Music and Applied Design. In addition to these divisions, many of the colleges and schools were sub-divided into departments (Von Bargen, 2002, online). The creation of colleges, schools, and departments called for administrators to lead those units and to serve as guardians of disciplinary turf.

Because of these often well-defended turfs, the EMC degree proposal hit snags almost immediately—many of them administrative. Administrators at both campuses were reluctant, and some would not even consider the possibilities of the degree.[7] One exception to this general reluctance was a forward-looking dean who did give the proposal the green light; unfortunately, he left before the degree could go forward. His replacement did not favor the degree. When it was first put forth, one administrator on the WSU-V campus called the degree "fluff" and was not willing to waste any "political capital" on it. Another at WSU in Pullman said it was "not worth doing." Not willing to admit defeat, Hunt and others at WSU-V asked if the EMC degree could be put forward as a Vancouver degree only. Administrators deemed that move impossible because academic offerings at all campuses had to be identical.

Despite the reluctance and roadblocks, the general studies option in Electronic Communications and Culture at WSU-V was growing. Students were graduating with the degree option and finding many open doors. This success, coupled with enrollment and administrative changes, led to less opposition. By 2002–2003, a proposal for a full degree program was once again being considered. Even though departmental structures at WSU-V were less defined and rigid than those in Pullman, if the degree was to be offered state-wide, it needed to have a departmental home. Some of those already teaching in the WSU-V Option were tenured in the English department (including Hunt) and the English chair was willing to take on the degree, so the WSU English Department became "home" for EMC.

The home of the degree decided, it then became the responsibility of the English Department to guide the degree through several bureaucratic hoops. That process was relatively smooth until spring of 2003, just days before the degree was to be voted upon by the Faculty Senate. At that juncture, the difficulties that the degree would face on the Pullman campus started to become clear as disciplinarity and departmental boundaries came into play. The Communications School[8] let it be known that they considered the term "media" in the degree

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[7] Information in this section is from my phone interview with Hunt. Names of administrators who hindered the program's development are not integral to this chapter and are therefore not included.

[8] The Communications School at WSU is housed entirely at the Pullman campus. It is the largest department in the College of Liberal Arts (about 700 students), does not offer courses

name, Electronic Media and Culture, to encroach on their territory. Because of that term's inclusion in the degree name, they announced their intent to vote against the degree. Because of their strength in the College of Liberal Arts, this negative vote would be a death knell for the degree program proposal. Although some promoting the degree wanted to stand fast and argue for the name Electronic Media and Culture, those with more political savvy realized that any dispute would set the degree process back at least a year, and quite possibly more. At the very last moment, the degree proposal was amended and the degree was put forth as Digital Technology and Culture (DTC).

DTC'S STATE-WIDE SUSTAINABILITY

As I mentioned in the introduction, I arrived at WSU in fall of 2003 and part of my job description was to "grow the DTC degree." Although I was just learning about the degree, I was eager to help the handful of students who were ready to complete the program. We immediately ran up against problems that had not been considerations when the degree was at WSU-V. In Pullman, where disciplines, departments, and degree programs had been in place for over 100 years, the situation was much different. At the Pullman campus, there are over 750 faculty in 10 colleges, some of which have been in place since WSU's founding. In the College of Liberal Arts alone, there are 18 departments offering 31 different majors. Disciplinary walls are well-established and run both high and deep.

The first encounter with disciplinarity involved the Fine Arts (FA) department. Because WSU-V had only upper-division classes, the issue of prerequisites was a non-issue—none were required. In addition, WSU-V had a one-person FA faculty, and not a single FA major. WSU-V DTC majors had no problem getting into FA classes, as there was no competition for seats in the courses. But the FA situation in Pullman is markedly different. Pullman has a full-fledged Fine Arts department offering several degrees including a BFA and an MFA. A full slate of foundational arts courses is available at the lower division, and prerequisites are typically enforced. To take some required DTC courses, students might need to take two or three prerequisite courses. At the beginning of the DTC program, a few majors slipped through the prerequisite requirements and took upper-division FA courses. They were not prepared, lagged behind those who had taken the prerequisites, and created pacing problems for teachers. Not surprisingly, FA faculty who were teaching the courses were unhappy, and DTC majors were equally unhappy. They were promised a degree that could be completed in 2 years, but found that on the Pullman campus, that promise was difficult to keep. FA courses were not the only ones in the Vancouver-designed major that had prerequisites on the Pullman campus. Not only did students run into prerequisites, but they also encountered faculty in several departments who had never heard of the DTC major and were unaware that their courses were part of an interdisciplinary major housed outside their home departments and sometimes even outside of their colleges.

Because I had been on the job only a few weeks, I knew very little about the institution, about the degree, or about how to approach these disciplinary issues. One thing was certain, however, these issues needed attention. To sort out the FA prerequisite issue, a meeting with the chairs of the English and Fine Arts departments and three FA faculty was arranged. Luckily, the FA chair and faculty knew about the DTC major and were willing to compromise. After two or three meetings and numerous emails, reduced prerequisites were set for DTC majors—enough so that the FA faculty believed DTC majors could successfully take the classes without the full slate of prerequisites that FA majors were required to take.

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at the branch campuses, and is named after the department's most famous graduate, Edward R. Murrow.

Negotiations on prerequisites with other departments have been slower than those with the FA department. Some department chairs have been reluctant to even discuss the DTC major and their department's possible role in it. In spring of 2007, conversations with one department offering courses included in DTC—but were nearly impossible for DTC majors to enroll in—concluded successfully.

Despite these difficulties, conversations with individual faculty members in various departments are often collegial and less concerned with disciplinary boundaries than my first experiences led me to believe they would be. Many have voiced support of DTC's interdisciplinary approach and an interest in helping the major succeed. Their interest is dampened by the realities of departmental structures and their need to heed the demands of disciplinary boundaries. Lattuca (1991) noted that disciplines are "more than canisters of subject matter and inquiry methods," and posited that "the value judgments made by individuals within a discipline concerning the appropriate topics for investigation, the kinds of questions that are valid to ask, and judgments regarding what constitutes a valid answer are social conventions, and these conventions lead to different views of scholarship" (p. 34). In addition to different views on scholarship, the disciplines provide faculty with an identity—an identity into which faculty have been well-socialized by the time they reach tenure-track positions. Lattuca claimed that, in addition to being technically competent, an individual must "show that she or he is loyal to the collegial group and will adhere to its norms" (p. 36). Because of the need to evidence these allegiances, participation in an interdisciplinary major like DTC can be a questionable career move—especially for pre-tenure faculty.

Even though there have been some complications, students are drawn to the major—often because of its interdisciplinary nature. Countless times, I've heard a student's sigh of relief when I finish explaining the major. This sigh is often accompanied by a statement like "this is what I've been looking for." The narrow disciplinarity of many fields seems constraining to these students, and DTC's broad, interdisciplinary approach is a breath of fresh air.[9] Ironically, DTC students end up with an interdisciplinary mindset even though the faculty teaching them might not share that mindset. For undergraduate students, developing an interdisciplinary sensibility is often easier than it is for faculty. In the core of the major, students encounter teachers with backgrounds in fine arts, literature, rhetoric, computer science, anthropology, library science, and sociology. At the least, students experience interdisciplinarity as "the interaction of different disciplines" (Lattuca, 1991, p. 78). Because students have not been fully initiated into disciplinary ranks, they often can weave ideas and approaches from their coursework into an interdisciplinary tapestry.

DTC IN PULLMAN: ECONOMIC AND SOCIAL JUSTICE ISSUES

Although the economic and social justice elements of this analysis have been in the background for a few pages now, these elements are still vital considerations. There are now nearly 100 DTC majors in Pullman and those numbers are growing. Growth is an important element of the economic sustainability analysis, and with increased numbers, the need for growth in facilities and faculty has become an issue. The English and Fine Arts departments are most heavily impacted by DTC's growth. Although both departments have computer labs, both are experiencing difficulties with growing numbers of DTC students who need access to sophisticated computers and software. When the degree was proposed and accepted, there was adequate technology in place. Because the proposals did not include plans to update or

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[9] In the interest of full disclosure, I must also admit that I have had a few inquiries into the major from students who, after hearing about it, just can't understand it and have no interest in a degree that isn't in a recognizable field of study.

expand technology access once the number of students increased, DTC faculty in these departments are now faced with the challenges of technology expansion. How these challenges will be met is, at present, an open question—a question complicated by disciplinarity and departmentalism. Although DTC students may need more and better technology, will funds and space come from the English department (where the degree is administratively housed) or will the costs of technology expansion be shared? If the costs are shared, will the DTC major headcount be shared between the departments who share the cost?

In addition to the need for more technology access, the need for new faculty is pressing. As research into interdisciplinary programs has shown, many "interdisciplinary programs borrow their faculty from discipline-based departments; a half- of full-time director is responsible for finding suitable individuals to teach program courses" (Lattuca, 1991, p. 48). I was hired to fulfill several roles in the English department, and my load is split between DTC, rhetoric and composition, technical and professional writing, advising, and administration. Up until fall of 2006, I was the lone DTC advisor, with over 70 advisees. A new hire in fall of 2006 has expertise in DTC, but also has advising duties along with teaching responsibilities in rhetoric and composition, and technical and professional writing. In Fine Arts, the situation is similar, with one faculty member who is responsible for the multimedia program and teaching responsibilities that are split between that faculty, one full-time instructor, and a few adjuncts. Neither the English nor the Fine Arts department is eager to give up hard-won faculty lines to a program that does not seem central to its core. Although it may have made sense (and in many ways, still makes sense) to have the DTC major housed in the English department but functioning as a stand-alone major, the economic issues of such an arrangement are difficult.

CONSIDERATION OF THE THREE LEGS: CONFLATION AND ONGOING CONCERN

In spring of 2007, two legs of sustainability conflated, thus illustrating the limits of this taxonomy.[10] The economic and interdisciplinary knowledge ecology leg were both in play when faculty in English/DTC and the multimedia area of Fine Arts initiated consideration of an interdisciplinary position to be shared by the Fine Arts and English departments. This position was initially supported by both department chairs. Upon further discussions between the chairs, the complexities of the disciplinary bureaucracy (which included issues of money, space, teaching load, administration, tenuring, and others) became too difficult to overcome. The position was removed from consideration even though faculty still strongly supported it. Spring of 2007 brought even more complications for DTC, when the two main multimedia FA teachers took positions at different institutions. Resolution of issues that directly impact the DTC degree are difficult to negotiate because of well-established department boundaries and DTC's awkward position as an interdisciplinary program in a university world ruled by the traditions and limitations of disciplinarity.

The social justice leg of DTC in Pullman is an ongoing concern of the degree. DTC graduates have been easily placed in jobs showing decent returns on their investment in a university degree. Several have been accepted into graduate school. The work-world and graduate schools welcome DTC's technology-savvy and culturally aware graduates. Besides job-placement, another substantial issue for any technology-based program is the digital divide—a divide sometimes trivialized by framing it only as an issue of access. But it is a much more complicated divide that encompasses not only access, but literacy, culture, content, pedagogy, and community (Carvin, 2000). To make the DTC program sustainable in the social

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[10] Even though this conflation may be seen as a fault, articulating a three-part taxonomy and then seeing how the parts of that taxonomy blend is, in this author's opinion, also helpful.

justice sense, work has been done to assure that graduates are fully aware of all aspects of the digital divide. A course in digital diversity has been added to the core requirements and students have the opportunity to do internships for WSU's Center to Bridge the Digital Divide. To make sure that the degree program itself does not become as andro- and euro-centric as much of the digital world is, efforts are being made to keep enrollments in the major diverse. In spring of 2006, 43.5% of Pullman DTC graduates were women. The total WSU female population is typically around 47%, making DTC female graduates close to the overall WSU population. In spring of 2007, however, 61% of the DTC majors are male, 39% female. So that the major more closely reflects the overall WSU population mix (53% male, 47% female), DTC may have to actively recruit female majors. To assure multicultural diversity, the DTC program may also have to recruit more minority majors. In spring of 2006, 8.7% of Pullman DTC graduates were minority students. At present, 11% of DTC majors are minority students, but 14.2% of the University is composed of minority students. To keep the DTC program headed in a socially just direction, attention to these factors must continue.

CONCLUSION

Although my analysis has been site-specific, I hope that I have accomplished at least part of my initial goal: bringing readers to understand some of the sustainability issues involved in establishing a technology-intensive interdisciplinary major at a university with well-defined disciplinary boundaries. These issues are not just local ones to WSU; interdisciplinary work has been taking place since at least the 1970s, but still exists on the fringes and between boundaries in most universities. Many universities are, however, promoting interdisciplinarity as the wave of the future. A 2006 WSU study strongly supported interdisciplinary work, noting that several recent policy reports "have emphasized that new frontiers in scholarly work require individuals with knowledge that cuts across narrow disciplinary boundaries and who have the ability to work in interdisciplinary teams." The same report acknowledges the difficulties of such work in university environments "bounded by infrastructures and organizations that create rigid walls between departments and schools that serve to promote turf battles and make it difficult to advance interdisciplinarity" (Report, pp. 7–8).

Based on these cautions and my own experience, my first recommendation to anyone stepping into an interdisciplinary program or considering instituting one is to read the scholarship on interdisciplinarity. In this chapter I have used the work of Lisa Lattuca (1991), one of the foremost scholars currently studying interdisciplinarity. There is much more excellent work available on the subject, and reading as much of it as possible is important for anyone jumping into the interdisciplinary fray.

My second recommendation has to do with the framework supplied by the three-legged stool approach to sustainability. It has been surprisingly helpful. When I began this chapter, I had a suspicion that this analytical framework might be a stretch. Instead, I found the three-part framework incredibly productive. The research required to complete the analysis led me to a much deeper understanding of interdisciplinarity and the DTC program itself. Before completing this chapter, I was fully aware of the difficulties that the knowledge ecology had presented, but I was less aware of the economic and social justice elements. Although the most difficult component of sustainability in the first 3 years of the major has been the interdisciplinary knowledge ecology element, the economic element is likely to become more challenging in the near future. Work to keep the degree as socially just as possible will require vigilance. The challenge of keeping the three-legged stool balanced requires that all three legs be considered—all the time. This sustainability framework is one I will keep as a guiding analytical and assessment tool for the program because I'm convinced that this framework will help me be a better administrator and assure that the DTC major is sustainable.

My third recommendation grows out of the second one. To complete this chapter, I had to learn more about the DTC major—about its genesis and its history. This recommendation thus is largely informed by Bruno Latour's (1996) actor network theory and its dictum, "follow the actors." Latour considers all parts of a project's history "actors," so people and documents are considered equally. I tracked down the people involved at the beginning of the major to find out what their motivations and visions for the major were. As I talked to those instrumental in creating the major and those who helped make it a state-wide degree, I found (not surprisingly) that their accounts varied. Each saw the establishment of the degree through different eyes and from different viewpoints. Weaving these accounts together to form my own understanding of the degree has been instructive. In addition to the oral accounts of the degree's history, gaining access to its founding documents was incredibly helpful. I was well into my fourth year of coordinating the major, but I had never seen these documents and had only a partial understanding of why and how the degree came about. Now I have my own narrative of the degree program, one more nuanced than before. While writing this chapter, I have muttered over and over, "If I'd only known this a couple years ago. . ." So my third recommendation to anyone stepping into a new program—of any kind—is to find out as much as possible about the history of the program. That means gaining access to all historical documents and contacting as many people involved with the program as possible. In my case, I had no idea that the documents that inform this chapter even existed before following the people-trail back to the beginning of the DTC degree.

Not surprisingly, my final recommendation grows out of the previous one. It can be summed up in one word: **network**. Although encouraging people to network might seem like trite advice, when considering a sustainability framework and working in an interdisciplinary program, networking is required. The university is an essentially anthropocentric entity—it works almost exclusively through human interaction, primarily for the betterment of humans. In such an institution, social networking is advisable. When working in an interdisciplinary program and hoping to sustain that program, networking is indispensable.

Although establishing the DTC major on the Pullman campus has not been without challenges, mid-way through 2007 it was thriving. There are over 100 DTC majors; when I talk about the degree, I'm not met with as many blank or quizzical looks. More and more frequently I hear something like "oh, I've heard about that degree; tell me more about it." Students, not typically steeped in the traditions of the university, are usually the first to "get it." Faculty, who often know first-hand the rich returns of interdisciplinary work, are likely to understand the degree; some are equally quick to recognize its perils. Administrators have much the same understanding as faculty, but they often have deeper reservations about an interdisciplinary degree, because they serve as the guardians and gate-keepers for their departments and disciplines.

For any program to be sustainable, those in charge must believe in the program and its possibilities. But, important as belief is, those leading the program must also have some theoretical and practical tools for analyzing and assessing it. The economic, ecological, and social focus of the three-legged sustainability framework provides powerful analytical and assessment tools.

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