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USE

IDENTITY AND FIGURED WORLDS OF SCHOOL TECHNOLOGY USE

by

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Identity and Figured Worlds of School Technology Use

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Technology use in educational contexts is a personal and social activity. It is linked to individuals' attitudes and practices as well as the culture and structure of the institution. This research uses the theoretical framework of **figured worlds** and **self-in practice** to examine identities and cultural practices linked to information technology use and support in a public law school. Observations and interviews were used to collect data on technology practice within the institution. Local practice can be characterized as a **figured world of technology use** in which particular artifacts, narratives, activities, roles, and concerns are identified as possessing a highly contextualized significance. Technologies and technology activities are identified with the cultural forms imagined in the figured world theory. As cultural forms, technologies and technology practices are adapted, adopted, and integrated into local practice and link the figured world of technology use at this law school to other contexts. Self-in-practice within the context of local technology use is identified with a **technology identity** and defined as the constant process of choosing and integrating technology into personal practice. As central figures in this figured world, IT support staff attended and adapted to individuals' technology identities while also acting as guides in the construction of individual and organizational technology practice.

Dedication

This dissertation is dedicated to the memory of Dr. Charles Friedman and Leonard Wiesenbergr. Two really smart guys.

It is also dedicated to the memory of Morticia and Kylie. Two really smart girls.

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Chapter 1: Subaru Outbacks and Fat Tire

I recently participated in a focus group for a local brewery. The leader of the focus group showed me and a dozen other white males, aged 25 to 34, a selection of nationally distributed and micro-brewed beers and asked us to describe the type of person who drinks each beer. To help us get into the exercise, he asked us to think about different car brands: "What type of person drives a Porsche? Who do you see driving a Toyota?" Then we generalized the car brands to the beer brands: "What kind of car does a Heineken drinker own?" After a couple of false starts, we all got into the game and started showing off the kind of brand consciousness that marketing types live for.

Soon the conversation turned to our own personal preferences and attitudes about the various brews on the table. "When would you drink a Corona? Are you a 90 Shilling kind of guy?" It wasn't hard for any of us to picture a time or place where we would be likely to go for a particular brand of beer. We aligned ourselves with different brands – most of us expressed an affinity for Colorado beer. After some careful reflection, I came to the conclusion that I'm partial to beers from Boulder County, and I've set some personal stake in the quality and success of Left Hand Brewery – which sits about a half mile from my home in Longmont.

What's interesting about this story and what does it have to do with technology and teachers? When I left the focus group, I started to think about how it was possible that 13 men who had never met could find so much common ground on such a specific topic. We were selected by the marketing firm based on our age, gender, and the fact that we all lived and worked around Boulder, but that was the extent of our shared experience. It was enough. We generally agreed on the types of people that would drink a particular beer or drive a particular car. We could all think of times and places where we might be likely to have a particular brand

of beer. We didn't have much trouble telling stories about who we were as beer drinkers. I only drink one or two pints a week, and I could say with just a little thought that I'm a knowledgeable beer drinker who likes dark beers brewed in Boulder County.

The beer focus group was an excellent example of practice theory. Practice theory is a framework for social science research that focuses on the production of shared meanings and on how individuals' use those meanings to define their own identities in particular contexts. My fellow beer drinkers and I could agree on who drinks Heineken probably because we all drew on similar sources to answer the question: Heineken adds on TV, experiences at college parties, being young, white, male and middle class in Boulder, Colorado. We used these same experiences to construct stories about ourselves drinking Corona and lime on a hot summer day or serving a Fat Tire Ale to an out of state visitor. And when we described our own drinking patterns and preferences, we fit ourselves into this beer universe by aligning ourselves with particular pieces of it.

My goals in this dissertation are similar to the goals of the brewery. However, and I'm sure I might come to regret this, I am not studying beer. What I would like to know is how the faculty, staff, and IT professionals working in a public university fit themselves into a universe of technology use within that campus. What kind of stories do they tell about their own technology use and the technology use of their colleagues, bosses, and students? My beer-drinking comrades and I drew on a world of shared experiences and popular culture to construct our tales of beer consumption. What kinds of shared knowledge and experiences do the faculty, staff, and IT professionals draw on when they talk about, think about, and use technology in the school?

Better understanding of these more human aspects of technology use in a university might have a number of important repercussions. For administrators and decision makers, more information about the daily use of technology in the school may help in effectively directing future resources: new technology initiatives, the nature and availability of training and support, or promoting better use of existing technologies. The faculty, staff, and IT professionals themselves may gain helpful insights into their daily practice: a better understanding of their own and their colleagues behavior and an increased ability to contextualize and communicate their problems and successes. It also may add to the growing collection of academic and applied research that attempts to understand the social and cultural aspects of technology and to understand and improve educational technology use.

A Comparison of Figured Worlds

Leaving the beer analogy behind for the moment, this dissertation is a comparative ethnography examining the technology use of university faculty, staff, and IT staff. Using interviews and participant observation, I will attempt to describe the universe of technology on campus: how faculty, staff, and IT staff see themselves and others as technology users; what shared meanings, behaviors, and ideas concerning the role of technology in the university are held by faculty, staff, and IT staff; and how these groups relate and communicate about technology issues.

The primary theoretical framework for this research is based on practice theory; particularly the ideas of identity and figured worlds presented by Dorothy Holland, Debra Skinner, William Lachicotte, Jr., and Carole Cain in *Identity and Agency in Cultural Worlds*. In this framework, individuals are seen as enacting and developing identities in a give and take process with the various systems of meaning they interact with in their daily lives. The

relationship between the individual and the social is conceptualized as an ongoing dialectic through which cultural forms (e. g. shared meanings, standard practices, archetypal narratives) are maintained and produced. Individuals' draw on and internalize these forms in an ongoing process of identity formation and enactment:

Persons develop through and around the cultural forms by which they are identified, and identify themselves, in the context of their affiliation or disaffiliation with those associated with those forms and practices... A better metaphor for us is not suture, which makes the person and the position seem to arrive preformed at the moment of suturing, but codevelopment – the linked development of people, cultural forms, and social positions in particular historical worlds. (Holland et al., 1998, p. 33).

Figured worlds is the name which Holland et al. give to the somewhat bounded systems of meaning and significance within which individuals act and interact. Figured worlds are a kind of localized culture-in-miniature:

Under the rubric of culturally figured worlds or figured worlds we include all those cultural realms peopled by characters from collective imaginings... These are worlds made up of Geertz's (1973b) "webs of meaning." Figured worlds take shape within and grant shape to the coproduction of activities, discourses, performances, and artifacts. A figured world is peopled by the figures, characters, and types who carry out its tasks and who also have styles of interacting within, distinguishable perspectives on, and orientations toward it (Holland et al., 1998, p. 51).

To illustrate figured worlds, Holland et al. provide a number of examples. The most accessible of these explanations is found in Cain's research on Alcoholics Anonymous. Holland et al. point out the aspects of AA and AA meetings that distinguish them from other contexts: the special significance of poker chips as symbols of staying sober; the particular form of the narratives that members tell about their lives as alcoholics, which include archetypal events such as "hitting bottom" (Holland et al., 1998, p.70); and well-defined roles for new members and old timers. Because AA is specifically designed to modify members' behavior, it is easy to see the process of identity construction and reconstruction that occurs: by telling their own life stories in the form of the AA life story of an alcoholic, AA members come to see themselves as an alcoholic and their actions and behaviors as the actions and behaviors of an alcoholic.

Cain's description of the figured world of AA shows the type of things that constitute a figured world: artifacts and activities that take on a special meaning or purpose within a particular context; specific roles or characters that are linked to expected behaviors, attitudes, perspectives, and positions of empowerment or dis-empowerment; narrative forms and ways of understanding oneself and the world or parts of it. Additionally, the transformative nature of joining AA highlights the idea that engagement with a figured world is intimately linked to one's identity. Participation with a figured world involves identification of oneself with and within that world.

Given that description, it is easy to confuse figured worlds with more traditional concepts of culture, tradition, and ritual. Holland et al. (1998) even quote Clifford Geertz's classic definition of culture in their initial discussion of figured worlds. Two important ideas about figured worlds distinguish them from pre-post-modern, *capital-C*, culture concepts. Figured worlds are more bounded than traditional cultural realms. The boundaries of a figured world may

be defined for the participants in a number of ways, but the general idea is that a figured world is a way of understanding that is highly contextualized through links with specific activities, people, artifacts, and/or locations. This gives rise to the "culture of" construction often associated with figured worlds: Culture of AA, Culture of Romance, Culture of the Tj Festival in Nepal.

That a figured world is highly contextualized is not to say that its effect or significance on participants is necessarily less profound than we might have imagined a Balinese cockfight to be for its participants. This leads to the second important distinguishing feature of figured worlds. As the title of their book suggests, Holland et al.(1998) conceive of figured worlds as intimately linked to identity and agency. Individuals interact with figured worlds in complex co-constructive ways. The various figured worlds one participates in provide the raw materials for constructing and enacting identity. These materials include all types of cultural forms such as behaviors, narratives, texts, and rituals as well as roles to fill or characters to play such as the neophyte, the veteran, the serious student, or the class clown. The figured world may also provide a particular perspective or understanding of events and even help determine what one thinks is worthy of attention. And, importantly, figured worlds can define the differential distribution of power and influence among the participants.

However, because figured worlds are conceptually smaller than monolithic concepts of culture, the role of each participant in enacting and creating the figured world can carry more sway. Any group of people sharing a context may develop a figured world, or way of being, that is specific to that context. Figured worlds are not juggernauts of tradition but on-going processes that are maintained only to the extent that the participants continue to act and enact them. The figured world will evolve and change if the participants act to redefine or reshape it. Additionally, individual's engagement with multiple figured worlds suggests that the

perspectives, roles, and meanings of any one figured world may be less important to an individual's identity; less central to overall identity than traditional concepts of culture. An individual might adapt the aspects of a figured world to a particular situation, experiment with and then discard them, rebel against them, or even reject them completely.

In terms of identity and figured worlds, the central questions of this dissertation become: To what extent do educators working with technology at a particular university construct and act within a figured world of technology use? Do these faculty and staff form and enact persistent identities as technology users? In other words, do these educators form a *figured world of technology use* and do they have *technology identities*? These same questions apply to the group of information technology professionals who are charged with implementing and supporting the technology. How are the figured worlds of technology use and the technology identities of the educators and IT professionals similar and dissimilar? How does this affect their interactions and the use of technology?

A Figured World of Technology Use

What might a figured world of technology use look like and how do I know if there is such a thing? The most basic requirement for applying the figured world concept is that a group of individuals possess a shared understanding or way of thinking about a particular aspect of their lives. This shared understanding should serve as a way of organizing and guiding their daily activities and interactions within this context.

To know whether these faculty and staff are engaging in a figured world, I need to look at the various aspects of technology use that could be part of this world: artifacts, activities, concerns, narratives, and characters or roles. Chapter 2 contains an in depth discussion of the sources of these categories. Chapter 3 contains a discussion of the research methods that allowed

me to observe these categories in the field. For now I will simply discuss how these aspects might appear in a figured world of technology use.

Like the poker chips at an AA meeting, certain artifacts may carry special significance in a figured world of technology use, and the faculty, staff, and IT staff's engagement in this figured world shapes their ideas about and use of these items. The most obvious artifacts implicated in this figured world are the pieces of technology themselves: computers, printers, digital projectors, external hard drives, or almost any physical technical device. If these are the hardware of the technical world, the software is equally important: particular websites or web pages, software applications, and operating systems. More general categories which are not technically hardware or software may also be identified as significant objects: email (without reference to a particular email client or application), the Internet (without reference to particular sites or services), or even computers or technology as general categories that refers to a wide variety of actual hardware, software, and services.

Within the figured world, these artifacts may be assigned certain roles, be characterized in identifiable ways, or implicated in particular activities. A computer or software application might be identified as temperamental, better or worse than another, easier or harder to use than another, or appropriate for one situation but not another. Discovering how these types of attitudes and ideas about technical artifacts are shared and utilized in communication between and among teachers and IT professionals is a primary goal of describing a figured world of technology use.

While engaged with a figured world, participants' activities and behaviors may be guided by shared ideas about acceptable ways of doing things. In a figured world of technology use, faculty might share accepted ways of seeking help with different types of problems, learning about new technologies, or using certain resources. They might share ideas about subjects that

are appropriate for teaching in a computer lab or educational software that is more trouble than it is worth. IT professionals may have an equally diverse set of accepted behaviors. These could be codified in written technology policies or just common practices within an IT department.

These shared activities and behaviors are likely linked to common concerns and attitudes about technology use. Discovering what technology related issues are on the minds of faculty, staff, and IT professionals is a major goal of this study. Looking for patterns in the faculty, staff, and IT professionals' views on both local issues and non-local issues requires a balance between guided questions based on previous research and providing a space for the faculty, staff, and IT professionals to reflect on the issues immediate to their current work and lives.

One important way people reflect and report on technology use, or any other aspect of their lives, is through the telling of stories. As with the alcoholic's life history in the AA, a figured world of technology use may include narrative forms that provide a basic structure for the stories people tell about technology and their use of it. In particular, life history interviews focusing on educators' and IT professionals' long-term experiences with technology may provide insight into how they see themselves as technology users. Additionally, there may be apocryphal or well-known stories that typify a situation or aspect of technology use.

These narratives will likely be populated with archetypal characters. Faculty and IT professionals may identify themselves with these and other roles in the figured world. A likely type of characterization has to do with technical competency: teachers may see themselves as *newbies*, *technophobes*, or *veterans* and share a common definition of what this means and what behaviors are acceptable and expected for these different levels of competence. IT professionals may characterize teachers as *good users*, *troublesome users*, or *problematic*. The extent to which

teachers and IT professionals identify, identify with, and enact these various roles serves as an important measure of their active engagement with a figured world of technology use.

In addition to these five aspects of figured worlds some other issues may play an important part in a figured world of technology use. A figured world may suggest special ways of dealing with time and space. Faculty members' time is often a constraining resource, and these constraints may interact with behaviors and attitudes toward technology use. Faculty, staff, and IT staff may define times and places with special significance within a figured world of technology use: Computer labs may be linked to well-defined behaviors in a concept of *lab time*. IT professionals might work in sensitive areas such as server rooms or networking closets or may define *face time* with users in contrast to time spent working on behind-the-scenes IT resources.

Because faculty, staff, and IT staff are likely to engage with a variety of figured worlds in any given day, there may be special behaviors, situations, or people that signify and/or mediate shifts into and out of a figured world of technology use. This shift could be as seamless as a faculty member sitting down to check their email or as straight-forward as moving from a regular classroom to a computer lab or smart classroom. An artifact such as a faculty or staff members' computer could serve as a pivot point for entering a figured world of technology use, and, just as a sponsor in AA serves as a guide or mentor into the world of AA, an IT professional or experienced faculty or staff member might help others find their way to and through a figured world of technology use.

In the following chapter I will further explore the concepts of figured worlds and identity. I will especially focus on ways other researchers have operationalized the concepts of figured worlds and identity and have used these concepts to describe and examine specific social contexts. I will also summarize some of the vast amounts of previous research on technology use

in schools and use this previous research to focus my attention on repeatedly important issues. In chapter three, I will set aside the hypothetical findings I've posited above and lay out the specific methods and instruments I use in this research.

Chapter 2: Literature Review

Identity and Agency in Cultural Worlds: A Theoretical Synthesis

In *Identity and Agency in Cultural Worlds*, Holland et al. (1998) address the late 20th century crisis of cultural theory by synthesizing the ideas of a number of early and mid 20th century thinkers. They begin by pointing out the inadequacy of purely cultural and constructivist theories for explaining and accounting for complex environments and unexpected behaviors and move quickly to developing a set of ideas that allow them to incorporate aspects of both. They end up with a theory of the self and culture that includes ideas from Vygotsky, Bakhtin, Foucault, Bourdieu and others. They offer self-in-practice and figured worlds as ways of thinking about and describing people and the social and symbolic systems in and through which they live.

The beginning of *Identity and Agency in Cultural Worlds* finds Holland and Skinner in the hypothetical situation of choosing an explanation for an unprecedented behavior observed in the field. Dissatisfied with the limitations of a purely culturalist or constructivist explanation, they look to Bourdieu for a more subtle understanding.

The idealized culturalist position views individuals' behavior as the manifestation of "historical events and conditions that have been distilled through group processes into culture and passed somehow into [the] mind/body" (Holland et al., 1998, p. 14). The constructivist position focuses on power and social position rather than history: "behavior instead is the acting out (or refusal) of subject position; it is pushed into line by relations of power and influence." (Holland et al., p. 14). Neither explanation, assert Holland and Skinner, account for the dynamic, personal, original, and highly contextualized behavior they observe.

While a culturalist explanation focuses on descriptions of rarefied, historical cultural systems, Pierre Bourdieu and those inspired by him examine the flexible habits, or cultural forms, of daily practice. The social and material relations given primacy in constructivist theories are, from Bourdieu's perspective, an historically determined and constantly changing context for the enactment of these cultural forms. People reinterpret existing habits in novel circumstances, improvising behaviors which are simultaneously grounded in history and a reaction to the immediate social context (Holland et al., 1998, p. 17).

In Bourdieu's practice theory, initially improvised behaviors may develop and solidify in practice, rising to the level of widely shared and available cultural forms. Through this process, the contexts of power and social relations of one generation act upon the cultural forms of the previous generation to give rise to new practices that, in turn, become the learned habits of the next generation.

Holland et al. (1998) take Bourdieu's historical, multi-generational, dialectic process and collapse it into the space of a lifetime: "In our view, improvisations, from a cultural base and in response to the subject positions offered *in situ*, are, when taken up as symbol, potential beginnings of an altered subjectivity, an altered identity" (p. 18). Holland et al. propose a "practice theory of self" (p. 18), also referred to as "history-in-person" (p. 18). This identity theory, in which available cultural forms are re-enacted, re-interpreted, and re-integrated within a context of social and material power, forms the first half of Holland et al.'s wider theoretical proposal.

This "theoretical refiguring of the relationship between culture and self" (Holland et al., 1998, p. 28) consists of three major components. First, the habits and customs of daily behavior referred to by Bourdieu are recognized as "living tools of the self" rather than either culturally

specific forms of universal humanity or historically determined reenactments of static cultural forms (p. 28). Holland et al. draw on Foucault and discursive theories of the self in rejecting an essential, unchanging self and propose instead that the self is dynamically constructed through continuous enactments and rejections of available cultural forms. Holland et al. acknowledge the process of subject positioning central to discursive theory, but temper social determinism with Bourdieu's ideas of improvised activity and their own concept of a durable self constructed through personal history.

As a corollary to the first component, Holland et al. (1998) propose that the self is both embedded in social practice and is itself a form of social practice. Self-in-practice names the process of individuals constantly interacting with their own history, the realm of available cultural forms and social discourses, and their immediate social context. Practice theory bridges the gap between the individual and the social or cultural while avoiding an essentialist view of either. Cultures are not independent entities, but the observable patterns of individuals' choices to enact behaviors based on shared knowledge within a shared historical context. The durable self is not wholly determined by either this shared knowledge or shared context, but is instead the memory and emotional attachment of a personal history of this knowledge and context and these choices.

The third component of Holland et al.'s (1998) theoretical refiguring of the self and its relationship to culture is a further dismissal of essentialist or monolithic concepts of both identity and culture. Holland et al. assert that both identity and the social context in which it is enacted contain multiple and possibly, or probably, contradictory discourses and practices. For example, even aspects of identity with relatively clear boundaries, such as gender, are recognized as complex factors of the self: any given social context might present a variety of competing

discourses on acceptable gender roles, personal history and experiences will influence an individual's perceptions and choices concerning those available roles, and immediate circumstances or perceived benefits will factor into an individual's choice to enact, ignore, or reject a given gender role at a particular moment.

To fully realize their theory of self-in-practice, Holland et al. (1998) introduce two more important ideas and two more important thinkers. From L. S. Vygotsky, they introduce the idea of semiotic mediation: The idea that an individual can modify his or her own behavior through the use of external symbols and that these symbols and behaviors can eventually become internalized and incorporated into oneself. Holland et al. suggest that not only can the process of semiotic mediation play a part in the way that individuals incorporate cultural forms into a durable identity but that the conscious conception of one's own identity can serve as an important symbol in guiding one's own behavior.

Finally, Holland et al. (1998) elaborate on the way in which identity can be both durable, defined by an individual's history and experience, as well as constantly reconstructed, by incorporating ideas from M. M. Bakhtin. Central to their interpretation of Bakhtin is the idea of “the authoring self”(p. 73):

The self is a position from which meaning is made, a position that is “addressed” by and “answers” others and the “world” (the physical and cultural environment).

In answering (which is the stuff of existence), the self “authors” the world – including itself and others (p. 173).

Multiple stories about who an individual should be, who he or she believes him or herself to be, are “orchestrated” (Holland et al., 1998, p. 173) by this authoring self. These stories may be prescriptive social discourses that are forced upon an individual. Other stories may be cultural

expectations or models for behavior. Still others may be internal voices arising from previously established identifications or beliefs. The authoring self is the process of balancing and choosing among these voices to craft personal responses to immediate situations. Over time, as with Vygotsky's semiotic mediation and with Bourdieu's dialectic cultural process, these immediate choices can become models for future behavior and persistent parts of a durable self.

Durable aspects of the self that have become established through the on-going stream of experience and choice become the primary site of agency for Holland et al. (1998). They do not suggest that all the orchestrations of the authoring self are conscious and deliberate. Rather, they allow for the possibility that the stories one can tell oneself about who one is or how one should behave can be a powerful factor assigning significance to experience, in choosing cultural forms to enact or modify, and in choosing social discourses to align with or resist.

In summary: Holland et al.'s (1998) practice theory of self draws from culturalist identity theory in asserting that behaviors, as well as aspects of a more durable sense of identity, are largely drawn from cultural forms and meanings found in an individual's environment and experience. Drawing from constructivist theory, they assert that any given behavior or choice of which cultural forms to draw from or enact at a given moment may be highly influenced by the immediate social relationships and power structures in play. Drawing from Bourdieu, they assert that both novel and established practices arise from cultural forms being adapted and reinterpreted for specific situations and that novel practices can, over time, become established forms. Finally, they use ideas from Vygotsky and Bakhtin to elaborate how multiple cultural forms and social discourses can serve to mediate and shape immediate behaviors, established practices, and, over time, an established and durable sense of self. They also introduce the idea that personal agency, which can be hard to locate in culturalist and constructivist models, can

exist as the ability of the self to exert control over its own processes of orchestration and development.

Holland et al.'s (1998) complex synthesis of ideas about identity and agency form the base of their theoretical stance. This theory relies on the “the situatedness of identity in collectively formed activities” (p. 40). Figured worlds, as they call these “collectively formed activities,” (p. 40) are the networks and communities of cultural forms, discourses, and social significance that address the authoring self and that the authoring self speaks to and with. While somewhat less complex than their identity theory, the idea of “figured worlds” as “socially produced, culturally constructed activities” in which identities are enacted and formed (p. 40-41) emerges as the organizing principle of their case studies and, arguably, their most powerful heuristic device.

Holland et al. (1998) progress through a number of increasingly complex definitions of what constitutes a figured world. The most simplistic explanation sets up the idea of something like game spaces: “as if realms,” (p. 49) in which certain meanings and rules apply. They assert that, “People have the propensity to be drawn to, recruited for, and formed in these worlds, and to become active in and passionate about them” (p. 49). They cite Vygotsky's fascination with play and the way that “everyday meaning of objects is suspended and new meaning is assigned” within the confines of a particular game (p. 50). Following Vygotsky, Holland et al. focus on the special significance of some objects within a figured world. These can serve as a “pivot” into and out of that world; a mediating device to place one in the right frame of mind for playing a specific game or acting in a particular figured world.

This definition stresses two important aspects of the figured world concept: First, figured worlds are contained within some type of real or symbolic boundary. The rules of the game only

apply as long as one is playing the game, and part of knowing the rules is being able to recognize when one is and is not playing. Second, though bounded and limited in scope, the depths of significance, the importance of the symbols, activities, and rules of a particular figured world, can be profoundly important to the identity of those who participate.

Holland et al.'s (1998) second definition of figured worlds builds on this significance:

These are worlds made up of Geertz's (1973b) "webs of meaning." Figured worlds take shape within and grant shape to the coproduction of activities, discourses, performances, and artifacts. A figured world is peopled by the figures, characters, and types who carry out its tasks and who also have styles of interacting within, distinguishable perspectives on, and orientations toward it (p. 51).

This definition expands figured worlds in two significant ways: First, by invoking Geertz's famous definition of culture, it suggests that the internal complexity of a figured world, as well as its personal significance to participants, is in the same realm as the classic Cultures studied by traditional anthropologists. Second, it expands on the relationship of identity to figured worlds. Figured worlds might contain archetypal-like "figures, characters, and types" (Holland et al., 1998, p. 52), and participants can identify with these roles and incorporate them, and the narratives they follow, into their identities in important ways.

The next definition of figured worlds further develops this idea:

By "figured world," then, we mean a socially and culturally constructed realm of interpretation in which particular characters and actors are recognized, significance is assigned to certain acts, and particular outcomes are valued over others. Each is a simplified world populated by a set of agents ... who engage in a

limited range of meaningful acts or changes of state ... as moved by a specific set of forces (Holland et al., 1998, p. 52).

The roles and characters available within a figured world not only organize the actors into recognizable social positions, they also provide the actors with a lens of interpretation with which to view other actors, other's activities, the physical world, and, significantly, themselves and their own actions.

Holland et al.'s (1998) identity theory eschews any kind of essentialist view of culture. Instead it places importance on how cultural forms are copied, re-enacted, re-invented, and integrated into individuals' sense of self. This process is key to the durability and flexibility of figured worlds:

Players become ever more familiar with the happenings of a figured world ... and learn to author their own and make them available to other participants. By means of such appropriation, objectification, and communication, the world itself is also reproduced, forming and re-forming in the practices of its participants (p. 53).

Identities and figured worlds are constantly co-constructed. Bourdieu's dialectic process of individuals drawing from extant cultural forms, changing these forms and improvising new forms which may then be drawn on and possibly become established practice is at work within each figured world. Simultaneously, actors' identities within a figured world are in the Vygotskian/Bakhtian process of orchestrating from among roles and activities available in a figured world and, over time, internalizing these roles and significances as parts of a durable identity.

In working up to their final and most complex definition of figured worlds, Holland et al. (1998) introduce two additional aspects to their concept. First, they reiterate and clarify the

importance of the narrative element of figured worlds and examine how these narratives intersect with daily life. While the concept of a figured world presumes a boundary, or separation of actions and significance to a particular realm, Holland et al. assert that, in the stream of lived experiences, these boundaries may be less clear:

The production and reproduction of figured worlds involves both abstraction of significant regularities from everyday life into expectations about how particular types of events unfold and interpretations of the everyday according to these distillations of past experiences (p. 53).

Heuristically, it makes sense to classify stories, characters, expectations, meanings, etc. to belonging to a particular figured world of AA or academia. From the perspective of individuals acting across a landscape of multiple and overlapping figured worlds, in other words, living, these multiple lenses of interpretation may be simultaneously available and significant. Again, the importance of Bakhtin's orchestration comes into play.

Second, Holland et al. (1998) return to constructivist issues of social discourse and the importance of power in social relationships through a discussion of the relationship between figured worlds and larger social structures such as gender, class, and race: "Lived worlds are organized around positions of status and influence ... and cultural narratives that posit particular sorts of characters and their dealings with one another" (p. 59). Particular positions of power, influence, and privilege may be embedded in the roles and narratives of a figured world. The relationships and roles within a particular figured world are built within the framework of social structures available, and these relationships may also be an instance, a particular way of acting out, these structural factors.

Holland et al.'s (1998) most comprehensive definition of figured worlds is worth quoting at length:

It is a landscape of objectified (materially and perceptibly expressed) meanings, joint activities, and structures of privilege and influence – all partly contingent upon and partly independent of other figured worlds, the interconnections among figured worlds, and larger societal and trans-societal forces. Figured worlds in their conceptual dimensions supply the contexts of meaning for actions, cultural productions, performances, disputes, for the understandings that people come to make of themselves, and for the capabilities that people develop to direct their own behavior in these worlds. Materially, figured worlds are manifest in people's activities and practices; the idioms of the world realize selves and others in the familiar narratives and everyday performances that constantiate relative positions of influence and prestige. Figured worlds provide the contexts of meaning and action in which social positions and social relationships are named and conducted. They also provide the loci in which people fashion senses of self – that is, develop identities (p. 60).

In summary: Figured worlds are the socially and culturally constructed contexts within which individuals act on a daily basis. The meanings and significances shared within a figured world are Bourdieu-like cultural forms from and through which individuals construct and enact identities. These figured worlds are more finite and particular than classic anthropological ideas about culture, but their complexity and significance for those participating in them may be just as great. Moreover, individuals may shift seamlessly from one figured world to the next,

orchestrating different identities and contexts of meanings as they balance the different worlds in which they live.

The stuff of figured worlds includes significant artifacts, which may serve as Vygotsky-esque pivots into and out of figured worlds or as external devices for mediating behavior and reinforcing particular aspects of identity. Figured worlds also might include myth-like narratives through which individuals interpret or reinterpret their experiences. In doing so, individuals might see themselves as fulfilling particular roles or characters within these narratives. The narratives and roles available in figured worlds are further devices for mediating behavior and constructing identity.

Engagement with a figured world is largely a process of constructing an identity within that world. Conversely, figured worlds themselves only exist to the extent that all of the participants co-construct a world in which these shared meanings are expressed. In other words, figured worlds and identities are constantly co-constructed through the daily activities and expressions of those who participate in them.

Importantly, these co-constructions happen within a landscape of history and other figured worlds. Social structure and history impact the process of figured worlds and identity. In a Foucault-esque way, figured worlds are often local expressions of historically established social structures like race, gender, and class. These structures are produced and reproduced in the daily practice and meaning making of figured world participation and identity construction. Of course, local practice can also be a site of change, resistance, opposition, and personal agency. In a Bourdieu-esque manner, local practice within figured worlds can be adapted sideways to other figured worlds or taken up and passed down to become part of the historically defined social structure.

Given all of that, the big trick for social science researchers is to find a way to examine local practice and individual identities. The next section of my dissertation provides a snapshot of how eight education researchers have accomplished this. I examine their work with the goal of operationalizing figured worlds and identity for my own inquiry.

Figured Worlds and Identity in Educational Research

Holland et al.'s (1998) synthesis of ideas on identity and figured worlds offers a promising way of conceptualizing systems of significance which are both highly contextualized and profoundly enmeshed with individuals' sense of self. These ideas may provide educational researchers a useful framework for articulating identity, agency, practice, and shared meaning within a bounded and localized system: a culture-in-miniature. For researchers who recognize the potential of Holland et al.'s concepts, a major challenge is to operationalize this theoretical framework without losing sight of its fundamental complexity.

Identity and Figured Worlds Research

This section of my dissertation reviews a variety of educational research guided by and based on Holland et al.'s (1998) work. I will begin with a brief summary of the research projects I have examined, followed by a more in-depth analysis of the nature and scope of figured worlds and identity represented. I will then attempt to summarize the concrete, observable aspects of figured worlds as defined by these researchers and the data collection and analysis methods researchers use to examine these. Finally, I will point out some common trends and ideas that emerge from this research and relate these to particular strengths of Holland et al.'s theoretical framework.

Research reviewed. Identity and Agency in Figured Worlds was published in 1998, and, despite interest in the ideas presented, few educational researchers have directly applied the

theories to their own research. In the introduction to a special edition of *The Urban Review* focusing on figured world research, Luis Urrieta, Jr. (2007a) reports that he has heard the critique “that the framework has not been operationalized for empirical research ... not defined in a concise and concrete way and thus applied inconsistently by different researchers” (p. 111).

To guide my own operationalization of Holland et al.'s (1998) theories, I reviewed the five articles that appear in the special edition of the *The Urban Review* as well as three additional, earlier, reports on figured world-based research. Beth C. Rubin (2007) and Ali Michael, Norma Andrade, and Lesley Bartlett (2007) explore the ways in which students' identities as learners are shaped by the figured worlds they encounter at school. Beth Hatt (2007) and Wendy Luttrell and Caroline Parker (2001) examine how two aspects of students' identities, smartness and literacy respectively, are constructed and enacted inside and outside of schools. A. Susan Jurow (2005) observes students in a math classroom balancing and shifting quickly between multiple identities and figured worlds. Bob Fecho, Peg Graham, and Sally Hudson-Ross (2005) and Cecil Robinson (2007) examine how programs for pre-service and in-service teachers can shift educators' understandings about who they are as learners and teachers. Finally, Urrieta (2007b) explores long-term identity development among educators to understand how their Chicana/o identities were constructed through participation in figured worlds of activism.

Defining figured worlds. Holland et al. (1998) provide a variety of examples of figured worlds taken from their own work: the figured world of romance on a college campus, the figured world of Alcoholics Anonymous, and the figured world of the Tiji festival in Naudada, Nepal to name a few. This flexibility in the nature and scope of contexts addressed is also evidenced in the educational research. Urrieta (2007b) examines “figured worlds of Chicana/o activism” (p. 121) which encompass a number of organizations and groups across a wide range

of time. Hatt (2007) addresses the “figured world of smartness” (p. 147) among a group of youth who left high school before graduation. Jurow (2005) and Robinson (2007) look at figured worlds constructed in a single classroom in a single course. Rubin (2007) and Michael et al. (2007) look at school-wide culture: Michael et al. works in the “small, tightly bound universe of Luperón High School” (p. 168) and Rubin refers to the “figured world of learning at Oakcity High” (p.218). Fecho et al. (2005) assume teachers will come to their professional development program from the figured worlds of their own schools and classrooms, and the program is designed to “enlarge their views of teacher research and their own classrooms by being part of a larger research community” (p. 175). The goal of their program is to co-construct a new figured world of teacher-based research. As Urrieta (2007a) states: “The strength of this framework for those of us doing social/cultural analysis lies in the very fact that it cannot be reduced to one simple, content-specific definition” (p. 112).

Defining identity. As shown above, identity, for Holland et al. (1998), is an extremely complex issue. The educational research I reviewed focuses on three key aspects of Holland et al.'s concept: First, identity is produced through participation in figured worlds. Second, participation in a particular figured world can limit the identity or identity characteristics available to individuals. Finally, individuals' identities are multiple and mutable.

All of these articles explore the relationship between participants' identities and the figured worlds they engage. Urrieta (2007b) states this relationship most clearly: “This article analyzes data about how twenty-four Mexican Americans *became* Chicana/o Activists by participating in the figured worlds of Chicana/o activism” (p. 121). Fecho et al.'s (2005) program for teacher researchers was an attempt to destabilize teachers' identity by exposing them to different figured worlds: “Together, these teacher researchers created a new, coast-to-coast

figured world ... in which they could ... reconstruct their identities while relying on each other for both perspective and support” (p. 193). Employing Holland et al.'s framework banishes any essentialist notion of identity and focuses research on the social, cultural, and personal practices and processes of identity construction.

In their descriptions of identity construction, Holland et al. (1998) distinguish between “figurative identities” that attach an individual to a role or narrative in a particular figured world and “positional identities” which index an individual's hierarchical position, or access to power and privilege, within that world (p. 127). These positional identities are often linked to larger social structures such as race, gender, and class which may be enacted and reproduced in specific ways within a figured world. Some of the research presented here points out the personal limitations faced by individuals who are disempowered by their positional identity in a particular figured world.

The most striking example of disempowerment is provided by Rubin (2007). She describes Oakcity High School as a “figured world with devastating consequences for the students who learned within it” (p. 244). Students at Oakcity High School were provided narrow choices about what kind of learner to be. An individual could either be a good student who accepted humiliating interactions and completed meaningless tasks or a bad student who refused or rebelled against these. By “positioning them as poor or non-learners and creating a deprecating environment within which compliance could be seen as a form of self-humiliation” (p. 235) the figured world of the school left no room for students to enact or construct identities as real learners with college and career aspirations. Rubin employs the framework of identity and figured worlds, along with a “*situated perspective* on learning” (p. 220) which also focuses on the activities in the environment of learning, to “more fully theorize the links between the micro

and macro levels of social relations” (p. 220) and the reproduction of structural inequalities within Oakcity High School.

Rubin's (2007) work shows that Holland et al.'s (1998) identity and figured worlds framework maintains a kind of backwards compatibility, to borrow a phrase from the world of technology, with 25 years of educational research based on cultural production. Other research makes it clear that Holland et al.'s framework can address identity construction across a variety of time scales and across overlapping contexts and environments. This research focuses on Holland et al.'s assertion that identities are both multiple and mutable and that individuals orchestrate, enact, and construct multiple, even conflicting, identities simultaneously.

Urrieta's (2007b) life history interviews examine individuals' production of activist identities through long-term participation in figured worlds of Chicana/o activism. His follow up interviews and observations focused on these individuals negotiating this activist identity within spaces where they were expected to enact more mainstream aspects of their identities: as successful educators in “whitestream” institutions (p. 122).

Similarly, Hatt (2007) asked participants to reflect on their past experience to explore the production of their “academic identity” (p. 146). Her participants, attempting to reconnect to an academic world after leaving high school early, articulated a distinction between the “narrow definition of smartness that had been imposed upon them in school” (p. 153) and a broader, non-academic, definition which allowed them to see themselves as capable actors in their own worlds. Both Urrieta (2007b) and Hatt use the identity and figured worlds framework to trace long-term identity production and then to examine how this established identity is enacted and reconstructed within a significantly different, even contradictory, immediate figured world.

Fecho et al.(2005) and Jurow (2005) both examine educational programs that attempt to deliberately and immediately inspire identity production in their participants. Fecho et al. come to value the “wobble” (p. 175) that occurs when teacher researchers are exposed to each others' disparate classroom contexts: “All teachers involved ... were compelled to consider their figured worlds in terms of others and ... to author a response that ... reaffirmed or called into question their existing secondary or post-secondary English practice” (p. 195). The figured world of Antarctic architecture described by Jurow is both transient and imagined. Nonetheless, she observed students quickly shifting between the mundane concerns of the classroom and their role as architects concerned with cost-benefit analysis and customer satisfaction.

The contrast between the long-term, life altering identity production explored by Urrieta and the transient, imagined production observed by Jurow highlights the extreme flexibility of Holland et al.'s (1998) identity and figured worlds framework. The key to this flexibility is the absence of any assumptions about how the specific processes of identity production and negotiation will play out in any given context.

Hatt's (2007) adult learners were able to express and enact conflicting concepts of smartness as they shifted between their figured worlds of schooling and their neighborhood and life outside of school. On the other hand, Fecho et al.'s teachers' identities as educators were destabilized, sometimes significantly altered, through exposure to, what might be considered slight, differences in the figured worlds of classrooms.

This inconsistent application of the framework, as Urrieta's (2007a) reported critic might call it, is central to Urrieta's praise for this research:

Each of these articles, although different, contribute to heuristically understanding identity and self-formation beyond the notion of ascribed labeling or affinity

grouping by exposing the complexity of coming to form and re-form the self in various social contexts (time/place/space) in education. (p. 115).

This range of research may also serve as a first response to Holland et al.'s (1998) request: "Researchers need to address personhood directly ... to ask a broader range of questions about experience and subjectivity and the role of cultural resources in the constitution of this experience" (p. 31).

Observing figured worlds. The variety and success of the articles I review above provides some sense that the application of Holland et al.'s (1998) identity and figured worlds framework to educational technology may yield useful or interesting results. The question follows: Do these articles offer any insight into how to accomplish this application and get to these results? Put another way: What are the concrete observable aspects of identity and figured worlds defined in the previous research and what methods of data collection and analysis are used to get at these?

Returning to Urrieta's (2007a) anonymous critic, the statement that "figured worlds is not defined in a concise and concrete way" (p. 111) is belied by the general consistency with which these researchers investigate figured worlds and issues of identity. In all cases these researchers relied on traditional ethnographic methods and analysis. All of the research cited used some form of participation observation and most used interviews to collect data on figured worlds and identity. Other data collection techniques included focus groups, photography, document collection, collection of online communication, and surveys; all common techniques in traditional ethnography.

Most of these researchers relied on some form of domain or thematic analysis to categorize their data and find emergent themes and issues. Two of the researchers, Jurow (2005) and Rubin (2007), also used a type of discourse analysis for fine-grained examination of

participants' interactions and language use. These are also all well-established practice in qualitative and ethnographic research.

Use of these accepted data collection and analysis methods meant that researchers were able to apply Holland et al.'s (1998) theoretical framework without significantly altering their own research practice. They were also able to rely on generally accepted notions of reliability, validity, and efficacy in qualitative research design.

While it borders on tautology to state that the nature of the data collected varied from one research context to the next, researchers' focus on key aspects of figured worlds depended upon their particular site and interest. In sum, research focused on five aspects of figured worlds that emerge from Holland et al.'s (1998) multiple definitions: artifacts and their significance, narratives, characters and roles available for participants to play and fulfill, activities or practices, and values and concerns.

Jurow (2005) and Hatt (2007) provide examples of the importance of artifacts in figured worlds. In Jurow's research, artifacts served as pivots into multiple figured worlds in the classroom. One student's engagement with a graph of insulation and heating costs allowed him to shift from the figured world of the classroom, in which completing the assignment was a primary concern, to a figured world of mathematics, in which understanding and application of mathematical ideas was his goal. Engagement with their proposed floor plan for an Antarctic research station allowed a group of students to shift into their imagined roles as architects and into the imagined figured world of their design project.

Hatt (2007) found that participants identified smartness in school with specific artifacts: “‘papers’ (diplomas), labels (i.e. gifted or honors), standardized test scores, books, large vocabulary, and participation in college prep math courses” (p. 151). Even when participants had

left school, these artifacts continued to mediate their conception of what it meant to be smart and their perceptions of themselves as smart.

Urrieta (2007b) and Michael et al.'s (2007) research includes examples of narratives, common stories or plot lines, within figured worlds. As a way of engaging a particular figured world, participants often see their own experiences, or re-interpret past experience, in the form of one of these narratives. The activist educators interviewed by Urrieta engaged in a “reinterpretation of the personal and collective past ... reanalyzing personal past experiences through a racialized lens” (p. 130-131). Seeing how their own lives were affected by racism and testifying about these experiences to other activists was an important part of participating in the figured world of Chicana/o activism and of developing an activist identity.

Narratives may also provide a way of understanding one's immediate circumstances and experiences. First generation immigrant students interviewed by Michael et al.(2007) commonly expressed a “opportunity narrative” (p. 182). Many students missed home or spoke of sacrifices that had been made for them to come to the U.S., but “seemed to use the opportunity discourse to convince themselves that academic achievement would make their sacrifices, and those of their families worthwhile” (p. 182). Within the figured world of Luperón High School, which valued both immigrant identity and academic achievement, the opportunity narrative provided students a way of reconciling remorse at leaving home with faith that success at Luperón could lead to a better future.

Rubin's (2007) report on the limited learner identities available at Oakcity High School is a good example of the significance that characters or roles can play in a figured world. Though students expressed more complex ideas about their own abilities and prospects, the figured world of learning at Oakcity High School offered them only one of two roles as learners: good students

who finished meaningless work quickly or poor students who did not. Problems at Oakcity High School were further complicated by school adults placing students in the role of troubled urban youth: “students were described in great detail by school adults as urban, deficient, prone to delinquency, unmotivated and severely disadvantaged by their families, cultures and communities” (p. 234).

It is important to note that, while all roles or characters are to some extent limiting, this limitation of available identity within a figured world can serve as a guide for behavior rather than as a disempowering constraint. Examples of more empowering roles can be found in the work of Urrieta (2007b) and Jurow (2005). Among activist educators, Urrieta found that “assuming organizational and cooperative leadership roles in student and community organizations were significant activities for their Chicana/o Activist procedural identity production” (p. 132). The Antarctica project studied by Jurow set out to create imagined architect roles “intended to position students in a more meaningful relation to problems that may involve mathematics” (p. 42). In both of these cases, access to new roles within figured worlds offered participants a chance to engage their experience from a position of greater power and potential than previously available.

The fourth aspect of figured worlds addressed by this research is practice, or activities, that have special significance to participants. Both Robinson (2007) and Luttrell & Parker (2001) collected data on specific language-related practices. In a social studies education course, Robinson witnessed the creation of a trope specific to that classroom. An off-hand comment about “stinky pilgrims” became a shorthand for pre-service teachers to “refer to revisionists accounts that made them question the traditional accounts ... or to question their schooling practices that omitted them from their lived experiences in social studies classrooms” (p. 205).

Luttrell & Parker (2001) used a variety of methods including observation, photography, surveys, interviews, school records, and participant journaling to track students' literacy practice. They found that the context in which students perform reading and writing determines the significance of these activities. Students reported a sharp distinction between reading and writing in their personal lives, in which these activities were intimate and passionate, and school related literacy tasks which were regarded as uncomfortable and constrained.

The final aspect of figured worlds operationalized in the research is values, or concerns and attitudes that are expressed, pursued, or embedded in the activities of a particular figured world. Fecho et al. (2005) tell the story of Lisa and Jerelyn, two teachers who communicated online about the differences in their schools and classrooms. One point of divergence centered on the issue of utilizing classroom material that referenced sex and violence. While Lisa struggled with questions of how to approach this material, the conservative nature of Jerelyn's school precluded its use. Issues of sexuality arose again when the two teachers shared stories of how they had dealt with homosexual students. Fecho et al. conclude: "Lisa and Jerelyn recognized in both their contexts something that resembled school as they knew it. Yet they also saw differences that shaped how they addressed issues that arose for them" (p. 187). Fecho et al.'s exploration of communication across figured worlds highlights the idea that individuals' experience of even extremely similar contexts can diverge greatly when the values and attitudes embedded in those contexts differ.

Observing identity. As discussed above, evocative representations of identity are largely gained by describing how identities are constructed and enacted through participation in figured worlds. Additionally, many of the researchers cited here collect data directly on participants' identities. Urrieta (2007b), Rubin (2007), Hatt (2007), Robinson (2007), and Luttrell & Parker

(2001) all use interviews to elicit self-report on identity issues. While interviews and self-reflection are established and accepted research practice in ethnography, it is important to note that all of these researchers support and further contextualize interview data with observation and analysis.

Daily activity and opportunities for agency. These applications of Holland et al.'s (1998) theoretical framework to educational research are clearly rooted in classic ethnographic research. All of the research relies heavily on data collected through participant observation and most augment and guide this data collection with personal interviews. The definitions of the contexts examined, or the boundaries of these figured worlds, are smaller, or tighter perhaps, than what an anthropologist would consider for proper ethnography. However, the results of the research are clearly “thick descriptions” (Geertz, 1973, p. 6) of specific contexts: “a stratified hierarchy of meaningful structures” (p. 7) in which artifacts, activities, narratives, roles, and values are all imbued with cultural weight, strands in “webs of significance” (p. 5), and intricately and intimately linked with on-going processes of identity performance and construction.

By narrowing the focus of ethnography, these researchers have effectively increased the resolution. Rather than sweeping statements about the structure and nature of ethnic groups, these researchers have produced thick descriptions of daily practice in particular contexts. The site of social and cultural processes is firmly located in specific patterns of daily practice, whether that be the reproduction of structural inequalities shown by Rubin (2007), the long-term production of oppositional identities shown by Urrieta (2007b), or the transient enactment of imagined identities recorded by Jurow (2005).

One of the challenges and opportunities of social science research, and applied social science research in particular, has been “understanding how human agency operates under

powerful structural constraints” (Bradley et al., 1996, p. 14). Holland et al.'s (1998) theoretical framework locates agency in “the products of the moment” that “become available as mediators to change oneself and others, and perhaps even the figured worlds in which one acts” (Holland et al., 1998, p. 46). In other words, the site of agency, the site where change, opposition, collusion become available, is in daily practice: the day-to-day engagement with figured worlds and the on-going production of identity.

Projects like those described by Jurow (2005) and Fecho et al. (2005) employ Holland et al.'s (1998) framework in an attempt to consciously and deliberately alter or construct identities and figured worlds. Environments like Oakcity High School are not interpreted as hopelessly stolid institutional forces of structural reproduction. Instead they are figured worlds in which disempowering patterns of practice, discourse, and personal interaction are enacted daily. Unlike structural inequalities due to race and class, the figured world of Oakcity High School, and the limiting student identities it spawns, may be open to manipulation and change. The strength of Holland et al.'s theoretical framework, and what these researchers take advantage of in their work, is the flexibility to define meaningful contexts of investigation, the methodology to explore the significance of daily life, and the possibility for agency and change.

Educational Technology Literature

A long tradition of research on educational technology addresses a variety of issues. Among them: barriers to the adoption of innovations, the integration of technology into pedagogy and curriculum, the relationship between specific technologies and specific pedagogical theories and practice, the importance and nature of teacher training and professional development, the planning processes and goals of technology introduction and integration, educational technology design and usability, classroom and school technology practice, the

unequal distribution of access to technology in schools, and the relationship of educational technology to larger social structures such as ethnicity and gender.

The goals of this dissertation are not to fill any particular lacuna in that expansive literature or verify any particular supposition about educational technology but to apply the identity and figured worlds framework to the field; to view the daily practice of faculty, staff, and IT staff through the lens Holland et al. (1998) have offered and see what insights and information may be visible. This is far from the first attempt to apply (post-) modern ideas about identity and culture to the problem of technology in schools. This is not even the first attempt to apply the figured worlds concept to this realm – though it could very well be the second or third. It is, however, the first attempt to apply a more fully operationalized version of the identity and figured worlds framework to the educational technology field and to explore the possibility of using this framework to compare the technology use of educators and IT support staff.

To guide this exploration, but hopefully not place undue bias on my findings, I present a limited review of the educational technology literature. I have selected a sample of research that utilized methods and theoretical frameworks similar to my own. This previous research helped steer and organize my data collection and guided my analysis toward particular issues.

The first group of research I review is a sample of work that attempted to directly address issues of identity, culture, and practice in educational technology use. The second group consists of qualitative research on IT support and IT support staff. This is a somewhat limited area of inquiry, but I will present examples that took identity and culture into account. Finally, I will present work that called for more exploration of social structure issues in educational technology research and highlight some examples of where structural issues appeared in the other works I review.

Identity, culture, and practice in educational technology research. The context of educational technology use and the beliefs and attitudes of the educators who make daily decisions concerning that use are established areas of inquiry. While qualitative methods and data analysis techniques are commonly used to explore these issues, researchers have approached the issues of identity and culture in a variety of ways. I will examine three different approaches to describing culture and identity in the realm of educational technology literature: research focused on technology adoption, research focused on teachers' beliefs, and, research that characterized identity and culture as co-constructed processes.

A large volume of educational technology research focuses on the adoption of technologies and on identifying barriers to that adoption. Jon M. Clausen (2007) described two new teachers' experiences with using technology in their schools and how their attitudes toward technology use developed during their first year of teaching. Mary Virnoche and Matthew Lessem (2006) described elementary school teachers' negotiation of internal and external pressures as they were offered the opportunity to use an Internet-based resource with their students.

These researchers focused on describing the interplay between the teachers' skills, beliefs, and attitudes toward educational technology and various contexts such as institutional organization, other teachers, and parents. This interplay between belief and context, analogous to identity and culture, was recognized as an important barrier to or impetus for integrating technology into teaching.

Clausen (2007) presented a case study of two first-year teachers. Both teachers participated in Preparing Tomorrows Teachers to use Technology (PT3) programs in the course of obtaining their teaching credential. Clausen wished to “understand how two first-year

teachers' development and teaching context affected their technology use with students" (p. 248). Patricia began work at a school that offered her a mentor teacher with significant technology training and a full time technology coordinator that aided her with planning and with classroom management issues in the computer lab. Though she was initially apprehensive about her students' ability to use the technology, Patricia became comfortable using pre-planned activities in the computer lab. Courtney began work at a school that did not offer much organizational support for technology use, but did offer her autonomy in making instructional decisions. Courtney's strong personal belief that "technology could be a catalyst for student learning" (p. 255) led her to integrate technology use into her daily teaching.

Clausen (2007) concluded that the support for educational technology use experienced by Patricia allowed her to include computer lab work in her regular teaching schedule. Her belief that technology could be disruptive to her classroom and her lack of any strong belief about the value of technology led her to limit her educational technology use to the lab. Conversely, while Courtney had little support for technology use, her belief in its effectiveness led her to integrate educational technology into her regular classroom practice. The school's support of her instructional choices, as well as the presence of a teacher's aide, allowed her to do this.

Virnoche & Lessem (2006) described a similar push and pull towards technology in teachers' use of an Internet-based resource with their elementary school students. They enumerated the factors that went into these decisions: "Teacher decisions about technology are negotiated using their own technical identities; ideological messages from colleagues, administrators, parents, and students; and structural factors such as administrative policies, teacher preparation time, classroom management, and the technology itself" (p. 266).

Virnoche & Lessem (2006) defined technology identity largely in terms of teachers' sense of their own competence as technology users and in relation to their beliefs about the efficacy and importance of educational technology. In particular, many teachers shared the idea that it was important to expose students to computers and the Internet at school because many of their families did not own computers. This belief was a strong pull toward increasing technology use.

Teachers received mixed messages about student Internet use from a number of external sources. The U.S. government stressed the importance of closing the digital divide with the funding of the e-rate program as part of the 1996 Telecommunications Act, and the local community and school district echoed this support by funding network and computer upgrades in the school. An energetic principal and increase in technology-related, district-offered, professional development courses were also factors encouraging technology use.

At the same time, legal requirements to have parents sign permissions slips before allowing their students to use the Internet signaled that the technology should be approached with some caution. Additionally, lack of timely on-site technical support meant any technical problems were extremely disruptive. Limited planning time and limited lab resources also made technology use inconvenient and difficult for the teachers.

Some parents were in favor of increasing technology use at the school, but others refused to sign permission slips. Students' excitement about lab use was a strong pull for the teachers, but taking care of students who were uncomfortable with computers or whose parents had not signed the permission slips presented a classroom management hurdle.

Both Clausen (2007) and Virnoche & Lessem (2006) reported a tension between teachers using technology and rejecting or marginalizing its use. Clausen focused on teachers' beliefs

about technology as an instructional tool while Virnoche & Lessem focused on beliefs and attitudes that had more to do with teachers' own perceived skills and the value of exposing their students to computers. Clausen's description of the context of technology use at the school focused on people and relationships: the presence and lack of a technology coordinator, Patricia's relationship with her mentor, and Courtney's school's support of her instructional preferences. Virnoche & Lessem characterized context as a series of messages or voices that originated from near and far: local and national funding for technology, administrators and district policy, and parents and students.

The research on technology adoption highlights many of the issues that may come up in any work that looks at the impact of identity and culture on technology use. However, Clausen (2007) and Virnoche & Lessem (2006) use relatively static concepts of both teacher belief and school and classroom context. A more dynamic model of identity and culture, belief and context, may reveal a more bidirectional effect: belief and context influence adoption, and adoption of technology influences belief and context.

Tamar Levin and Rivka Wadmany (2006) conducted a case study with six teachers over three years in an Israeli school that was in the process of implementing a large scale “technology-based teaching and learning environment” (p. 163). They wanted to know if teachers' ideas about teaching, primarily in terms of behaviorist versus constructivist views on teaching and learning, changed as a result of the technology use. They also wanted to know if these views on learning and teaching affected their technology practice and whether or not their views on technology itself changed over the three year period.

Levin & Wadmany (2006) found that three years of educational technology use did lead to teachers expressing more views that could be characterized as constructivist, and this was born

out by observations of more collaborative learning in teachers' classroom practice. Additionally, three of the six teachers showed a significant change in their views on technology, coming to see it as a partner in teaching and learning. Levin & Wadmany concluded that extended technology use can lead to changes in teachers' beliefs about learning and teaching as well as their beliefs about technology's role in their classroom. However, they also observed that change among the teachers was not consistent or consistently expressed. It “is an individual process, unique to each teacher” (p. 172). A detailed analysis of the teachers' beliefs also revealed that, “teachers' beliefs could not always be classified simply and dichotomously as either constructivist or behaviorist/functionalist ... they seemed to change educational lenses, demonstrating multiple views rather than pure beliefs” (p. 173).

Levin & Wadmany (2006) began with the concept that technology use could affect belief, and concluded that beliefs could be complex and multiple. Viewing identity, culture, and practice as co-constructed processes that constantly interact allows for a deeper understanding of this complexity. Eli Ottesen (2006) and Mark Windschitl and Kurt Sahl (2002) apply what Ottesen refers to as a “sociocultural perspective” (p. 277) and Windschitl & Sahl call an “ethnographic perspective” (p. 173) to explore teachers using technology.

Similar to Clausen (2007), Ottesen (2006) worked with four student teachers who had participated in the Programme for Teacher Education, Technology and Innovation, or PLUTO, at the University of Oslo in Norway; a plan similar to the PT3 program in the U.S. Observations and interviews were collected over a 12 week internship that placed these student teachers with mentors in a public school. Ottesen focused on students' discourse concerning technology and specific technical artifacts to find out how students represented these artifacts, how those representations were enacted in conversations with their mentors, and “how ICTs as artefacts

might mediate new-found spaces of authoring and whether 'new worlds' can be seen to be in the making” (p. 281-282).

Ottesen (2006) used the concept of figured worlds to describe the student teachers' situated activities with technology artifacts and the spaces in which the students developed “identities as teachers” and “identities as ICT users” (p. 277). Ottesen found a tension between the students' production of these identities. As neophyte teachers, the students participated in a figured world of didactics. This stressed accomplishing curricular goals and maintaining classroom control and positioned them as clearly subordinate to their mentor teachers. However, the students' identities as technology users were more sophisticated than those of their mentors. Student teachers' PLUTO training and their experiences using technology as learners allowed them to see possibilities for educational technology use that were not always recognized by their mentors. Given the student teachers' inexperience, the stress of classroom management issues, and the powerful position of the mentor teachers, the figured world of didactics often determined students' actions more than their identities as technology users.

Unlike Levin & Wadmany (2006), Ottesen (2006) concluded that technology artifacts could be subsumed into traditional practice and classroom activity. Ottesen suggested providing all teachers time to interact with the technology outside of the pressure of the classroom to allow them to develop identities in relation to the technology artifacts. In this way, the figured world of technology use and the figured world of didactics could meet on a more even playing field, and teachers would be free to experiment with the ways in which practices from the two worlds could crossover and combine.

Like Levin & Wadmany (2006), Windschitl & Sahl (2002) were interested in finding out if prolonged use of educational technology would lead teachers to more constructivist

instructional practices. They observed eleven teachers over a three year period in a school that had just implemented a program to provide each student with a laptop computer. They utilized an “ethnographic perspective ... to take a more focused look at the actions of members of a group – examining 'bits of life' (Bloome, 1989; Hymes, 1982)” (p. 173). They specifically wished to reveal:

Principles of practice that are constructed by members as they fit into roles and relationships, establish norms and expectations, and negotiate rights and obligations that constitute membership in the local group ... this approach helped us understand how differential access to the ideas of others within a group shaped opportunities for learning. (p. 173).

Windschitl & Sahl applied this theoretical framework to explore how experiences and personal history interacted with school culture to influence technology practice and teachers’ construction of norms and practices in various school settings.

Windschitl & Sahl (2002) found that choices about classroom technology practice were related to four general areas: participants' personal history and experiences as teachers, their beliefs about learning, their perceptions of institutional expectations about teaching, and their differential access to opportunities to learn about technology. Like Clausen (2007), Levin & Wadmany (2006), and Ottesen (2006), Windschitl & Sahl found that:

The influence of ubiquitous technology on instructional decisions was mediated in substantial ways by teachers' interconnected belief systems about learners ... about what constituted good teaching within the context of institutional culture, and about the role of the technology in the lives of students. (p. 201).

Like Clausen, Windschitl & Sahl found that the introduction of ubiquitous technology did not inspire teachers without constructivist tendencies to move in that direction, but it was used by those who already supported constructivist instruction to further their collaborative pedagogy. Like Virnoche & Lessem (2006), they observed a variety of external voices relaying expectations about technology use. Like Ottesen, they suggested that teachers be given the time to work with colleagues outside of the classroom to establish relationships that can support sustained “growth in instructional sophistication and technology use” (Windschitl & Sahl, 2002, p. 203).

Windschitl & Sahl's (2002) conclusions are a near complete summary of the issues that reoccur in this sample of research. It is clear that looking at educational technology use through the lens of identity, culture, and practice reveals that the introduction and use of technology in schools is a complex personal and social process. Educational technology, regardless of its intended purpose, can be subsumed into daily classroom practice with little change in teachers' beliefs about teaching or in school culture. On the other hand, technology can be a powerful tool for those who wish to enact more constructivist practices. As Levin & Wadmany (2006) point out, however, practice can affect belief.

A similar dynamic is apparent in Virnoche & Lessem's description of the push and pull of technology adoption. As teachers make decisions about technology use, they balance powerful discourses on technology use from distant and local sources including governments, the school district, the principal, students, parents, and other teachers with their own multi-faceted beliefs about technology use, classroom practice, and their own competencies as technology users.

As Ottesen (2006) and Windschitl & Stahl (2002) explore, teachers' beliefs and school culture are sites of on-going identity and cultural production, and technology artifacts are a part of that process. Ottesen used the concept of figured worlds to good effect, but focused primarily

on artifacts. Windschitl & Stahl used concepts similar to Holland et al.'s (1998) framework and were able to describe the complex relationship between teachers' instructional beliefs, the context of the school, and teachers' use of students' laptops in instruction. Applying the framework of identity and figured worlds in a more general context will allow me to explore the issues that arise in this research and to gain a clearer understanding of the relationship between culture, identity, and educational technology practice.

Culture and identity in research on educational technology support. One of the structural factors that researchers found affected technology use in schools was access to technical support. Clausen (2007) found that access to a technology coordinator who helped Patricia plan and execute lessons in the computer lab was one of the reasons she was able to overcome her early apprehension. Virnoche & Lessem (2006) found that lack of access to immediate on-site technical support, combined with worries about unreliable equipment and software, pushed teachers away from using an Internet-based program with their students. Clausen, Ottesen (2006), and Windschitl & Sahl (2002) all concluded that support from colleagues played an important role in teachers' technology use.

Research that directly addresses educational IT support staff from an identity, culture, and practice perspective seems to be rare. One reason the research may be hard to find, or that technical support may be hard to find in the literature, is the various names for and sources of support in schools. Administrative support may come from technical coordinators, technical staff, technical support, computer coordinators, the IT department, ICT support, or even an MIS (management and information services) department. Informal sources of support, such as technically savvy colleagues, parents, student teachers, and students may be even harder to track down. The meaning of technical support can also vary greatly: from administration of complex

hardware, software, and networks, to answering a phone when a computer crashes, to helping teachers think critically about how to integrate technology into pedagogy.

Otero et al. (2005), David Marcovitz (1999), and Neal Strudler (1996) provide examples of research that directly address identity and culture issues in technical support and highlight the variable nature of technical support in educational settings. Otero et al. report on a program that utilized education graduate students to provide instructional technology support to university faculty in a school of education. The focus of this program was to develop a community within the school of education that could “produce a sustainable shift in teacher educators' technological skills and their views of technology and its pedagogical purposes” (p. 10). Rather than provide separate courses or workshops on technology, the graduate students worked with faculty to integrate technology directly into their on-going courses.

Made up of graduate students in education, it was all but inevitable that the program would develop a model for technical support based on Vygotsky's theory of mediated action. The project utilized a “critical framework” to create a common language and way of thinking about and evaluating technology use (Otero et al., 2005, p. 12). The eventual goal of the program was to “imbed practices and norms within the normal operations of the school of education” and to create “a discourse community” through which faculty could rely on each others' internalized ideas about educational technology for support and encouragement (p. 14). Faculty beliefs about the usefulness and reliability of technology similar to those cited above, as well as self perceptions of competence, were barriers to the faculty's willingness to use technology. However, Otero et al. found that “with the help and encouragement” (p. 21) of the graduate students, faculty were willing to engage in a discourse about technology use, reflect on their own

instructional practice and how technology might enter into it, and, in many cases, develop and implement ideas for actually using educational technology in their courses.

Like Ottesen (2006), Marcovitz (1999) examined the roles that student teachers could play in educational technology use. He focused on how student teachers supported the technology use of existing teachers. Marcovitz observed that student teachers fulfilled roles on a continuum from student to teacher, often functioned in multiple roles simultaneously, and supported IT use in many of these roles. Student teachers brought in extra technical resources, such as their own laptop, acted as on-site technical experts with specific skills and knowledge, and provided teachers with help managing the classroom during technology-related activities. A planned period in which student teachers took over the class allowed teachers additional time to work with technology on their own. Student teachers also functioned as collaborators who helped teachers plan and execute technology-related activities. Marcovitz concluded that the lack of immediately available technical support at the school meant that some teachers had “partially recreated the role of the student teacher to be an integral part of support for IT” (p. 373).

Strudler's (1996) case study provides an example of research that focuses on official technology coordinators. Strudler followed up on an earlier case study that looked at three elementary school technology coordinators. Strudler found that coordinators provided training on the school's constantly changing technology resources and maximized the effectiveness of time teachers spent working with technology by streamlining their interactions with technology: screening and choosing the best applications, assisting with technology planning, and organizing technology savvy volunteers and students. Effective technology coordinators also collaborated with teachers to help ensure that the available technology was a good fit with the teachers' curricular goals. Strudler found that technology coordinators also provided “Nuts and Bolts” (p.

249) support by dealing with “custodial details” such as purchasing new equipment, maintaining equipment, scheduling computer labs, and troubleshooting problems (p. 249). Overall, Strudler concluded that the presence of a good technology coordinator could “tip the scales for teachers weighing the costs and benefits of technology use” (p. 249).

The above research suggests that technology support in schools can come in many forms and fulfill many roles. Marcovitz (1998) spent a day shadowing a “computer coordinator” (p. 1041), Robert, and enumerated his roles as: “support by walking around”, or providing in-person support “by virtue of being in the right place at the right time”; “Nuts-and-bolts” activities that required technical expertise; and “policy-maker”, planning and setting goals for technology in the school (p. 1041). Marcovitz also characterized Robert as a “troubleshooter”, dealing with immediate issues, and a “local facilitator”, serving as a source of information and guidance to those in the school and a point-of-contact for district IT staff and technology projects that involved multiple schools (p. 1042).

Windschitl & Sahl (2002) observed the importance of this distinction when they witnessed the replacement of a “Director of Technology” with a “technical support staff member”. The former was an administrative position that took the lead in guiding the school's use of their students' laptop computers while the latter acted mainly as a technician. Windschitl & Sahl reported that the Director of Technology was primarily responsible for the institutional vision of how the laptops would be used, and his replacement with a technician led to a decline in conversations and activities concerning school-wide plans for the technology.

Technology and Power. An important aspect of the identity and figured worlds framework is that it provides researchers a way to connect large social structures, especially in the form of structural inequalities, to daily practice and individual identity. Fields such as mass

communications and anthropology are replete with theoretical and empirical works that explore the power of technology, the technology of power, and the power in technology. Research on educational technology is much less likely to focus explicitly on these issues. When questions of power and inequality do find their way into the educational technology discussion, it is most often with regard to differential access to technology for different groups of students, especially pertaining to race and gender. Questions about technology and power relating to educators and other school staff are rare.

The research focused on identity and culture issues provides some examples of how structural forces can affect teachers' technology practice. Virnoche & Lessem (2006) reported that a number of external voices influenced teachers' technology use. Discourses on the importance and dangers of the internet came to teachers through the media and the concerns of parents, administrators, and students. On a more local scale, Windschitl & Sahl (2002) reported that “institutional voices” relaying the expectations of administrators and parents were a significant factor in teachers' technology use (p. 188). Otero et al. (2005), Ottesen (2006), and Marcovitz (1999) report on government funded projects that encourage technology use in schools by providing grants to teacher training programs.

In his introduction to *Education / Technology / Power* (1998), Hank Bromley argued that the power embedded in the technology is the real issue. Bromley asserted that educational technology affects education in four important ways: First, educational technology is one way of introducing a business model of schooling that attempts to increase the efficiency of schooling without focusing on the quality of education. Second, educational technology, by design, promotes an “information processing” model of the mind that limits human experience and casts students into the role of “components of a megamachine” available as labor for corporations, the

government, and military (p. 18). Third, schools become a source of direct profit, by buying technology, and indirect profit, by training students to be technology consumers. Fourth, educational technology is a tool for taking away control from teachers and local districts and centralizing that control in large institutions.

In the same volume, Michael Apple and Susan Jungck (1998) continued the argument that educational technology removes control from local educators. Apple & Junckg explored the ways that educational technology can negatively affect teachers. The introduction of educational technology, along with a focus on standards and standardized testing, represents a “separation of conception from execution” (p. 140). In other words, centralized control of curriculum and instruction leaves teachers as merely “alienated executors” (p. 137) of someone else's plan. These trends deskill and de-professionalize teaching, stripping the job of any identity and expertise that went with it. Finally, Apple & Jungck described the “intensification” of teaching; a process where more work is demanded from fewer or the same number of employees and “Getting done is substituted for work well done.” (p. 139). While teachers are asked to do more with less time, “many teachers will be *committed* to the goals” and will eventually “exploit themselves, working even harder in underfunded and intensified conditions” (p. 151).

Existing research on identity and figured worlds makes it clear that some contexts and identities are highly influenced by structural factors while others are relatively isolated. The figured world of romance described by Holland et al. (1998) is an enactment of historical gender roles and the activist identities described by Urrieta (2007b) are constructed in opposition to ethnically-based structural inequalities. On the other hand, the figured world of AA is purposely isolated from such issues; participants' identity as an alcoholic taking precedence over gender, race, and class.

Educational research, and especially educational research focusing on identity and culture, has long recognized that schools are sites where structure can be produced, reproduced, and opposed. Similarly, research on technology recognizes that “technologies both *reflect* and *affect* the surrounding social conditions” (Bromley, 1998, p. 5). It is likely that, as the researchers cited above suggest, educational technology practice is affected by social structures, and, as Bromley and Apple & Jungck (1998) argue, the nature of the technology itself carries discourses about society, teaching, and learning. Application of the identity and figured worlds framework can provide a way to not only observe and describe these discourses, but to connect them to local identity and cultural production.

Chapter 3: Methods of Data Collection

In the broadest terms, this dissertation is a comparative ethnography of technology use among university IT professionals and a group of faculty and staff they support. My research is conceptually guided by relatively recent ideas concerning identity and figured worlds, but my data collection relies on well established ethnographic methodology: participant observation and ethnographic interviews.

I will begin this chapter by briefly describing my field site and participants. Following that, I will review my research questions and summarize the data required to address each question. I will then present a description of my data collection and analysis techniques.

Site and Participants

The primary ethnographic goals of this research presume groups of participants working closely enough to form and maintain shared attitudes and behaviors toward technology use. The comparative aspects of the research require that the IT professionals and educators interact both directly and indirectly. Indirect interaction consists primarily of the IT professionals' installation and maintenance of technology eventually used by the educators. The direct interaction consists of the training and support relationships that exist between the educators and IT staff.

These requirements suggest a small to medium sized school or department: an organization which is large enough to employ a centralized group of approximately five to fifteen IT professionals who work closely to provide both technology infrastructure and direct end user support. An extremely small organization may only have one or two IT professionals, while larger organizations may have a more bureaucratic IT department that segregates technology installation and maintenance from direct user support and/or diffuses and isolates support personnel. The existence of a shared culture of technology use also presumes a

somewhat cohesive group of faculty, staff, and IT staff that work together in a recognized and cohesive organization.

Following an extensive search for either a public school or higher education site that was both suitable and interested in granting me access to their faculty and staff, I identified The Law School as a suitably sized, relatively cohesive, and adequately agreeable site. The Law School is part of a public state university with approximately 30,000 students. It is an American Bar Association approved law school and was ranked as a top 50 law school by *U.S. News and World Reports* (American Bar Association, 2011; "Best Law School Rankings", 2011).

The Law School itself has an enrollment of about 550 students. The Law School faculty consists of approximately 50 resident faculty, 50 adjunct faculty, and 20 visiting scholars, fellows, and emeritus faculty. Most of the 50 administrative staff members are part of the Dean's office or the Law Library, but they also work in research centers, the law journal offices, legal clinic, career services center, and, of course, in the IT support office.

While the Law School is a graduate school of the University, the daily operations and most administrative functions are handled internally by the Dean's office. In addition to the Dean of the Law School, the Associate Dean for Academic Affairs, and the Associate Dean for Research – faculty positions – the Dean's office houses three Assistant Deans and a Director of Operations and Financial Management – staff positions. Communications, admissions, business development, and student career services are also handled by Law School staff.

There are two full time Information Technology support staff employed directly by the Law School: titularly, the Director of IT and the Assistant IT Manager and Web Developer; nominatively, Don and Peter. Don and Peter work closely with three employees of the university's central Information Technology Services Department, or ITS. Two of these ITS

employees, Michael and Herman, are “Troubleshooters”, whose job is to respond to faculty and staff requests for help with hardware and software issues. The third, Peggy, is an “Academic Technology Specialist”. Her mission is to advise, train, and assist faculty with technology related issues in both teaching and scholarship. Michael and Peggy spend most of their time at the Law School, and are well known in the building. Herman spends fewer hours in the Law School. While these three are officially ITS employees, the Law School pays a portion of their salary, and, within the Law School, it is generally accepted that they are part of the Law IT staff and work for Don.

The Law School building is one of the newest at the university. It is located on a far corner of campus, a fifteen to twenty minute walk from the central academic “quad” and separated from it by dormitories and administrative buildings. It is a large four story stone building set with its back to the rest of the campus. The Law School website touts the new structure as a “technologically advanced facility” that includes “state of the art classrooms”, and two “high-tech courtrooms with leading-edge videotaping and distance-learning capabilities”. The building is also LEED certified by the US Green Building Council and includes rooftop solar panels and an electric car charging station. The building’s most striking feature is a centrally located, twenty foot wide, slate stairway that bisects the length of the interior space. Standing in the first floor entryway, at the west end of the building, one can look upward and eastward along the gray stone steps and see sky out of the fourth floor windows.

Research Questions and Types of Data

The goal of this dissertation is to address three primary research questions: First, to what extent do a group of educators and a group of IT professionals form figured worlds of technology use with their peers and co-workers. Second, to what extent do these individuals develop and

enact identities as technology users and learners. And, third, how do these figured worlds of technology and technology identities affect the interactions and relationships between the educators and IT professionals. These three areas of inquiry may be referred to as: figured worlds, identity, and interactions.

The description of figured worlds of technology use primarily involves observation of the five areas of figured worlds previously discussed: artifacts, activities, concerns, narratives, and characters or roles that may make up the figured world. It may also involve descriptions of constraints or special definitions of time and space within the figured world and transitions in and out of the figured world.

Data concerning identity formation and enactment consists primarily of self-reflection from the participants. Self-reflective comments observed in situ as well as longer, more detailed stories prompted by interview questions provided the most insight into how participants see themselves as technology users. Observation of participants working with technology, especially when this involved interacting with other participants, also provided important information about how participants see themselves and others as technology users.

Data concerning the intersection of figured worlds and identities between IT professionals and faculty and staff relied on observations of participants' interactions across these groups. Exploration of the relationships between IT staff and faculty and staff also relied on analysis of how these groups interact indirectly through their actions, expectations, and roles in working with technology.

Data Collection

Data collection occurred over a seven month period from December, 2009 through June, 2010. I began with participant observation of the IT staff, and this mode of data collection made

up most of my observational data. Each session lasted from two to four hours during regular working hours and generally consisted of me spending time in the Law School IT office and shadowing the IT staff as they went about their daily activities. I conducted 16 participant observation sessions with the IT staff for a total of approximately 36 hours of data. Additionally, I was able to perform two classroom observations with two different faculty members. I was also invited to spend an hour in a faculty member's office as he told me about his technology use. Because the faculty member suggested this format, and because I asked few questions during this time, I included this as an observation rather than an interview. Participant observation data was collected as hand written notes with no audio or video recording.

I conducted six interviews with five different faculty members, eight interviews with four IT staff members, and eight interviews with five different staff members. My goal was to conduct two interviews with each participant. However, all but one faculty member was unable to schedule more than one interview period, and two staff members chose not to schedule a second interview. Interview schedules were based on the set of interview questions found in Appendix A, but all interview schedules were highly customized based on observation data and, in the case of second interviews, on my initial analysis of a participant's first interview. Interviews ranged from 30 minutes to slightly more than one hour, with a final total of approximately 22 hours of audio recorded interview data. I fully transcribed these interview recordings prior to analysis.

Data Analysis

Hand written participant observation notes and audio recordings of interviews were transcribed into electronic texts and imported into ATLAS.ti Qualitative Data Analysis software (version 6.2). I performed a domain analysis on the data by using ATLAS.ti to add identifying

codes to the textual data. This process resulted in 81 separate codes, with each code grouped into one or two of the following code families based on the types of data I suggest in Ch.2: activity, artifact, character/role, concerns/belief, narratives, identity, and time. Coding and grouping of the data with ATLAS.ti facilitated a further thematic analysis of the data in which I identified significant patterns and narratives that reoccurred throughout the observations and interviews.

Chapter 4: Technology Practice at a Law School

The Law School

At approximately 10am on December 12, 2009, I walked into the lobby of the Law School to begin my first day of field work. I was confronted by grey slate floors and wood paneling. The muted grey and brown color palette complete the sense that one has left a world of Frisbees and pajamed undergraduates on skateboards and entered an institution of serious pursuits. Even the student lockers, neatly tucked away in a first floor alcove, are oak and brass. As I walked down the quiet hallway to the Information Technology offices, three decades of graduation photos, hundreds of future lawyers in somber poses, stared at me from floor to ceiling framed yearbook-like pages.

First Day and Things to Come

At the end of the first floor hall, past the lockers and restrooms, I find the door to the Law School IT office. The main part of the office is about 250 square feet. Computers, video cameras, projectors, monitors, external hard drives, and cables cover the gray desktops lining each wall. A 24-inch LCD TV is mounted high on the west wall, and a 46-inch LCD TV sits under it on a rolling cabinet. A door on the east wall of the main area leads to Don's office. A narrow area along the south wall is stacked with desktop computers in various states of disassembly.

Peter and Michael sit at their desks. I greet them as I step into the office. Michael is an ITS "Troubleshooter", meaning he is responsible for "machine deployment... maintenance, updates, any kind of repairs" and, as he succinctly states, "I keep people's computers up and running" (Michael, int 20100311). His current assignment has him spending 75% of his 40 hour week in the Law School. His work area is setup along the south wall just to the right of the door.

Today it holds three laptops: his own and two faculty or staff machines in for repair. Peter is the Assistant IT Manager and Web Developer. His work area is setup in the northeast corner of the room, opposite the entrance. He has two large monitors spanning the corner of the office, and he usually works with his back to the door.

Hearing me enter, Peter swivels around in his chair and tells me Don isn't in the office. Don is the Law School Director of IT and the person primarily responsible for introducing me around the Law School. I take a seat in the middle of the room and get out my pen and Steno pad. Peter tells me he is working on an "intranet" project. He is taking some information from the Law School's public website and publishing it in Microsoft SharePoint. Michael stands up abruptly and announces there is a virus in the library. He received an email from the central ITS trouble ticket system; someone in the Law Library phoned or emailed the central ITS switchboard to report the problem, and they routed it to his inbox. With his laptop in hand, Michael leaves the office.

Peter tells me Angela, the Associate Dean for Academic Affairs, asked the Law IT Office to create an intranet after she saw expense reports and other internal documents published on Stanford Law's intranet site. Peter and Don responded by installing Microsoft SharePoint on one of the Law School servers, and now Peter is populating SharePoint with faculty and staff contact information.

As Peter tells me about SharePoint, Don enters the office. Hearing our conversation, he adds that he wants to use SharePoint within the IT office to establish a process for setting up new Law School employees with computer accounts and equipment. He also wants to create a "welcome packet" to provide faculty and staff with basic IT information. As Don excuses himself to check his email in his office, he tells Peter they need to go up to the fourth floor to tear

down the testing center. Peter says he hopes they will have some kind of intranet, probably SharePoint, rolled out by the summer. He is also concerned that peoples' inboxes are filling up with junk, and he wants to use SharePoint to setup an "internal announcement section – so people aren't getting emails about cupcakes." Peter, who previously worked as a programmer at IBM, says the intranet at IBM was a, "one stop shop for everything" where you could find any work or employment resources you needed. He tells me there's nothing like that at the Law School.

I ask Peter if he's had any SharePoint training. He says he hasn't done much training since coming to the Law School. Their normal procedure is to "figure it out as you go." He shows me one of the SharePoint pages he's already created: a "knowledgebase" for use by the Law IT staff. Referring to a list of printer network addresses, he says, this is "[Michael]'s world usually," meaning that Michael is usually responsible for setting up faculty and staff with access to the printers. He says their short term plan is to keep, "playing with it. Figuring it out. Seeing how we can use it for the Law School as a whole."

While Don is still in his office checking his email, Claire, a faculty member, steps into the office. She is looking for Michael. Peter asks if he can help her with anything. Claire tells him there is a pop-up window on her computer. Michael told her it was a side effect of downgrading from Windows Vista to Windows XP, but she's concerned it may be a problem. Standing up, Peter says he will take a look. The three of us walk down the hall to Claire's office. Most faculty offices are on the fourth floor, but Claire works in the Law Clinic and has an office on the first floor.

We enter Claire's office, and she takes a seat at her desk. Peter stands behind her so he can see her monitor. Her computer is a newer Dell laptop attached to a large Dell monitor. This

is similar to Peter and Michael's setup. Don tells me later he encourages faculty to use a laptop and docking station because it allows them to use the same computer in their office, at home, on the road, and in the Law School's AV-enabled classrooms. Also attached to Claire's laptop is a personal digital assistant, or PDA – a model I recognize as at least five years old.

Claire shows Peter what Michael told her to do and the pop-up message it caused. Peter tells me Michael previously replaced the newer Windows Vista on her laptop with the older Windows XP. Claire, motioning to the PDA, explains, "I have this old Palm, and Vista disabled some of the features". Peter says Claire uses her Palm PDA a lot. Later in the week, Michael elaborated on the story, telling me Claire uses her Palm PDA to share her public calendar with her students, but Windows Vista caused a problem by showing students her private appointments as well. Claire holds the device out so I can get a better look, saying, "I would die without it". Answering an unasked question, Claire tells Peter and me she wouldn't pay for a smartphone when she only uses her current cell phone "three times a year". This prompts Peter to mention the possibility of replacing the Palm with an iPhone. Unconvinced, Claire declares any replacement would not be an Apple product.

Returning their attention to Claire's laptop, Claire and Peter read through the error message on her screen. Peter asks her to reboot. Claire restarts and logs in. The error reappears. Peter tells Claire he doesn't think the message is a problem. He will clear it and prevent it from reappearing. Claire hands the mouse to Peter as he leans over her desk. He closes the error and then clicks through a few windows and changes a setting. Claire thanks Peter, and he and I head back to the IT office.

As we walk, Peter tells me part of Don's and his job description is that they, "have to do everything," but that he usually qualifies that to faculty with, "I may not know the answer". As

he returns to his desk, Peter tells me there are a lot of interruptions now that he and Michael and Don are all in the same office; interruptions are part of his job. I ask where their offices were previously. He says Michael had a cubicle on the fourth floor, closer to most of the faculty offices.

Peter gets an idea and calls into Don, who is still in his office. They should add a question to their annual IT survey and ask if it is better or worse now that they are all in the same office. Returning his attention to me, Peter says there was a, “lull in drop-by’s” when Michael moved to the first floor. People didn’t want to walk all the way downstairs to ask a question. Now, someone comes by, “every half hour.”

“It does allow us to provide better service,” Peter says after some thought. He adds that it is helpful to have Don and Michael in the same office so they can confer on technical issues. For example, he says, he isn’t good with Macs. He pulls an older Mac laptop out of a desk drawer and turns it on. It’s a “hand-me-down” from a faculty member. Peter tells me he played with it for a while when he first got it, installed boot camp on it, software that allows a Mac to run a Microsoft Windows operating system. He hasn’t been using it lately.

There is a lull in the conversation as Don and Peter check their email. I ask Don for a faculty list. He laughs at my request for a hard copy, and says he will email me a link to the online faculty and staff directory. I agree that hard copies are overrated, and I don’t like dealing with printers in my own IT support work. Peter tells me he has had issues with hard copies of text for the website. People were giving him hand edited print outs of the web page. Someone even made him a cheat sheet of the traditional editing marks the faculty used to indicate their changes. He convinced them to cut and paste the text from the web page into Microsoft Word, edit it, and email him the Word file. Now he can just paste the new text into Dreamweaver, the

application he uses to create many of the Law School web pages, and, “If there’s a typo it’s not my fault.”

Don announces it is time to head upstairs to disassemble the temporary student testing center. He grabs a wheeled cart full of cables and pushes it in front of him as we head for the elevator. As we ride up, Don tells me they don’t support students, with one exception. Exams at the Law School are given on computers using software the Law School purchases. Students are expected to install this software on their own computers. They can write the exams by hand, but this is neither common nor preferred. In order to minimize the effect of an “emergency”, when a student’s computer fails during an exam, the IT office sets up an “emergency testing center” in one of the fourth floor classrooms. It is simply a room full of laptops borrowed from the Law Library and setup with the exam software. “We feel good helping the students, but what we’re really doing is supporting the registrar. We’re just backing her up.” Exams ended last week, and it is time to break down the room and return the laptops to the library.

We walk into a medium sized classroom that would seat about 40. There are eight Dell laptops locked to desks around the outside of the room. Don and Peter begin shutting down the machines, unlocking them, and stacking the security cables, AC adapters, and laptops on the cart. As he works, Don tells me, “This is a classic example of what I do to Peter.” Don was on vacation when he remembered it was time to setup the testing center. He emailed Peter from the beach and told him to setup the room.

Peter laughs. He says it normally wouldn’t have been a problem, but this semester there was an issue. The laptops belong to the Law Library and are managed by ITS. Peter and Don don’t have administrative rights on them. ITS installed the testing software on the computers, but when Peter did a practice test to check the software, he noticed it was the wrong version. He tried

to get ITS to fix the problem, but couldn't get in touch with the ITS employee responsible for the machines. Though Michael and other ITS Troubleshooters work in the Law IT Office with Don and Peter, the Law Library laptops are supported by a separate group within ITS, and Michael and the others do not have administrative rights on these laptops.

Peter had to go to an, "emergency Plan B." He installed the testing software on the few extra laptops owned by the Law IT Office: emergency faculty loaners. Don adds, "That is the classic Peter approach. Peter makes things work to solve an emergency." Peter replies that he knew Don would support him if anyone questioned what he was doing.

I ask if ITS manages all of the Law Library computers. Don and Peter explain that the Law Library has its own support contract with ITS. The library's laptops are managed by ITS as if they are a campus computer lab. Don adds, "We have a very interesting relationship with ITS." The Law IT Office has to get permission from the library and coordinate with ITS lab support in order to remove the laptops from the library.

Don says he would like to use the Library's laptops as emergency loaners for the faculty, but that is problematic. The Law IT Office needs loaner laptops because the AV equipment in the Law School classrooms requires each faculty member to bring their own laptop. When a faculty member's laptop fails, they need quick access to a loaner in order to continue using the classrooms. Because he and Peter don't have administrative privileges on the library computers, and because they can't remove them from the library, they can't use the library laptops as faculty loaners. The Law Library laptops are only available for library patrons to borrow and use within the library, and Don sees this as a waste of resources.

In addition to contracting with ITS for laptop support, Don tells me the Law Library has a part time web developer and a faculty member who specializes in technology and legal research.

Peter says he has worked with the Law Library web developer to ensure the library's website is stylistically matched to the Law School's. In the course of my observations, I did not see or hear of anyone else in the Law IT Office interacting with the library's technology support staff. I did observe members of the Law IT support team working with both library faculty and staff on various issues. As Don, Peter, and I discussed how the Law IT Office does and does not support the Law Library, Michael was in the library working to remove a virus from a staff member's computer.

Bringing our conversation back to the temporary testing center, Don and Peter tell me they don't advertise it to students. They want students to use their own computers whenever possible, and think some students might imagine an advantage to doing the exams in a, "safe environment" on "Law School computers" even if their own machines would work. This leads Don and Peter to begin discussing the issue of students who own Macintosh rather than Windows-based laptops, which Peter calls, "PCs". Peter guesses that probably half of the students own Macs. He tells me some of the Mac students buy inexpensive PC netbooks just to run the exam software. At new student orientation, they recommend the students purchase a PC to run the exam software, and they warn them about the hassles of trying to install Boot Camp, software that allows the Windows operating system to run on a Mac.

Don and Peter finish stacking equipment on the cart, and we leave the classroom. As Peter wheels the cart of laptops back to the Law Library, I ask him about the Law School's server he mentioned earlier. Peter tells me they are currently using an old desktop computer as the Law School server. It was setup by an ITS Troubleshooter who transitioned into a consultant role for the Law School prior to the existence of the Law IT Office. This consultant created a number of web-based applications which run on that server.

Peter tells me he and Don are in the process of updating those applications and transferring them to a new server; a recently purchased server class machine. Server class hardware is generally more durable, is designed to be run constantly over a long period, may include redundant hardware to limit the effect of failures, and often includes a more comprehensive warranty with a faster response time.

As Peter and I return to the Law IT Office, we are joined by Don and Michael. Michael holds up his laptop to show us all a security advisory posted on the www.techjaws.com website. He tells us this is the new threat he found on a Law Library computer. Don asks Michael if the Microsoft Forefront anti-virus program was able to detect the virus. It did. Don asks if they should have a policy to install Forefront on all desktops. Michael says he is already installing it on any machine with a virus problem. The question of whether and when to install Microsoft Forefront is currently an issue because ITS, which funds a campus-wide antivirus software license, is transitioning from a Computer Associates antivirus package to the Microsoft solution.

Don, Michael, and Peter return to their desks. A new email prompts Michael to take a cable out of a desk drawer and he gets up to leave. Michael tells us a faculty member wants the cable to transfer some data from one laptop to another. He is happy to provide the cable since it means he will not have to do the data transfer himself. Don tells Michael to let the faculty member know they're happy to help, but it would be better if they had more advance notice next time.

Peter swivels around in his chair and tells me he can give me a, "run down of the website." It is a "two headed beast". The static content on the website is stored on one of ITS's web servers. Static web pages are pages in which the content does not change between viewings, as opposed to dynamic pages, whose content is determined at the time the page is viewed.

Examples of dynamic web pages include pages with interactive elements and pages whose content is retrieved from a database, for example fill-in forms or a faculty and staff directory.

When the Law School, “developed needs for dynamic content”, they contracted with the afore-mentioned Troubleshooter to create it on the Law School's own server. This was prior to Don and Peter being hired. Peter inherited “his stuff” when he was hired as the Law School Web Developer. Hearing Peter’s story, Don sticks his head out of his office and tells me they are a “JSP shop” because that is what the Troubleshooter used originally. JSP stands for JavaServer Pages, a particular programming and development environment used to create dynamic web pages ("JavaServer Pages Overview", n.d., para. 1).

Peter says the Law School server is running Tomcat, MySQL, and JSP. Tomcat is an application which, among other things, allows a web server to host JSP content ("Apache Tomcat - Welcome!", 2011, para. 1). MySQL is a common database server often used to store information for dynamic web pages ("MySQL :: MySQL Editions," 2010, para. 1).

Peter describes some of the "dynamic stuff" he is currently responsible for: a calendar system where events are submitted and then approved and posted on the website; bio pages for each faculty member built from information stored in a MySQL database; and course pages and course listings built from another MySQL database.

I ask him if all these pages are being transitioned from the desktop machine to the new server he mentioned earlier. He tells me he is doing it piece by piece. He has the new server running Microsoft Server 2008, the newest version of Microsoft's server operating system. He also has MySQL installed on it. They want to get IIS and Tomcat running, but that will require a little more work. IIS stands for Internet Information Services and is Microsoft's web server software ("Overview: The Official Microsoft IIS Site," 2011, para. 1). Peter tells me Don is an

ASP programmer and has been working to make IIS and Tomcat work together. ASP.NET is another web development environment, similar to JSP, but released by Microsoft ("Get Started with ASP.NET: The Official Microsoft ASP.NET Site," 2011, para. 1).

In other words, Peter is proficient in JSP, which is what the Law School website currently uses, and Don is proficient in ASP.NET. These are both software environments that enable the Law School web server to provide dynamic content. Their plan is to implement a hybrid solution that uses the Microsoft IIS server for ASP.NET content and the Apache Tomcat server for JSP content. They are working together to make that happen on the new server. This is fairly technical work which requires Peter and Don's simultaneous attention, and it could be a time consuming project.

Peter hopes they will have time over the summer to fully implement the new Law School web server, but he isn't sure. He tells me the Law School rents out space, especially the large courtroom, for a number of events over the summer. The Law IT Office is responsible for making sure all of the AV equipment, including screens, projectors, cameras, and microphones, are functioning. As I would later witness, they are also responsible for training outside users to use the Law School equipment and for providing immediate assistance during the events.

Peter tells me other projects may also prevent them from working on the new server. For example, the Law School recently started an LL.M. degree program. This is a more specialized degree usually pursued by those who already have a J.D. but wish to gain expert knowledge in a particular field of law ("LLM GUIDE - What is an LLM?", 2011). Peter recalls a discussion about setting up the LL.M. portion of the Law School website: "They requested a form, then the dynamic side of the website kicks in... A professor is like, 'it'd be great if it did this or that,' and I'm running through in my head, well that'll be days of work." Peter tells me these faculty

requested projects generally take priority over the work he and Don are trying to accomplish on the new server.

He and Don also recently setup a private data server for the Law Clinic and spent time working on a new admissions systems. "Needs are always evolving, always changing. We are just trying to give people what they want," says Peter. I ask about the private data server: What is it used for and how did they set it up? Don tells me they didn't want to get into it because he fears they'll get fired if there is a security breach. He explains, the Law Clinic is a law firm housed within the Law School. All of their data is protected by attorney client privilege, and it would be very bad if someone gained access to what should be secure private data about clients and cases. The Law Clinic's security requirements are well beyond what the University or Law School would normally offer. Peter reminds Don that the Dean promised not to fire them if there was a problem with the server, but Don laments that the faculty may have asked for too much with that project.

Peter tells me neither he nor Don have any formal training in server administration. Don says, "It is one of these things. The Dean says, 'Oh, it's technology. You guys do it'. We have a general policy that we don't say no." I would hear that policy from everyone in the Law IT Office throughout my research, and it came to define an important aspect of how the Law School IT staff thinks about technology use and their role in the Law School.

Don gives me a brief explanation of the technology they used to isolate the Law Clinic server from the rest of the campus network. Some security folks from ITS helped them with the initial setup. He tells me another group within the Law School found out they were hosting secure client data for the Law Clinic and requested the same thing. They provided a similar setup for this group: "Once we are in the private data world, why not."

Peter says it would be helpful if ITS would provide a secure private data server they could use instead of the Law School having to provide its own. I ask Don and Peter how regular law firms solve this problem. Don tells me most law firms are "boutiques." Small businesses that contract out their IT work. He says he knows a lawyer who keeps a Microsoft Exchange email server in a closet at his law firm, but that isn't the norm.

Don and Peter return to work. Michael returns from delivering the data transfer cable to the faculty member on the fourth floor. He sits down at his desk and begins working on a new MacBook Pro. Peter points at the Mac and tells me, "That is an interesting story, The Mac PC." Michael tells me the professor thought he was ready for a Mac, but he wasn't. They put Boot Camp on it and then put Windows Vista on it. Michael says it worked fine until a Microsoft Windows update killed it. Peter adds that some people don't want to transition from using a Mac to using a PC because they have to relearn everything they know about computers.

Later that week, I asked Michael how it was going with that Mac laptop, and it led to a conversation about how he handles reporting to both Don in the Law IT Office and to his Troubleshooter supervisors at ITS. He told me he recently had some issues with regard to both faculty interactions I witnessed on my first day of observation. Michael solved Claire's issue with her private Palm Pilot calendar by installing Windows XP on a Dell laptop purchased with the newer Windows Vista. He helped the owner of the new MacBook Pro by using Boot Camp to allow him to continue using Windows. In both cases he did what Don and the user wanted, but was taken to task by his ITS supervisors: downgrading from Vista to XP and running Boot Camp are not ITS approved solutions.

In his interview, Michael reiterated his attitude toward these restrictions: "Whether it's planned or unplanned, hardware, software, whatever it is. People are still people inside. They're

not machines... We still try to treat people like people as opposed to just a number." (Michael, int 20100311). In one of his interviews, Don reported, Michael "has hard lines... which I think he's willing to cross over those lines if I ask him to." and that this attitude is "critical" to his success in supporting the Law School (Don, int 2010212).

After a few minutes of Don, Peter, and Michael working quietly at their desks, Peter swivels around in his chair and tells me jokingly, "I'm logging into Facebook for work." He explains he is creating a Facebook page for the Law School class of 2013. They are trying to, "get on the social networking bandwagon" like everyone else. Last year they took bets on how many students would join the class of 2012 Facebook page. Everyone else guessed low, but he guessed high. They ended up with 98 to 99 percent of students joining the page. After he setup the page, he was able to turn over daily control to a few students. Students were able to join the Facebook page as soon as they were admitted, so they used it to setup roommates, arrange play dates for their kids, and find climbing partners; all prior to arriving in town for school. Peter says the Law School doesn't have a Twitter feed, but they do have a LinkedIn group. He adds, "You've got to be on Facebook these days. Everyone is on Facebook."

Peter tells me the admissions office requested an admitted students' portal: a website where each student could log in with an individual username and password and access information such as the invitation to join the Facebook page. Instead he setup a simple site protected with a single password. They just emailed that password to all of the admitted students. Setting up the portal site would have been overkill. Unfortunately, Peter has forgotten the password, and he calls to Don to see if he remembers.

Don doesn't respond to Peter's question, but instead excitedly calls me, Michael, and Peter into his office. We gather around his monitor. He shows us an application displaying

information about the current state of the AV equipment in each classroom in the Law School: which projectors are turned on, which AV sources are selected. Don explains, all of the classrooms use Crestron touch screens to control the AV equipment: turn on and off the projectors, select audio and video sources, adjust the volume, etc. He just setup the Crestron Roomview application to remotely monitor these AV controllers. The Law School also has a number of Crestron interactive digital kiosks, and Don shows us how those can be monitored and controlled with the Roomview application.

Don says one of his goals is to "share everything", meaning Peter and Michael could also access this software and share the responsibility for ensuring the kiosks and classroom AV equipment is functioning. He would like to display this information on the 26 inch TV that hangs on the office wall. I ask if that is why they bought the TV. Don admits he actually bought it to be his own desktop monitor, but the image quality was insufficient for that purpose. Now they use it to monitor the cameras in the large courtroom and keep an eye on events. Confirming the value of remotely monitoring their AV equipment, Peter comments, "We are slowly becoming a real shop."

Michael asks Don what software is running on the kiosks. Don tells Michael he can be in charge of the kiosks now. They are running a POS version of Windows XP. Don laughingly clarifies, "point of sale" and not "piece of... sale". It is a version of Windows designed for cash register systems. We can see on Don's screen that two of the kiosks are frozen. Don tells Michael they just need to be rebooted. Michael asks if they are network computers that don't have hard drives but get all of their software from a server. Don tells him they are full computers with IP addresses; meaning they exist on the campus's computer network just like a desktop or server would.

As we file out of Don's office, I see that it is lunch time. One of my own employees texted me earlier to ask if I wanted to go to lunch with them. I've been devoting a lot of time to preparing for this field work, and I haven't spent much time at my own IT support job or socializing with my employees. I text back to see if they can pick me up. Looking at the pages of notes I've taken, I tell Don, Peter, and Michael that I've collected as much data as I can for one day. I let them know I'll be back soon, and head off to lunch.

Pattern and Complexity

Looking back at my first three hours of field of work in the Law School, I am struck by two realizations. First, even at this early stage, it was clear that the landscape of technology use and support at the Law School was extremely complex. In my first three hours, I witnessed Peter, Don, and Michael working with at least 13 different issues ranging from immediate tasks such as assisting a faculty member with a Personal Digital Assistant and clearing a virus from an infected staff machine to long term projects such as setting up new server hardware and teaching themselves to build a Law School intranet with Microsoft SharePoint.

The complexity of technology use in the Law School was not merely a function of the abundance of technologies in use or the variety of technology related activities. It was also a function of how these artifacts and activities were linked to each other, to the Law School faculty and staff, and to relationships and social structures at the Law School, the University, and beyond. In other words, each of the technology related activities I witnessed involved a highly contextualized system of technical, organizational, social, and interpersonal links.

My second realization is that many of the links and relationships I glimpsed on my first day were indicative of important patterns which reoccurred in later observations and interviews. Peter's work on faculty requested projects, Michael's tension over Law School demands and ITS

policies, Don's delicate, if slightly frustrated, handling of Law Library politics, as well as the Law IT Office's general commitment to be responsive and helpful and their tendency to laugh and joke in the face of potentially aggravating work, remained prominent throughout my observations and interviews.

The goals of this chapter are to describe the patterns and complexity of technology use at the Law School with the methods and ideas suggested by the figured world and identity concepts. This chapter will examine specific examples of technology use within four important Law School activities: teaching, research, administration, and IT support. Relying on both observation and interview data, I will provide thick descriptions of these specific technology activities. Examining the artifacts, activities, concerns, narratives, and roles involved in these examples will provide a general sense of the technology landscape of the Law School and show how a figured world and identity approach may be applied to achieve a highly contextualized understanding of local technology use.

Teaching with Technology

In an educational institution the most obvious place to start an examination of technology is in the classroom. As a state-of-the-art building, every classroom in the Law School contained a digital projector and the AV hardware required to hook up a laptop, playback a DVD, or connect additional AV sources. The Law School also contained two courtrooms with multiple integrated projectors, cameras, and microphones, as well as a shared AV control room stocked with mixers, monitors, and recording devices. There was no shortage of hardware and no scarcity of technology, and my observations and interviews focused on when, how, and why Law School faculty chose to use these resources. Three areas of technology use were particularly present in the faculty's teaching: the use of Microsoft PowerPoint in the classroom; attempts to capitalize

on the available AV resources by pushing classroom presentations beyond static slides; and the use of what Peggy referred to as a "Learning Management System", namely, TWEN (The West Education Network), a web-based tool used by Law School faculty to communicate with students and share resources such as electronic course materials and links to other websites (obs 20100120).

Microsoft PowerPoint. At the Law School, as in many organizations, Microsoft PowerPoint was often used for computer-based presentations. PowerPoint was freely available to all Law School faculty via a campus-wide software license managed by ITS. Along with the rest of Microsoft Office it was part of the basic suite of applications present on most Law School computers. Of the five Law School faculty members I interviewed, four were currently teaching. Three reported using PowerPoint as a basic part of their classroom practice, and the fourth reported using it with larger classes and at conferences but not in his smaller courses.

Discussing their everyday technology use, Mohinder stated, "I constantly use PowerPoint in my classes." and Angela stated, "In the classroom, I have regularly used PowerPoint." (Mohinder, int 20100409; Angela, int 20100503). Recognizing it as a basic component of his teaching, Mohinder referred to PowerPoint as the "bread and butter" of his classroom practice (Mohinder, int 20100409). While Lyle reported finding other types of AV presentations unnecessarily time consuming and unreliable, he continued to use PowerPoint in his teaching.

My classroom observation opportunities were limited to two sessions, and both involved PowerPoint presentations. In an interview, Angela explained that she used PowerPoint to "contextualize" class discussions by displaying statutes and other reference material on the classroom screen (Angela, int 20100503). In the class I observed, Angela setup the screen, projector, and her laptop prior to beginning class. She introduced the topic of Antitrust law in

Healthcare and lectured for some time without reference to the projected image. When she reached the point of going over Antitrust terminology, she brought up a PowerPoint slide containing definitions. Later in the lecture, she referred to a slide which contained specific antitrust statutes. When the class transitioned from lecture to a discussion of the reading, Angela moved back and forth between the slides as both she and students referred to different information.

The only technical issue Angela experienced, besides her early observation that my presence in the class would ensure some embarrassing display of technical incompetence, was when her laptop's screen saver activated and the slide of reference material was replaced with pictures of her and her husband on vacation. She laughed this off and resorted to periodically touching her laptop keyboard to prevent a reoccurrence. It is worth noting that Angela was the Dean of Academic Affairs in the Law School and was generally regarded with deference and respect by staff and students. While a few students politely laughed at the self-deprecating remarks concerning her technical prowess and unintentional vacation slideshow, most seemed fully absorbed in their attempt to follow the discussion and avoid being embarrassed by Angela's unsympathetic assessments of erroneous or irrelevant comments.

Discussing his reliance on PowerPoint, Mohinder stressed the wide use of PowerPoint outside of the Law School: "I'm very comfortable also because I speak largely in conferences... in numerous conferences that are attended by non-lawyers. The language in many of these science conferences and non-legal conferences is PowerPoint.". He doubted that law students recognized the need to efficiently communicate and absorb information through this medium: "I don't think law students get anything like what regular professionals get out of a PowerPoint, and I think students across campus... are much more receptive to it than our students are typically..."

They want it to be spoken out so they can take notes, you know." One of his goals was to familiarize the students with absorbing the "condensed material being given... in a graphic": "Now I keep telling the class, you know, don't just sit there, mouth open when you're in class. Because the PowerPoints actually have a lot of preparation going into them." (Mohinder, int 20100409).

In line with his desire to have students recognize the ability of PowerPoint to efficiently convey information, Mohinder asked his students to prepare their own presentations. The class I observed consisted entirely of student prepared and presented PowerPoint presentations. To give their presentations, the students connected their own laptops to the classroom AV system. Mohinder passed around a USB flash drive to collect the PowerPoint files from the students' computers. Outside of a few minor glitches, the presentations were completed without any technical difficulties.

PowerPoint use appeared to cause few technical issues, but the faculty were not entirely uncritical. Mohinder questioned his students' ability to fully engage his carefully prepared slides, but asserted it was "something they have to get used to" due to its wide use outside of the Law School (Mohinder, int 20100409). Angela, Nathan, and Lyle were all critical of PowerPoint's applicability in certain teaching situations. Lyle stated, "PowerPoint is good for a lecture, but the blackboard is better for problem based courses" (Lyle, int 20100408). Nathan stated he used PowerPoint for large classes, but it was "too linear" for small lecture courses where he "didn't know where the lecture will take me." (Nathan, obs 20100316). Angela articulated the problematic evolution of her PowerPoint use:

Probably half my career, I didn't use any technology in the room at all. And then what happened was... I went back into practice for a short time, and I was a

litigator. And people were using PowerPoint with juries... I think classrooms are like having juries that talk back. So there was this aha, that this new fangled thing called PowerPoint would be great in the classroom. Well, honestly, I'll tell you, when I first started using PowerPoint... I thought it was really awful because all it did was have people read and copy instead of talking to me during class. So I stopped using it for a long time... Then I started teaching these complex regulatory courses, and in order to make people engage with the statutory language, I thought, ok, I'm going to put things up that I need them to think about collectively for a long time. Still, students say, "Ooh, can I have your PowerPoint slides?" and what they really mean is, "Ooh, then I don't have to do any work on my own." I still hate that aspect of PowerPoint, to be honest with you. (Angela, int 20100503).

Lyle summarized similar feelings: "I'm ambivalent about PowerPoint, but I trust the students who say they like it... It is time consuming, but improves teaching outcomes." Angela observed that her limited reliance on PowerPoint limited the impact of technical problems: "If it doesn't work, I just use the chalk board and say, 'Oh well.'... I don't rely on it to do that heavy lifting for me... we'll just have the discussion anyway." (Angela, int 20100503).

Audio Video Technology. When asked about classroom technology use, all four teaching faculty brought up technologies they regarded as less linear and more dynamic than PowerPoint. However, in most cases, this technology was also considered more problematic and prone to failure. Angela and Lyle both liked the idea of using a Smart Board, an interactive whiteboard that allows a presenter to use markers for live editing of digitally projected slides and images, but both reported giving up on the technology when problems and inefficiencies outweighed

perceived benefits. Angela started using the Smart Board as part of a "self-imposed program to try one new technology per semester." She initially, "thought the wisdom of the Smart Board was that I could show things in real time... and then save it." But stated that in practice, "I found myself spending a lot of time trying to figure out what to use it for." (Angela, int 20100503). After experiencing technical glitches, Lyle concluded the Smart Board was, "a pain to use... it is not realistic." (Lyle, int 2010408), and Angela decided, "the kinds of concepts I teach... aren't any more clear using the Smart Board than they would be if I was just using a chalkboard." (Angela, int 20100503).

All four faculty also reported attempting to integrate video footage into their classes, but all four encountered issues. Angela worked with Peggy on accessing video clips from youtube.com. While generally valuable, she had been, "disappointed if a clip doesn't work." (Angela, int 20100503). She reported she was still working out the best way to integrate these clips into her teaching:

Some of them didn't work because they were too long. Like at two o'clock in the morning when I'm getting ready for class, oh, all of this is so good. And then I turn it on, and it's seven minutes, and that's just way too long... I consider that not working. Like it sounded like a good idea, and then when I execute – it's not such a good idea. (Angela, int 20100503).

Mohinder and Lyle both expressed interest in integrating video into their teaching, but stumbled on technical details. Lyle said he occasionally based critical discussions around movie clips shown during class. He had success showing the movie Startup.com, a 2001 documentary about the failure of a media company, and found it, "allows students to see up on the screen what we're talking about in class." However, despite being, "pretty tech savvy," Lyle had experienced

audio problems with other video clips. He found this type of technical issue, "brings the class to a standstill." He concluded there was, "no seamless way to embed youtube videos into PowerPoint" and "shied away" from frequently using videos in class (Lyle, int 20100408).

Mohinder reported having been inspired by a colleague at a conference using videos integrated into a PowerPoint presentation, but, "I came back and asked people here. They couldn't do it." He was having similar issues with webcasts:

When I talk to this guy from New York who called me yesterday and said, you know, he couldn't come for my talk, but he was going to listen to the webcast, I said, "What is that?" And he said, "Oh. Pfff. Every university does this. And it's part of what I do. I listen to webcasts all the time." So I thought, man, nobody told me about webcasts (laughs). (Mohinder, int 20100409).

Mohinder told me he was going to talk to Don about setting up webcasts of his talks and events in the Law School courtroom.

Nathan had an all together different issue with his attempt to integrate video into a class. He told me the story:

Last year... in my judicial opinion writing class – there's an excerpt from a Law & Order episode that I assign to students, that was available online at the time. It was from what was then the current season... say, you know, skip ahead to three minutes, twenty nine seconds, and watch until forty five whatever, and think about these following things. This year... the link had changed, and I had to go all over NBC.com, and it's no longer anywhere on the public site. I did site searches. I tried to find it in different ways. So, I ended up having to email NBC to see if I could get permission to use it – haven't heard back from them, which is weeks

ago. My class is tomorrow, when I needed to do it. And so, in terms of self help, I figured, at this point, trying to make some sort of formal request for a non-commercial, educational use, fair use, type of thing just isn't going to happen. So I just went to Amazon and downloaded it for like a buck ninety nine out of my own pocket, and figured, you know, it's kind of like the third grade teachers going to buy crayons. I'm just going to spend two bucks on this video. So now I have it on my own machine. I don't, I'm not, I was tempted to make a clip of it using third party software and upload that for the students to view ahead of time, but it's outside the scope of my use, and I don't want to take the time to actually figure it out, and it was so much easier last year to just say, here's a link... I'm not sure if I'm going to be able to use it at all, but I'm hoping to at least show it in class. Or maybe somehow put it on reserve. (Nathan, int 20100413).

Each of these faculty members expressed interest in using videos in their classes. Lyle, Nathan, and Angela had all spent time working with videos, and Mohinder expressed plans to do so. While all of them had experienced some technical, or legal, issues with video use, none of them reported having given up entirely.

A prerequisite for the use of technologies like PowerPoint and video in the classroom is the availability and support of classroom Audio and Video hardware. Classroom projectors and other AV equipment were ubiquitous in the Law School, and AV technology was a central part of technology use at the Law School. Each Law School classroom contained a permanently installed digital projector as well as a DVD player and touchscreen controller. Additional AV equipment such as video cameras and digital audio recorders were also available and often used.

The centerpiece of the AV technology in the Law School was the main courtroom auditorium. This large room took up a significant portion of the ground level, and included multiple cameras, microphones, speakers, projectors, and screens. It also included a control room with monitors and a rack full of professional sound and audio equipment. Mohinder described the courtroom as a "really good, smart, and lovely auditorium." Discussing his use of the AV equipment, he stated, "we try to use all the technology in that auditorium" including the multiple projectors and screens (Mohinder, int 20100409). He also reported using recordings of conference proceedings to transcribe speeches and post the text on his research center's website. Peter lauded the technology in the Law School courtroom over setups he had seen elsewhere on campus with portable projectors and "bad speakers": "Once people use this, they make it their go to place... No wonder people like the Law School" (obs 20100119).

The investment in AV technology in the Law School did not stop at hardware. The IT staff spent a great deal of time on AV training, support, and projects. Much of Peggy's one on one training with faculty involved the classroom AV equipment, including how to setup a laptop to work with the classroom equipment and guidance on integrating videos, live document editing, and internet resources into teaching. Peggy listed "classroom AV" along with Microsoft Word and Microsoft Outlook as the three basic technologies all faculty needed to know (Peggy, int 20100520). To facilitate use of these resources, Don and Peggy worked together to create and maintain instruction sheets for the classroom AV equipment. These were available on the Law School website and were posted in each classroom.

Don, Peter, and student IT employees also provided AV support for events in the courtroom. For example, despite Don's assertion that "nobody paid for support" for a particular event, he spent almost an hour showing a presenter how to connect her laptop to the projector in

the courtroom and told her someone would "come running" if she had a problem during her event: "I'll make you a deal that I'll be around." (obs 20091228).

In the Fall of 2009, the University campus began to prepare for the possibility of an H1N1 epidemic, and AV technology was at the core of the Law School's response. The Law School IT department purchased a number of portable audio recorders which provided faculty an easy way to record their classes. These recordings were meant to encourage sick students to stay away from campus. The recording devices were available for faculty to check out from the Dean's Office, and Peter retrieved the audio and posted it to the Law School website.

Peter also spent a significant amount of time editing and preparing videos for Law School faculty and research groups: "The needs for media changed in the last few years and everybody wants video and usually streaming video of a conference... they want that video available either hours later or days later." (Peter int, 20100525). Peter converted digital videos captured with one of the Law School's tape-based cameras or recorded onto DVD by the courtroom's DVD recorder into a format that could be posted on the Law School website or youtube.com. He performed some light editing, "you just trim the beginning and end and get it up there," and worked on more time consuming "custom videos" that, "require a lot of interviews and editing, and you spend a lot of time with it." Peter reported the demand for these more involved projects, "has been creeping up more and more in the last few years" (Peter int, 20100525).

Don also spent time on video production. Peter told me Don and the wife of the Dean spent up to three weeks working on a "super high quality" video for the annual alumni banquet. This video, honoring a particular alum, consisted mainly of interviews. Peter said it, "looks like something produced out of Hollywood" (Peter, int 20100525). Peter explained that he mostly used Microsoft Movie Maker to, "Get it done. Move on with your life." Whereas Don's

background with Adobe products allowed him to create more professional looking videos but required a great deal more time (Peter, int 20100525).

The most significant investment of Law School IT resources into AV technology was the setup of a new process for capturing and processing videos from the courtroom. An alum of the Law School, who was also a former student employee of the Law School IT Office, worked with Don to setup a Linux-based server to directly capture courtroom video to a format appropriate for internet streaming. Peter added video streaming capability to the Law School web server and created a standard way to link videos to courtroom event listings. The courtroom was originally setup to provide DVDs of recorded events, but Peter explained the need for this new system: “Nowadays, no one wants a DVD. You hand them a DVD, and they say, what am I gonna do with this. They want it up on youtube, and they want it right away” (Peter, int 20100408).

Though Peter and Don invested significant time and resources into keeping up with the demand for recording and streaming videos for Law School courses and events, they and others worried that some of the Law School's more basic technology infrastructure, especially the classroom AV systems, might begin to fail. As Dean of Academic Affairs, Angela was aware of the problem:

We brought the building online in 2006, as well as all the technology, and it's just, it's going to all crash at the same time... that's going to be a big problem... the bulbs are all going to go out. The buttons are going to stop working. The wires are going to fray. Things get old. I know this. Right. And that's a problem. (Angela, int 20100503).

Peggy, who spent a lot of time training faculty on the use of the classroom AV systems, recognized a disturbing detail: "I'm sure that the classrooms that are used more frequently are the ones that are going to burn out faster" (Peggy, int 20100520).

During an interview, I asked Don directly about the AV infrastructure issue. He responded, "It's on my mind, but I haven't thought it through enough to make a plan... So it's fix things as they break is the plan right now." (Don, int 20100602). For Don, the main issue was budgetary: "It's been a fight, although the Dean is on. I have a commitment from him now to have money for that, but it's on an as needed basis." (Don, int 20100602) Peggy, who was an ITS employee, recognized the Law School didn't have, "That ITS R&R thing. The renewal and replacement plan." (Peggy, int 20100520). Aware of ITS's commitment to scheduled upgrades of campus-supported AV equipment, Don reported, "Our Dean has this pipe dream... of having central campus funding that. So, he's just dragging his feet... we shouldn't have to pay for the technology. Central campus should if they can come in and use our rooms." (Don, int 20100602). Don's implicit support of the Dean's plan to involve ITS in funding replacements was tempered with the realization that stalling might put the Law School in a bad spot: "So the plan, at this point, is replace things as they break. And that will stay in effect until things are breaking a lot. We may very well have a problem with DVD players this year. Like right now." (Don, int 20100602).

The West Education Network. Another area in which Law School technology split from the rest of campus was their choice of an online learning management system. A campus-wide solution was provided by ITS, and training and supporting faculty use of this system was the responsibility of ITS's team of Academic Technology Specialists, Peggy's counterparts in other schools and colleges. Peggy reported that for Law School faculty, the choice of online learning

environment did not include the campus-wide option. Instead, it was between services offered by the two large subscription-based law research companies: Westlaw and LexisNexis.

Peggy explained that TWEN, the Westlaw system, was more popular among faculty because when it first came out it was seen as the "more robust" of the two solutions (obs 20100120). Though Peggy did not elaborate on that statement, the three teaching faculty I interviewed who mentioned using online learning systems specifically referred to TWEN. In response to a question from Noah, a faculty member whom Peggy was training to use TWEN, Peggy reported knowing of only one faculty member using the LexisNexis system.

For Mohinder, who relied heavily on PowerPoint to present information to students in the classroom, TWEN provided a means of extending digital communication: "I put the PowerPoint on TWEN. So it's part of their materials." In addition to PowerPoint files, Mohinder had a number of digital sources he distributed to students, and TWEN was essential to this process:

I couldn't do without TWEN because... all the materials that are collected are obviously on my computer, and I load them on to TWEN... Their reading consists of materials that are on TWEN... so they are not supplied with a printed folder, you know, which they buy. They just go to TWEN and download it. (Mohinder, int 20100409).

Mohinder also used TWEN to manage his course and his interactions with students: "I also communicate with my students on TWEN. There are sign-ups for meeting with me on TWEN. The syllabus is on TWEN. Everything, basically, is on TWEN. I don't give out any papers or paperwork." (Mohinder, int 20100409).

Mohinder believed his use of TWEN exceeded what most of his colleagues were doing, and Peggy's assertion that most faculty used it merely as a "course material repository"

supported this. For example, even Lyle, who had a reputation at the Law School for his blogging activity and reported using interactive online sites such as blogs in some of his classes, stated he mostly used TWEN as a basic way of posting materials for students.

Some aspects of TWEN seemed to encourage this limited use. While Peggy was training Noah on the use of TWEN, he had no problem with the basic mechanics of the site, which allowed him to create a space for his course and post his syllabus and other materials. However, Noah also had the specific goal of using the site's discussion feature to provide his students with detailed answers to student-generated questions; like an FAQ. This proved difficult to implement within TWEN's open discussion forums, in which all posts from all students were equally available to the class. Noah wanted more control over the questions and responses; the ability to moderate questions and only post discussions he deemed important.

After he became frustrated with the discussion features of the TWEN system, Peggy suggested he should instead have students email questions directly to him and use TWEN to simply post the questions and answers he wanted everyone to see. Unconvinced of the usefulness of the system in general, Noah asked Peggy to show him some other Law School course sites on TWEN. As they looked through these, Noah pointed out that all of the discussion sections for other courses had zero posts, and Peggy confirmed that the system is often just a "document repository". Noah ended the training by telling Peggy he had enough information about TWEN and, "would just chew on it for a while." As we walked away from Noah's office, Peggy observed that Noah is technology oriented in many respects, but he, "wants to do something and get's really frustrated if the technology doesn't let him do it." (obs 20100120).

Artifacts and Concerns in Teaching with Technology. It is clear from the above examples that PowerPoint, AV technology, and TWEN are integral parts of the technology landscape at the

Law School, but are they parts of a figured world of technology use that might exist among the Law School faculty? I showed in chapter two that the key to observing a figured world is to observe and recognize some or all of the five aspects of a figured world in a given context: artifacts with shared and special significance, common roles or characters individuals fulfill in this context, common concerns or attitudes, common activities and understandings of those activities, and common narratives or understandings about the proper or expected way events should progress or unfold. The following section will show that many of these aspects of a figured world are present in my account of teaching with technology at the Law School.

As a particular piece of technology, PowerPoint had special significance not only as a de facto standard for giving presentations, but as a large part of what Law School faculty considered teaching with technology. PowerPoint was the first piece of computer-based technology Angela ever used in her teaching, and Mohinder referred to it as the “bread and butter” of his teaching practice. PowerPoint’s central role in teaching was also evidenced in Lyle and Mohinder’s frustration with using videos in their course presentations. This frustration was not about playing DVDs or even streaming youtube videos for their classes, but about trying to integrate these videos into their PowerPoint presentations. If videos could not be integrated into PowerPoint, then using videos in class was seen as problematic.

Despite these reported problems with videos, AV technology and the use of digital media in teaching were an important part of technology use at the Law School. Spanning multiple technologies and incorporating a number of individual pieces of hardware and software, the fascination with AV technology, and the idea that it was a worthwhile and effective use of time and resources, was a common attitude at the Law School. The building itself, with projectors and DVD players in every classroom and a courtroom setup like a soundstage, with multiple

cameras, microphones, projectors, and a production control room, was an important part of this concern.

The prevalence of AV technology at the Law School was also linked to the Law School IT staff's specialized role as media processors and producers. Much of my time in the IT office was spent observing Peter processing and editing videos or troubleshooting the software and hardware he used to do this. According to Peter, Don also spent a week or two each year working on a highly edited and produced video for the Law School Alumni Banquet. The clearest evidence of Peter and Don's role as media producers was the investment of time and money into a project to facilitate the video capture and streaming of courtroom events. According to Peter the new server was not a pet project, but a response to a continued and increasing faculty demand for streaming video.

The Law School faculty's wide use of TWEN, a system provided by a well-established legal database provider, rather than a campus-wide solution providing similar features, highlighted the faculty's connection to the legal profession. This role played out in other teaching with technology choices as well. Both Angela and Mohinder were inspired to use PowerPoint in their teaching after recognizing its effectiveness in their legal pursuits; Angela in litigation and Mohinder as a legal consultant at industry conferences. Similarly, Lyle's use of blogging, which he now used in his teaching, had begun with his writing of a blog intended for other legal faculty. Nathan's professional concern with fair use and copyright actually impeded his classroom practice when he decided not to exceed or circumvent the scope of use on a video he had purchased.

As artifacts commonly recognized as valuable educational technology tools, PowerPoint, AV Technology, and TWEN were all markers of a figured world of technology use among Law

School faculty and IT staff. PowerPoint and TWEN were significant technology artifacts serving as de facto standards for teaching. Faculty and IT staff also shared a common concern with AV technology. It was a prevalent topic of interest to faculty, a constant source of work for IT staff, and a ubiquitous feature of the Law School building itself.

A Narrative of Technology Choice. Though the Law School faculty's roles as legal professionals impacted their use of technology, this role was only part of a wider shared narrative about the process of adopting technology for teaching. Expressed in a number of faculty accounts of technology adoption and evident in observations of faculty technology use, this narrative outlined the path faculty took in recognizing, researching, evaluating, and using new technologies.

The first part of the process involved finding out about new technology or reevaluating the usefulness or applicability of a known technology. A common strategy for making these decisions was looking around at what other faculty and colleagues were doing. For example, during his TWEN training, Noah asked Peggy how other faculty used TWEN and was curious about the one faculty member who chose to use the LexisNexis system rather than TWEN. Similarly, as noted above, Angela and Mohinder's use of PowerPoint was inspired by their observation of its effectiveness among their non-teaching colleagues.

This looking around strategy was augmented by an idea that it was best to be deliberate in choosing whom to look at. Lyle, whom Michael and others referred to as a technologically savvy faculty member due to his blogging, would talk to "early adopters in teaching" both at the law school and at other institutions and also "touch base" with Don and Peggy as he considered using something new. Angela named three specific faculty members she listened to when they said, "you really ought to check this out" and explained the importance of their judgment in her

decision to use electronic clickers – remote controls given to students that allowed for a digital display of multiple choice responses:

I trust that they are using it to a purpose that I can identify with, right... [Janice] is one of the best teachers in the building, and [Isaac] is one of the best teachers in the building. And if he says, "Clickers have helped me show students over real time how their viewpoints change, or how they're exposure to different evidence, or different facets of the law, changes." If I can think of something that, boy, educationally, that's going to make them into better lawyers... they're going to have a better encounter with the material because of that. Those are people that think about those kinds of things... That's why I rely on those people to think of it. (Angela, int 20100503).

While each faculty member generated a unique list of knowledgeable colleagues they looked to for ideas about using technology, there was significant overlap. Sam made everyone's list. Sam was a faculty member who specialized in computer crime and intellectual property law and had a history as a programmer and IT professional. He was cited as a technology leader by all four teaching faculty as well as both Don and Peggy. Other names came up multiple times, including Lyle and Nathan, who were seen as savvy technology users, Don and Peggy, and Isaac, who led the Law School's technology committee and whom Mohinder reported, "basically setup this IT department."

Don and Peggy had also formalized this peer based learning by creating a series of faculty-led talks about technology use. Peggy explained:

The Technology Topics Brown Bag Series... I thought were really cool because not only did they showcase faculty's work, it allowed other faculty members to

learn from their peers about what they're doing and how they might be able to use those technologies. (Peggy, int 20100207).

Peggy attributed some of the success of these talks to the cohesiveness of the Law School faculty:

I would invite the other [Academic Technology Consultants] to come too so they could learn about the technology, but also kind of see how this forum worked at the Law School. And a lot of them, they can't even think about doing something like that. Because, they'd say, trying to convene the faculty members at the same time of day? Yeah right. (Peggy, int 20100207)

The first part of this story involved making wise decisions about where to invest the time and effort of working with a new technology. The primary means for accomplishing this was relying on trusted sources and commonly recognized technology leaders. While each faculty member had a unique list of people they looked to for technology guidance, there was also a set of people in the Law School who were generally recognized as trusted innovators. This peer based learning about technology was also formalized by Don and Peggy into faculty-led presentations on innovative technology use.

Once faculty had decided to pursue a new technology, they moved on to a stage of learning and evaluation. This stage might include working with Peggy or Don to learn more about the technology. Peggy's schedule included helping a faculty member hook up a tablet PC to the classroom AV system, showing another faculty member how to do live editing of Word documents in front of her class, guiding Angela through the pitfalls of using the internet "on the fly" in the classroom, and introducing Noah to the TWEN system (Peggy, obs 20100120).

The chance to play with and test new technology in non-critical situations could also be an important stage of evaluating technology. Noah recognized Peggy's training could only take him so far, and after an hour of working with her on TWEN, he wanted to, "just chew on it for awhile." (obs 20100120). Lyle, who was, "using dictation software as an experiment... for commenting on students' papers," (Lyle, int 20100408) and Nathan, who, "was on the beta team for Office 2010 and Windows 7," (Nathan, int 20100413) were constantly testing and playing with new technologies on their own. As Lyle put it, "I'm always buying toys," and as Nathan put it, it was, "always something I was interested in."

Whether faculty enlisted the help of the IT staff or went about it on their own, learning and experimenting with new technologies was ultimately about efficiency and utility. The sentiment that technology was a tool, a means to an end, was a common refrain across all four interviewed teaching faculty. Nathan stated:

I think it is just another tool. A great tool, but it's high tech, low tech, hammer, electronic hammer, electronic screwdriver, old screwdriver. They're just tools...

And so I try and think carefully about all the tools in my arsenal... which ones are the best to meet my goals. (Nathan, int 20100413).

Mohinder, who was adamant about the benefit of using PowerPoint and TWEN in his teaching, nonetheless expressed a similarly utilitarian view: "Basically, I think, the bottom line as to why I do technology is I want to be more efficient at what I do. And technology helps me to do it. There's nothing else that drives me." (Mohinder, int 20100409).

This analysis of efficiency was related to a common concern with time. Nathan linked this concern to attorneys' billing practices and the assumption that greater efficiency could allow one to poach a competitors' clients:

Most private lawyers bill by the hour, and so the lawyer who can provide you the same answer in half the time as everybody else will have half your clients. So the ability to find ways to optimize your process... is crucial. (Nathan, int 20100413).

Angela explained how her role as Associate Dean, with a lot to do and a hand in shaping the Law School budget, affected her evaluation of technology use:

Now, I think because I'm an administrator... unless I'm going to use it a lot it doesn't make sense to invest in both the time and expense, financial expense, of doing something. So, just because it's available, doesn't make it efficacious for me to use. (Angela, int 20100503).

Mohinder also reflected on faculty's use of time: "We have very little time, and we're not in an area where you really want to spend a few days doing something other than your own research and writing and that kind of stuff." (Mohinder, int 20100409).

The idea that faculty often needed to focus on teaching and research rather than learning about technology was echoed by Angela and Peggy. When Peggy reported to Angela's office for a scheduled training, Angela backed out saying, "I'm too busy to think about using the internet in the classroom." (obs 20100120). A few days later, during an IT staff meeting, Peggy let Don know about a "senior faculty directive" to the junior faculty to focus on getting out publications (obs 20100128). Peggy also described all the faculty as, "spread thin" (Peggy, int 20100217). Angela summarized the time constraint issue:

The faculty is going to look up and say, wait a minute, my peers are blogging. My peers... have web pages, and why don't I have it? And then they're going to put their heads back in their books and write articles and teach classes. Because that's really what their primary job is. (Angela, int 20100503).

Another common concern that factored into the evaluation of teaching with technology was the special nature of legal education. As described above, some faculty felt PowerPoint was only appropriate for certain types of Law courses, namely large lectures. Nathan linked this limitation to a long standing tradition of legal education:

Traditional law teaching, as you may know, dates back to the 1890s. Kind of a pre-, early modern, pre-modern, you know, pseudo-scientific method that involves standing in a room full of people and talking about a single case. And drawing deductively some principle out of it over the course of an hour. (Nathan, int 20100403).

While Lyle, Angela, and Nathan accepted that technology like PowerPoint was not useful in some classroom situations, there was also a sense that these teaching traditions might be getting in the way of innovative technology use. Nathan continued his explanation of legal education tradition with a more critical bent:

It was basically bad science the day (laughing), the day Harvard adopted it in 1890 whatever... People that thrive through that method of teaching tend to get really high grades and enjoy thinking that way, learning that way, just as they enjoy being taught that way – end up becoming law professors themselves... It's as if people that really loved blueberry anchovy pizza got to run the pizzerias, then we'd all – that's all we'd have (laughing). So I think it could be better.

(Nathan, int 20100403).

I asked Peggy if she agreed with the assessment that legal teaching inhibited use of some technology:

I do... Part of it is because legal education is really, to me, it seems like it's very grounded in tradition. Which would be using the Socratic method, and just discussion... So you don't need technology to do that. (Peggy, int 20100217).

When a certain technology did not live up to expectations or provide a noticeable benefit, there was little hesitation to drop it. Both Lyle and Angela had tried and dismissed the use of a Smart Board in their classroom because it was not worth the trouble. Lyle had similarly dismissed the use of "clickers" – remote controls given to students that allowed for a digital display of multiple choice responses – and his Kindle, which he "looked at... for half an hour" before deciding it was not useful for reading PDFs of academic papers.

This second part of the story of how Law School faculty incorporated new technology into their teaching was about evaluating utility and efficiency in a non-critical setting. This could mean receiving specific training from Peggy, playing and experimenting on one's own, or both. The concern with efficiency was linked to both a legal professional's sense that time, in the form of billable hours, really was money, as well as a university professor's busy schedule and multiple responsibilities. A pragmatic approach to technology was common, and the ability of new technology to add to the classroom experience was not only evaluated against established technology, but also against long standing traditional methods of legal pedagogy.

Angela did a good job of summarizing her process up to this point:

Whether I introduce it is – I just want to play with it (laughing). I want to try something new. Whether I stick with it is whether it has any ability to improve the pedagogical goals of the class. Whether it improves anything. Whether it's in any way better than chalk. (Angela, int 20100503).

The third part of the story of technology adoption in Law School teaching was almost an epilogue: a recognition that any technology, no matter how useful or time saving, could fail unexpectedly and catastrophically. Though technologies like PowerPoint, classroom and courtroom AV equipment, and the TWEN system were commonly used and widely integrated into teaching practice at the Law School, faculty maintained a healthy skepticism about their stability and reliability, and Peggy's training included encouraging faculty to have "a contingency plan in case something goes wrong." (Peggy, obs 20100120).

Angela described a contingency plan she had devised when the "clickers" – multiple choice remote controls – failed:

I've had the clickers go wrong and I just sort of said, ok, that's not working guys. Instead of everybody having a clicker for two people, get yourself in groups of six, and then... you're going to negotiate the answer before you put it in. And I try to pretend that was pedagogically valuable in some way. (Angela, int 20100503).

She also explained how failure could be part of a continuing process of evaluation: "People can raise their hands. It's not as good. That's how I know I've got a good technology, if the fallback's really not as good, when it doesn't work." (Angela, int 20100503).

Mindful of technology's pitfalls, Lyle expressed his hesitance to rely on it too much in the classroom: "I've shied away from doing as much in the classroom... There is unreliable equipment... I'm pretty tech savvy, but when things break, it brings the class to a standstill." (Lyle, int 20100408). Nathan was similarly wary:

One limitation that technology has that's somewhat unique is the possibility of error. If I'm planning on drawing on a chalk board, as long as the board doesn't

fall to the ground, and as long as there's chalk there, and an eraser, I can pretty much guarantee that I'll be able to achieve my goal of putting something on a chalk board. In contrast, if I'm going to do any sort of technology based screen projection, whether it's with a document camera, or PowerPoint, or what have you, there's always the possibility of technological failure changing, thwarting that goal. And that has happened to me. (Nathan, int 20100403).

The idea that one should be prepared for even well known technologies to fail was the last part of this shared narrative. In general, this story might describe technology adoption in a variety of settings: choosing interesting technologies by looking at trusted innovators, evaluating technologies through limited implementation, making decisions about use according to efficiency and possible benefit, and recognizing the possibility of failure and the need to plan around instability and unexpected problems.

In reality, the specific aspects of this narrative were highly contextualized and reflected the shared technology practices of the Law School faculty: Recognition of particular IT staff and faculty members as technology leaders, an environment which valued and formalized peer-based learning about teaching with technology, concerns about time and efficiency linked to both the legal profession's concern with billable hours and the academic world's pressure to perform in multiple realms, and ideas about classroom performance that recognized both the importance of innovation and the influence of a long history of traditional legal pedagogy. As a common trajectory for technology choice shared by the faculty and endorsed and supported by the IT staff, this narrative is strong evidence that teaching with technology practices at the Law School are part of a figured world of technology use.

Research with Technology

One of the multiple realms in which higher education faculty are expected to perform is in research and scholarship. In the Law School much, but not all, of the research was organized around four research centers. These centers included regular faculty members, who also taught courses, as well as dedicated research faculty and staff. Individual faculty members not involved with one of the Research Centers were also expected to conduct original scholarship, either on their own or as part of one of the Law School's academic programs: areas of legal scholarship in which the Law School advertised a collection of expert faculty and an institutional focus.

My data on research activities in the Law School includes discussing research related technology use during interviews with four regular faculty members, interviews with Niki, a research faculty member from one of the research centers, and Tina, a staff member who worked for Niki on one of her research projects, as well as observations of the Law IT staff assisting faculty and staff with research related technology issues. My observations and interviews suggest the technology activities related to research involve a focus on sharing results with the wider academic and legal community. In this section I will describe the creation and use of web-based resources as a product and goal of Law School research and the use of both Law School and non-local websites for publicizing and distributing Law School research.

Law Research Websites. Mohinder, a full professor in the Law School, was also the director of one of its research centers. When I asked Mohinder to talk about the technologies which were most central to his work in the Law School, he discussed the importance of the web in publishing his center's work:

Most of those research projects involve a huge amount of work on graphics and technology to show off what we've done, and they've got websites... each one of those projects ended up with a website. (Mohinder, int 20100409).

While these websites were, "running off the server downstairs", meaning the Law School's own web server maintained by the Law IT staff, Mohinder had contracted the actual site development to an outside party: "We definitely needed... to hire out people to write codes and things like that." (Mohinder, int 20100409).

When Mohinder showed up in the Law IT Office one morning, ostensibly to ask Don about the shipping status of a new laptop he had ordered, he ended up discussing one of his center's websites with Peter, who served as the Law School's webmaster. Mohinder told him the site had started as a conference website, but had developed into a more permanent program website. He told Peter, "You may want to take a look at it.", and solicited Peter's opinion about the look and functionality of the site. Though the site was hosted on the Law School web server, the URL for the site, a .org address, placed it, in a virtual sense, outside of the Law School and University sites. (Mohinder, obs 20100302).

Mohinder was worried the design of the site was not intuitive, and Peter agreed with him. Peter suggested Mohinder have the original site designer change the location of a menu bar to make the site easier to navigate. Mohinder lamented, "That guy is useless." Mohinder told Peter another staff member had taken over maintaining the site, but she was "not a web person," and could only accomplish basic updates (Mohinder, obs 20100302). Peter was happy to offer his opinion, but he was not interested in taking over a redesign of a website that was not his responsibility. Peter eventually suggested Mohinder offer the work to an outside contractor who maintained Mohinder's other research center sites, and Mohinder agreed this might be feasible.

Mohinder's comments and his exchange with Peter showed that research related websites developed within the Law School were both central to the faculty's academic pursuits and yet somewhat marginal to normal technology use in the Law School. Niki, a research faculty member in another of the Law School's research centers, worked on two other Law School websites which were developed, and in this case, hosted, outside of the Law School, the University, and Peter's purview.

While the websites for Mohinder's research centers were important tools for communicating the results of his policy research, the goal of Niki's research was the development and updating of the sites themselves. Niki's two projects focused on collecting legal resources related to natural resource law and distributing these to the public and industry. Niki explained the need for the websites: "The goal of [the site] is to make things easy for them to find the information and therefore incorporate it in what they need to do – or, they need to do, want to do, should do. All of those do's." (Niki, int 20100510).

The first site Niki worked on was hosted and developed completely outside of the Law School. Niki provided, "the laws section" (Niki, int 20100304). She updated her portion of the site through a content management system – a web-based system that allows multiple users to make changes and updates to a website, usually with a minimum of technical knowledge, and often within strictly controlled parameters.

Niki's second site, a searchable database on natural resource practices, was one she had started herself: "We contracted with a website design, website and database design company, to create the initial website and also to design the database." (Niki, int 20100304). Tina, who had some experience working with databases and websites, was hired to work with these outside designers and contractors: "I'm responsible for keeping it updated and working on the database

for the website... Working with our web database designers to reorganize it and make sure it's working in a way that's useful for everyone." (Tina, int 2010304).

Niki's expertise was in the "issues that are covered, substantively covered" by the websites. (Niki, int 20100510). With her first website, she had no technical responsibilities, and functioned as an expert content provider to an outside organization that maintained and developed the website. With her second website, she was primarily responsible for the site, but relied on Tina to function as a link between her subject area expertise and the technical knowledge of the contractors she had hired to actually construct the website.

Niki did not consider herself an expert on web development or technology, and did not have a particular affinity for it – "I'm really, pretty much, I guess I have to use technology as opposed to considering it fun and exciting" (Niki, int 2010510) – but explained how she was now applying to start another web-based project:

I guess it's sort of snowballed in the sense that the first project I started working on, website based, was the [first site], and then we created the [second site], which is also web-based and database. And now we're applying for the funding for something comparable, similar to the [second site]... it's also intended to be a database and website based approach – project. So, one has sort of led to the other. Partially, I guess, because we're maybe getting good at it (laughing). Or other people are being mislead into thinking it's a good idea, and they don't want to do it themselves. (Niki, int 20100510).

Additional Research Technologies. For faculty whose work resulted in more traditional publications, technology aided in publicizing and distributing their work. Peter was working to

streamline the process of making faculty publications available on the Law School website. He told me this directive had come directly from the Dean:

The Dean was pushing for a new, kind of a redesign of the whole way the news works on the website. He wanted the faculty getting more press... they wanted newspapers and television stations to begin interviewing our professors, and they needed more visibility of how active the faculty is. (Peter, int 20100408).

According to him, the more "tech savvy" faculty were now providing him with links to their papers on SSRN – the Social Science Research Network, a website "devoted to the rapid worldwide dissemination of social science research" (Peter, int 20100115; SSRN, 2011). Other faculty would send him PDF or Microsoft Word documents he could post directly.

While publicizing and distributing faculty work on the web was the most apparent use of technology in Law School research, other web-based services also played a role. Peggy worked with a student researcher and a faculty member on the use of Zoomerang – a site for conducting online surveys. She showed them how to setup a survey and how to extract survey data for publication. Niki and Tina were experimenting with the use of Google Docs – a part of the Google website that allows for online collaboration on various types of documents – as a way of organizing tasks among a geographically distributed group of researchers and students. Lyle used blogging to share ideas about his work with colleagues. Nathan was experimenting with using Adobe In Design as an alternative to MS Word for document creation and editing.

I observed a common concern with using technology to publicize and distribute research, but I did not see the more obviously shared practices and narratives apparent in faculty's use of technology for teaching. Mohinder and Niki were both involved in developing websites providing information to specific corporate and community audiences, but their discussions of

these projects focused on the particulars of dealing with their contractors outside of the Law School. Niki had hired Tina to deal with much of this work, and Mohinder also mentioned having staff who were considered responsible, if not competent, for maintaining his sites. Peter, the Law School's web master, did not regard these sites as his responsibility. When asked, he shied away from providing too much advice or guidance to Mohinder.

For most faculty, web-based publicity meant the use of sites like SSRN and the Law School's Media and Publications pages. Peter was still in the process of developing these pages and establishing the business processes for updating them. Don and Peter were still working out the details of what faculty needed to do to have their publications posted and which parts of the process would fall to a Dean's Office staff member and which would remain with Peter.

Unlike the technology and technology practices involved in teaching, Law School faculty's use of technology for research appeared more individualized and isolated. Though some were hosted on Law School servers, Niki and Mohinder's research websites relied on outside developers. Niki and Tina also relied heavily on outside technologies such as Google Docs to communicate with these contractors as well as with colleagues at other institutions and organizations. The Dean's interest in encouraging the use of the Law School's own website to report publications reflected a common concern with using technology to advertise Law School research, but this concern was less prevalent than, for example, the faculty's interest in incorporating AV technology into their classroom practice.

Administrative Technology

Unsurprisingly, technology was pervasive throughout all areas of work at the Law School. Certain technologies, like the use of email for communication, were ubiquitous and well accepted, and did not arise as topics of interest during my interviews and observations. Other

technologies were more specific to the Law School environment, and repeatedly showed up as topics of conversation and attention. In the following description of administrative technology I will focus on two types of these technologies: University business and administrative systems used in areas such as finance, human resources, and purchasing and Law School specific administrative systems used in areas such as admissions, resource scheduling, the Law School website, and managing holdings in the Law School's Law Library.

The Law School is a graduate school of a large state university. Though the daily operations of the school were centered around the Law School Dean's office, many of the systems used to perform these operations were based out of the bureaucratic structure of the University and state. Namely, the University itself was part of a system of state universities which encompassed a number of different campuses. I will refer to this as the University System. The University System itself is part of the state government. This meant in certain cases the use of systems to manage business operations such as human resources and finance might be mandated by Law School policy, University policy, and University System policy, as well as by state law. Misuse or lack of use of some of these technologies could actually be criminal.

Other technologies in wide use at the Law School were either campus-wide systems whose Law School implementation might be mandated or encouraged and systems entirely distinct from the rest of campus. For example, use of the University's Microsoft Exchange server, which provided email, calendar, address book, and todo list functions, was encouraged by the Law IT staff and was becoming the standard email solution for faculty and staff. A Law School specific admissions system was tied into a national system for law school admissions, but was separate from the campus-wide admissions systems. The Lawpac software, used to manage the

Law Library's holdings and acquisitions, was also used by the main campus library system, but the two packages were reportedly purchased and maintained independently.

Administrative System Changes. The business systems of the University and University System in use at the Law School were primarily accessed by Law School staff members. Their discussion of this technology was dominated by concerns with the many recent and upcoming changes occurring across a number of these systems. As I conducted my research, three major business systems had either recently changed or were in the process of changing: the student information system used to lookup and record all enrollment and personal data about students, the expense system used to allocate and process purchases and reimbursements, and the financial system used for all of the Law School's accounting work.

Staff members' concerns over these changes focused on their ability to continue to perform their jobs as the systems and business processes changed around them. Helen told me about an impending change in the way she was able to access financial data from the University System:

You've probably heard of Peoplesoft Lite, which I love. And I attend a budget officers' meeting and represent the Law School, and there's been a lot of discussion... there is a reporting system out, Cognos, that is just useless. So no one uses Cognos, and everyone uses Peoplesoft Lite... They're threatening to take away the Peoplesoft Lite. (Helen, int 20100511).

Helen explained that the University System Comptroller's Office was planning to make everyone move to the Cognos reporting system rather than the system she preferred, and she felt this would limit her ability to access and manipulate financial data:

No one who actually does anything in finance at the University uses Cognos reports. And I know that they are supposed to be the Cadillac of reporting systems, but... they're just reports. You can't pull data from them. They're useless. Because... if you have any responsibility to any institution, you have to be able to slice and dice the data. (Helen, int 20100511).

According to Helen, the decision to move from one reporting system to another had little to do with the functionality of the two systems:

We paid a lot of money for Cognos... I think it's actually supposed to be a great reporting system, although the way we've purchased it is limited... Peoplesoft Lite was created by []. She's retiring. She was the main support person for that system, and she's going away... Because they spent so much money on Cognos, they don't want to support Peoplesoft Lite... even though no one uses Cognos that has any responsibility. (Helen, int 20100511).

Bette, a recent retiree who had been hired back at the Law School, took a long term view. She accepted that the changes were disruptive, but thought they might be necessary:

I think it's always easier to deal with any changes or anything if you have a big picture. And if you know how the University was operating sixteen years ago, and you see where it is today, and you've been able to see how it progressed to get where it is today, you have a much better idea of why the changes were made... So you're looking at a very large expanse of time, in a humongous expanse of advancement in the whole technological system. And you're just seeing its development. That's the big picture. (Bette, int 20100511).

Bette believed that the systems, including Peoplesoft Lite, had gotten better over time, and had faith those setting up and supporting the new systems would work out any issues:

I'm not worried about it because if all of a sudden I'm not able to use, to have access to the information I need, I know I can call, I can get in touch with somebody to find out what I need to do to have access... And I know that they have setup, they've been able to facilitate feedback from a lot of different users to find out... what the people who will be using it will need. I have no questions that'll be satisfied. (Bette, int 20100511).

Bette's faith was not that the systems would work immediately or all the time, but that she would find a way to do her job despite any issues and that the systems would eventually do what she needed. She reported having multiple problems with multiple generations of financial systems: "It goes through periods still where the servers are acting up and you know, maybe you get kicked out... your pages will just either freeze or close down." (Bette, int 20100302). When Bette had upgraded from Microsoft Office 2003 to 2007, she had waited four to six months for Michael or Herman to restore her access to Peoplesoft Lite, but, "I was working around it... It was a lot more tedious, but I could go directly... and get the information I needed." (Bette, int 20100302).

While Helen was dreading an impending change, and Bette was patiently weathering years of changes, Alice, a recent hire in the Law Library, was struggling to make changes. Alice was attempting to leverage a variety of technologies to limit the Library's reliance on paper accounting records. The new expense system required scans of receipts and invoices and provided online access to statements and reports, and Alice wanted to use this system, along with the L drive, shared data storage space available to the Library staff, to minimize paper use.

Despite the requirement to use the new expense system, and the Law IT staff's encouragement to use shared storage, Alice encountered resistance from her co-workers and supervisors: "A lot of the higher ups in the Law Library are older and they like to see paper copies of certain things... There are certain things that we're putting in binders that nobody was ever looking at." (Alice, int 20100224).

The process of dealing with purchases and expenses in the Law Library was further complicated by the need to do accounting in both the new expense system and the separate Lawpac system the Library used to track and manage its holdings and acquisitions. Alice explained the process she shared with the co-worker responsible for working with the new expense system:

She's entering it in Peoplesoft through the expense system. I'm entering into Lawpac, which is the inventory. She hands it to me, but she wanted to keep a copy first, so she's making duplicate copies for different people, and she's like, "Oh, the supervisor might want to see it, so I'll put a copy in here, and I'll leave a copy with me, and I'll give you a copy." and it's like copies all over the place. (Alice, int 20100224).

Alice believed part of the problem was the new system itself: "The fact that it's a new system... that's throwing her off... Nobody wants to login to that expense system. I mean not even – she doesn't, the one whose logging in, she doesn't even like – she doesn't want to use it very much." (Alice, int 20100224).

Alice reported the main concern of her co-workers was the ease of access of paper files. She had made some changes by explaining the L drive data was actually more accessible and

more reliable than paper files. She also pointed out the practical benefits of sharing the data digitally:

That's my excuse a lot of times. I'll say, oh, show me what you're doing because in case you're out I need to be able to do it. That way you can go on vacation and not have to worry... That's a really good thing to say when you want anybody to put their stuff on the L drive (laughing). Can you put it on the L drive because that way... when you're gone, you don't have to worry. I can actually pick it up and do it. (Alice, int 20100224).

Alice's explanation of expense tracking and purchasing in the Law Library highlights the complex set of systems Law School staff used in their daily work. Even tech savvy Alice, who took on the role of leading the Law Library accounting office into a less-paper, if not paperless, world, became confused about the tangle of systems she needed to access. When Herman showed up to do an install on her machine, they went back and forth about what she needed:

Alice: I need Oracle for [the student information system] I guess.

Herman: [The student information system] shouldn't require Oracle.

Alice: Right. PC Lite (sic). I'm learning a lot of new systems lately.

Herman: There are a lot of systems. (obs, 20100119).

A few things were interesting about this exchange. The Peoplesoft system Alice needed was actually referred to as "PS Lite", but as he left Alice's office, even Herman referred to it as "PC Lite" when speaking to one of Alice's co-workers. Second, PS Lite was a financial system, not the new student information system. Finally, Alice actually did need access to the student information system, and it isn't clear when she received that access. Herman did not make an

effort to install it that day, but a few months later, Alice reported attending the training for the new student information system.

Alice's campaign to update business processes involved both a mandatory University System system – the new expense system – and two Law School specific systems: Use of Lawpac, the library inventory software, was required by Law School policy. Use of the L drive for sharing and storing data was recommended and supported by the Law IT staff, but was not a requirement. These three technologies were connected to the Law School in related but distinct ways. The expense system was setup and supported by the University System. The mandate to use it came from the University System Comptroller. The Lawpac software was purchased and maintained locally within the Law Library, but it was also used by other libraries on campus. Finally, the L drive was setup on faculty and staff computers and supported by Don and the Law IT staff, but was actually a service the Law School purchased from the University's ITS department. The actual data storage and backup facilities were run by ITS as a campus-wide storage solution.

A number of other Law School administrative systems shared equally complicated pedigrees that included a combination of mandate, policy, source, and practice. I will briefly describe a number of systems that show some of the different ways administrative technologies were brought into and implemented at the Law School.

Campus Provided Services. Microsoft Exchange, Microsoft Active Directory, and Microsoft Enterprise Storage services represented three core technical services managed and provided by the University's Information Technology Services department and in wide use at the Law School. Microsoft Exchange provided email, calendar, address book, and todo list functions to Law School faculty and staff, mostly through the Microsoft Outlook client software. The

Microsoft Active Directory provided user authentication, meaning the ability to securely login to desktop and laptop computers and a security infrastructure for things like shared access to data and printers. Microsoft Enterprise Storage, implemented at the Law School as the "L Drive" and "U Drive", provided individual and shared data storage that was backed up and available from anywhere on the campus network or remotely.

Don explained, with regard to these services, the Law School was a customer of ITS:

We're thrilled with that relationship... those are well defined customer relationships. So, we're a customer, and we have a service, and we have high expectations. And since those services are met, or if they're not met, we have a way of complaining. (Don, int 20100212).

Don also worked to create unofficial channels to communicate with ITS:

I'm on these various committees... I work with having an open relationship with ITS folks, and work on making individual connections... If the file server goes down, I'll call [the ITS help line], but the minute I hang up that phone, I'm also going to call the guy who I know runs that, and I'm going to tell him we have a problem. (Don, int 20100212).

The Law School's relationship with ITS was further strengthened by having Michael, Herman, and Peggy, all ITS employees, in the building and working closely with Don and Peter. Michael summarized his position on providing Don with inside information about ITS issues that might affect the Law School: "Sometimes I'll need [Don] to know something that they have coming around the bend because it's going to affect us later on. And I'd rather him have the heads up now. And I feel like, if I'm a mole, I'm a mole. You know." (Michael, int 20100311).

These services were not entirely unproblematic, and like the administrative technologies described above, some work could be required to adapt them to the Law School. As Peggy worked with Sandra, a faculty member, on a laptop Michael had recently setup for her, Sandra became frustrated with the address book functionality of Microsoft Outlook. Peggy explained that not everyone at the Law School was using Microsoft Exchange for email, and those people who were not would not show up in her available contacts list. Further, everyone at the University who was using Microsoft Exchange, thousands of non-Law School users, would show up.

Michael and Don's attempt to setup a new employee with an account in the Active Directory, which would enable him to access specific computers and shared data, highlighted a disconnect between the technical infrastructure of the University's Active Directory and a Law School faculty member's understanding of the employee's role in his organization. The faculty member, on the speakerphone with Michael and Don, told them the employee needed access to "the L drive". Don and Michael asked if they could give him the same permissions to access data as another employee. The faculty member explained that the new employee was being paid by a different account than the existing employee, so they shouldn't be the same. Don replied, "You and I are on different plains of reality... for us, he can be the same" (obs 20100125).

Faculty and staff use of these resources was wide spread, but was not mandatory. Like Sandra, Angela was adjusting to using Microsoft Outlook with the Microsoft Exchange server. She was applying criteria similar to what she used to evaluate technology for teaching: "I just literally, this week, went away from a paper todo list to using my task function in Outlook... For me, it's like a transition. I've got to prove to myself it's better than paper (laughing)." (Angela, int 20100128).

Mohinder explained he was transitioning from a personal solution for remotely accessing his data to using the "U Drive" as a way to work from home:

I'm working a lot of time at my home, and I need to make sure I have access... I've been using... PC Anywhere for fifteen years now... we've had, you know, uncertain results... so I bought the most recent version. I want to put it on. But I think they have now got a better system of U drives, so that, you know, I don't need to use PC Anywhere. But I've got used to PC Anywhere because I'm saving here, saving there. (Mohinder, int 20100409).

Mohinder also told me he was "terrified that they'll be a crash, and I don't have a backup" and had purchased an external hard drive to perform backups of his data. He did not mention using the "U drive" as a way to do his backups or the fact that the "U drive" data itself was backed up by ITS. Don did mention that much of the Law School's U drive use was data they had backed up for faculty or staff, implying that faculty and staff were not using it as their primary storage.

Other faculty and staff were doing similar administrative tasks with other technologies. Don told me one of the few services the Law IT staff provided to students was allowing them access to shared data space on the L drive to facilitate their work in either the Law Clinic or on the Law Journals. However, Niki and Tina, who worked extensively with student researchers in one of the Research Centers, reported using Google Docs rather than the L drive to share data and documents among their research teams. Similarly, though Nathan had access to Microsoft Exchange calendaring, which was integrated with the calendars of other Exchange users at the Law School and around campus, he chose to use a complex system of Google calendars to coordinate the work and home activities of himself, his wife, and their toddler.

Law School Website. The use of the enterprise data storage, Exchange email, and Active Directory systems were examples of campus-wide systems being locally implemented and adapted to Law School use. Don and Peter's work with the Law School website was an example of the Law IT staff providing specific services which would not otherwise be available. As such, the splitting of responsibility of the Law School website between ITS and the Law IT staff was distinct from the service provider and customer relationship Don described for these other services. As Peter described it on my first day of field work, the Law School's website was a "two headed beast" with the static content hosted on ITS's web server and the dynamic content hosted on the Law School's own server (obs 20091221).

Peter served as the web master for the Law School. Both he and Don could update the static content hosted on ITS's web server, but Peter took the lead in working on the Law School's server and in building new dynamic content. Peter believed they would eventually move even their static content off of ITS's server: "I think once we get this new server completely the way we want it, we're gonna move it onto our site completely, and just take over." (Peter, int 2010408).

Peter explained that his relationship with ITS might be strained by ITS's desire to standardize the University's websites while the Law School was attempting to carve out a unique web presence. This was apparent when he participated in campus-wide meetings with other University web developers:

I was in an awkward position because one of the things they're pushing for is they want all department websites to look the same. They want to brand the main [University] website to all look the same and take on the [university.edu] look.

Where the Law School likes to kind of have a separate identity and not be put into a box. (Peter, int 20100525).

Part of the Law School's web presence involved pushing for more dynamic content. While I was doing my field work, Peter was working on two major website projects: the new media and news site for publicizing faculty research and accomplishments and the new streaming video site. The news and media site idea had come directly from the Dean, and the streaming video idea had come from Don, but was something a number of faculty were interested in using. Both sites were expansions of the Law School website beyond what ITS could offer. The new pages would be hosted on the Law School web server and depend on Peter's ability to deliver complex web-based solutions.

While Don fostered a good relationship with ITS to support the Law School's use of Exchange, Active Directory, and Enterprise Storage solutions, the Law School's desire for dynamic web content and a unique web presence meant he and Peter were relying on ITS's web services less and less. In other areas of administrative technology use, the Law School relied on ITS technologies to an even lesser extent. Three systems in particular exemplify the various ways Law School specific administrative systems were implemented: the Law School's SharePoint intranet, the Law Clinic's private data server, and the Law School's unique admissions system.

As I heard from Peter on the first day of my field work, he was working on setting up Microsoft SharePoint to serve as an intranet for the Law School. Like most Microsoft products, Microsoft SharePoint server software was available to the Law School at a deep discount through the University's educational license agreement. Peter took advantage of a campus-wide interest in SharePoint by working with developers in other departments and colleges. He and Don had a

tentative plan to start a "SharePoint users' group" with developers from the Business School and Housing Department who were "three years down the road" in their use of the software (Peter, int 20100525). Similar to the use of PowerPoint among faculty, Don and Peter's use of SharePoint was not required by the University or Law School, but was supported by a licensing agreement and common use. Also similar to the faculty's PowerPoint use, their local implementation of SharePoint, though inspired by use in other departments, would run on Law School hardware and contain information and tools specific to the Law School.

The Law IT staff had also set up a private data server running on a machine in the Law School's server room. This server was used by the Law Clinic, part of the Law School that functioned as a law firm, and the Law School's Innocence Project, the local branch of a "national litigation and public policy organization dedicated to exonerating wrongfully convicted individuals through DNA testing and reforming the criminal justice system." (Innocence Project). Both groups stored data, "protected by attorney client privilege" and "that is beyond the privacy concerns of the Law School" (Don, obs 20091221). Peter commented, "It would be handy if ITS had a private data server," but in this case the needs of the Law School were not met by any existing ITS services (Peter, obs 20091221). The Law School had relied on the expertise of ITS's IT security group to aid in setting up the private data server, but there was no formal support contract to define this relationship.

In the same server room as the private data server, the Law School hosted a law admissions web appliance – a web appliance is a purpose built computer usually sold by an application vendor to provide a specific set of services. This appliance hosted the Law School's interface with the Law School Admissions Council. The LSAC is a nonprofit corporation that centralizes the admissions process for a number of law schools, including all American Bar

Association approved law schools. The services provided by the LSAC and the admissions web appliance were required for the Law School's admissions department, but were unique from any admissions or student information services provided by the University or University System. In this case even the Law IT staff's involvement was limited. Peter told me Don had worked on setting up the appliance, but, comparing the LSAC web appliance to the private data server, Don commented, "The admissions thing is totally outsourced to the Law School Admissions Council. It is not a headache." (Don, obs 20091221).

Artifacts and Roles in Administrative Technology Use. On my first day of fieldwork, one of the striking aspects of Law School technology use I encountered was the variety and complexity of technologies, and this early impression is supported by my description of Law School administrative technologies. While the sheer number of technologies in use is impressive, a mere accounting would belie the significance carried by each of these artifacts. The figured world of technology use at the Law School includes a complex array of technical artifacts originating from different sources and adapted to local use in specific ways.

Some of these technologies, like the purchasing and accounting systems, are required by the University, University System, and state bureaucracy. Other systems, like the enterprise storage system and Microsoft Active Directory, are provided by ITS, but are configured and used in ways specific to the Law School. Still other systems, like the Law School website and Lawpac-based admissions systems, require a hybridized practice in which the Law School staff and IT staff must deal with both campus or system-wide technologies and Law School-specific solutions in order to accomplish a single administrative goal.

The technology practices involving these various artifacts cast the Law School staff and IT staff in particular roles within a figured world of technology use. As many of the

administrative systems changed around them, Bette, Helen, and Alice took on roles as technology adapters. Rather than skilled professionals accomplishing administrative tasks with a known set of tools and technologies, they were now spending time and energy working out how these new tools could be applied to solve the same set of problems the old tools had addressed. While each of them reacted differently to taking on this role – Helen dreading it, Bette accepting it, and Alice embracing it – they shared a common concern with maintaining their ability to function and complete their work despite being asked to make significant changes to their daily technology practices.

For many administrative technologies, the IT staff were directly responsible for accomplishing a similar goal – adapting these outside technologies to the Law School. For services such as Microsoft Exchange, Microsoft Active Directory, and the enterprise storage system, this might mean requiring, shepherding, or just encouraging use among Law School faculty and staff. In other cases, as with the website, this meant significantly augmenting the service to address Law School needs not met by University technologies. In other cases, such as the SharePoint intranet and private data server, the IT staff provided entirely local solutions. I will further explore the ways the IT staff provided, supported, and mediated Law School technology use in the next section.

Supporting Technology

The Law School IT staff provided support for all but a few of the technologies and technology related activities described above. Most of the hours I spent observing technology use at the Law School were done so while shadowing the Law School IT staff. Don, the Director of IT, was instrumental in helping me gain access to the Law School. Within the Law School, my presence was generally recognized and explained as someone working with Don and the IT staff

to observe technology use and support. Not only was I externally identified with the Law School IT staff during this project, but, having almost twenty years of experience as an IT professional in higher education, I personally identified and sympathized with them. In many ways, their daily activities were not dissimilar from my own IT support work.

During one of the many days I spent in the Law School IT Office, Don invited me to join the IT staff meeting. Peter and Michael were both absent, so the meeting was just Don, Peggy, and me. The three of us sat in the center of the office, and Don started off the meeting: "Let's go around the circle and say how we're doing." (Don, obs 20100128). Peggy told Don, "The craziness of the beginning of the semester is over, I'm going around checking on people I helped." (Peggy, obs 20100128). During a later interview, Peggy told me: "So every semester I do rounds, and I go to all the faculty to try to be proactive and to get myself out there so that people who don't think about coming to me can still get help." (Peggy, int 20100217). Peggy also told Don she was leaving late every day and working more hours than she was supposed to: "It is hard to leave in the middle of something. People stop me on the way out." (Peggy, obs 20100128).

Peggy and Don moved through a number of topics: Whether Peggy can provide support to research assistants, establishing a process for the Law IT staff to setup new adjunct and temporary faculty with accounts and computers, Peggy's ongoing struggle with whether to get a new PC or Mac laptop, and how the Law IT staff can support smartphones when they don't all own one.

Eventually, Don brought the discussion around to how his own week was going: "Work is great. I can actually get stuff done. Lots of projects." (Don, obs 20100128). Don recounted getting the room reservation system online, and he and Peggy discussed how they could

transition to using the system to checkout laptops and other IT equipment to faculty. Don brought up a couple specific issues he wanted Peggy to check on: Angela had a software licensing issue and Sandra had ongoing issues with using Windows 7 on her new laptop.

Don and Peggy touched on many different support activities during their staff meeting, and Don summarized them during a later interview:

I'm busy, but I like it that way... I think that because it has been assigned and I have claimed all technology in the Law School, that my role changes dramatically from advisor and consultant to fix this, and everything in between. And the things in between would be identifying, oh that's going to break or this is going to be a problem, or we're vulnerable here. (Don, int 20100212).

I will begin my discussion of technology support activities in the Law School by describing the Law IT staff's involvement with these different types of support: maintaining the technology infrastructure; providing immediate and emergency support to Law School faculty and staff, including in-the-moment training and instruction; technology training and consulting; and working on long and short term projects and upgrades. My experience suggests this description may not be a revelation for anyone familiar with technology support, but it will provide a sense of what the Law IT staff do all day. I will follow this basic description with an examination of how the IT staff's support activities may be understood as aspects of a figured world of technology at the Law School.

Don's Multiple Roles. When Don says he has, "claimed all technology in the Law School" (Don, int 20100212), he is speaking to the fact that he feels personally responsible for all of the technology in use at the Law School:

I see my job description and my job as to be the point person for technology in the Law School... For all constituents... And the idea is that if someone doesn't know anything else about anything, they at least know, well, just call [Don], and he'll take care of it. (Don, int 20100212).

Taking "care of it" included the obvious task of providing help when things went wrong, but also a more general sense of providing for and attending to the technology needs of the Law School faculty and staff: "I need to deal with, just making sure that everyone has what they need. And I think that's core. That's our baseline, right. Everything is seamless and satisfying." (Don, int 20100602).

As the Director of IT, Don's unique activities included setting priorities for the Law IT staff and communicating with the Law School Deans and Roger, Director of Operations and Financial Management for the Law School and Don's direct supervisor. Discussing priorities, Don said, "Where we're moving is toward aligning all IT projects with the mission of the Law School." (Don, int 20100602). Discussing Don's role, Peter commented, "[Don] is really good at running interference... communicating to, you know, whoever's on the other end of a project... they kind of understand that he gets to set the priorities in terms of what I work on." (Peter, int 20100408).

In addition to these management tasks, Don would assign himself projects. Among other things, I observed Don setting up a new desktop computer for Peter, rolling out a room and equipment scheduling system, and working with the Law School admissions office on their interface with the new University-wide student information system. Of course Don's work also included training, such as showing a guest user how to connect her laptop to the courtroom AV system (obs 20091228), and dealing with immediate problems, such as fixing the keyboard on a

faculty member's laptop (obs 20100125), applying security patches to the Dean's laptop (obs 20091228), and ordering repairs on a broken printer (obs 20100120).

During the staff meeting Peggy mentioned her concern that the demands of addressing similar immediate and emergent issues were interfering with her abilities to keep up with new technology and expand her skills. Don shared this concern, and his priorities included carving out time in the schedule for "innovation days" for him and the rest of the Law IT staff:

It's a benefit to the IT department because if we spend all our time just putting out fires, we never get a chance to really know what we're talking about. And in my world... I'm relying on things that I've learned about three or four years ago. So, in technology, that's a lifetime... And it's a fun thing. And then, if we have this established, then I get it too – where I get the support of the staff to not bug me on those days. So if I get to do an innovation day, and I'm here, and my door is closed, and everyone knows that, unless it's an emergency, that everything's put off until the following day to deal with. (Don, int 20100602).

The Hustle of IT. Whether Don was available or not, much of the work of attending to immediate requests for service fell to Michael, the ITS troubleshooter working at the Law School. Michael described his job as, "machine deployment... maintenance, updates, any kind of repairs needed. That's what my role is. I keep people's computers up and running." (Michael, int 20100311). Most of Michael's work came from requests called in to the central ITS phone line, emailed to ITS, him, or Don, or from people who walked into the Law IT Office looking for him. I observed Michael transferring data from people's old computers to their new ones, dealing with viruses, installing software, doing hardware diagnosis and repair, and performing the dreaded "reformat and reinstall" (Michael, int 20100311), in which Michael would completely blank and

reinstall the operating system and all software on a user's computer to overcome a particularly troublesome software, virus, or operating system problem. Michael referred to the ongoing process of responding to user problems and requests as "the hustle of IT" (Michael, int 20100311).

As noted above, Don, Peter, and Peggy also got caught up in the "hustle". For Peggy, these immediate support tasks often came in the form of showing faculty how to overcome minor technical issues or accomplish small tasks. In an interview, Peggy discussed how her time was split between consulting with faculty about how to use technology in new ways and simply supporting their daily use:

Someone was just asking me how I was doing in this job here, and I said, I feel under-utilized. A lot of times, you know that Maslow's hierarchy of needs, right, you can't go higher if your basic needs aren't met. It's really hard to think about... how to use technology in a creative way for your teaching and learning if you can't get it to work just for your daily needs... But it's kind of interesting because I'm supposed to be here to act as a consultant, to talk with faculty members... "Are there any concepts you're struggling with where technology might help you?" It might even just be creating an image in PowerPoint rather than writing a paragraph on a slide. That might help you... But yeah, most of it is the technical issues, like, "How do I do that?", "My screen resolution is not how it was yesterday." You know that kind of thing. And I am here for that. And part of my job is doing those kinds of things... Those are good instances for me to be able to get their confidence level up so that we might be able to get to those points where, we've covered this, now we can move on to this. (Peggy, int 20100217).

Despite feeling she spent too much time on immediate support issues, I did observe Peggy training a number of faculty members, and this role of faculty trainer fell primarily to her. As described earlier, I observed Peggy helping Noah begin working with the TWEN system, scheduling a time to help Angela begin working with the internet in front of her classes, and showing two people how to use an online survey site.

Long Term Projects. Peter, whose official title was Assistant IT Manager, spent much of his time working on longer term projects. As the web master, he updated and maintained the Law School website. This included setting up new features such as the new news and media pages described above as well as revamping parts of the site, such as the faculty publications pages. As previously noted, Peter also spent time editing and publishing audio and video.

While Peter was working on these projects, which might require days or even weeks of careful and solitary concentration, the interruptions of the "hustle of IT" were particularly problematic:

There's a lot of day to day stuff. Emergency stuff, where you walk in the door, you kind of have a plan for the day. If you're lucky you'll get to half of that plan. Sometimes you walk right in, and there's some kind of crashed hard drive or system failing in a classroom, and it takes precedence over everything else. (Peter, int 20100408).

When Peter really needed to concentrate, he would avoid interruptions by either working from home or retreating to the isolation of the Court Room AV control room. Discussing a project to modify the encryption of the database used on the Law School website, Peter told me:

That's my top priority thing sitting on the list right now. Which, I might actually try to work from home tomorrow and dedicate the whole day to doing that...

That's what it kind of takes for a project like that, where I need to sit down for you know days on end uninterrupted. You know, I have to either get out of the office and hide somewhere in the building or work from home and do it. (Peter, int 20100408).

Beyond faculty and staff issues, the unexpected failure of a piece of the Law School's technology infrastructure could also ruin Peter's, and everyone else's, plans for the day. During an interview, Peter recounted the recent failure of the Law School's web server:

So, it just died over the weekend. We know it's a ten year old box... but it hadn't given us any warning... We've been, like, we really need to move this over to our new server... but it's been so rock solid and stable it didn't feel like an emergency even though it was old. And then it just died... I came in Monday morning and [Don] was in his office with computer parts all over the floor, and I just thought he was in the process of building up a new machine. And he said – you know our server is called Law Web – and he said, "Oh, this is Law Web." And I thought, oh no. Crap. (Peter, int 20100408).

A Busy Day. While the Law IT staff themselves distinguished between different types of support activities, in daily practice, they often blended together into a seamlessly busy day. An afternoon I spent with Peter provides a good example of this. He was wrapping up his modifications to the faculty publications web pages and was ready to show Jodi, a staff member in the Dean's Office, how to update the site. Peter told me there was some disagreement about who should post new publications to the site, but once "Don got in the middle of it... said it was a bad use of my time." The task was assigned to Jodi, who, "got volunteered to do it." (obs, 20100115).

I joined Peter on his trip to the Dean's office to train Jodi. As we got up to leave the Law IT Office, a student knocked on the door and entered. She started talking to me about a video cable she was holding. Peter turned around from putting the final touches on the publications database and told her she could return the cable to him. He told me the students had had a welcome back party and had borrowed the video cable to hook up a projector they were using, "You never know what people will need help with. We try to help them out."

As we rode the elevator up to the Dean's office, Peter joked that I would be seeing how quickly Jodi could learn the task. I joked back that I was actually judging how quickly he was able to teach her. I had adamantly explained to the IT staff that my observations were not about evaluating their performance or comparing their work to some pre-existing standard, and this had quickly turned into a running gag wherein they would accuse me of judging them and ask me how they were doing.

When we arrived at Jodi's cubicle in the Dean's office, Peter sat down at her computer. She kneeled next to him with a pad and paper. Peter showed her the publications website, retrieved the Microsoft Word document with the new publications which needed to be added, and showed her how to open up the database file with Microsoft Access. He explained to her it was better to cut and paste to avoid typos and showed her how to reformat the data from the Word file to work with the database and website. For example, she needed to remove most of the punctuation from the citation in the Word file because the code on the web page automatically included the necessary commas, periods, and parentheses.

Peter found a few citations that were "a little funky", such as one having a publication date of "Spring 2009" rather than a month and year. He showed Jodi a few "workarounds" to deal with those and explained some of the limitations of the page and his code. Peter decided he

should document how to deal with these peculiarities. He opened up a blank Word document and began making his own notes about how to handle certain types of citations. While making notes, Peter asked Jodi if she knew any html – the basic coding language used to format web pages. Jodi replied, "I've worked with it a bit. I can figure it out." Peter explained how she could use html codes to correct some of the formatting problems.

Jodi asked Peter about setting up hyperlinks for the citations that were accompanied by links to PDF files or other online copies of the publications. Peter replied, "Hyperlinks is more html. Let me put that into your Word document. The code for that is this." Peter added some html coding to the Word document. As he typed, Peter realized there was a problem with what he had put in the Word Document: "Ooh. I goofed up." As he fixed it, he told Jodi, "So don't pay attention to this." Once he figured out the issue, he explained to Jodi that the opening and closing quotes used by default in Microsoft Word won't work when they are copied into the database. Peter fixed this by copying the text out of Word, into Microsoft Notepad, and back into Word. Peter told Jodi, "Now you should be able to copy this from Word into the database."

Peter got up from Jodi's computer and said, "Let's let you do it for a little bit here. Close this out. Let you do it from the get go." Jodi sat down at her desk, and Peter pulled up a chair from another desk and sat down next to her. Jodi opened up the database again and began moving data from the Word file to the database. She started working on a citation that was not in a standard form, and Peter told her she could just skip it. Jodi asked if she could get in touch with him when she ran into one like that, and he agreed.

As they continued to go through the citations, Peter asked Jodi, "Did you volunteer to do this?" Jodi responded, "I didn't really have a choice." Peter replied, "I just knew I didn't want to do it." Peter showed Jodi how to use the keyboard to move around in the citation database, and

they completed a few more entries. Peter decided they had practiced enough, and said, "Let's do that funky one. If you can do this one, you can do anything." Jodi completed the "funky" entry with little difficulty or direction, and Peter decided she got it. Peter asked if she had any other questions and let her know she could email him if she ran into any difficulties.

As Peter and I returned to the Law IT Office, he told me he had created the citation database based on a professor's request, and he wanted to make some changes so it would be less complicated. When we got back to the office, Peter repeated this desire to Don, "That system was really made for a techie... I think it is over-engineered." Peter told Don about training Jodi, and then commented to me, "[That's] my style: Do it for them once. Then make them do it from scratch... That's how I learn." Don replied, "That's for sure."

Peter left the office again to pick up audio recordings from the Dean's office. He would copy these recordings off of the SD memory cards used by the digital recorders and post them to the Law School's web server. While Peter was gone, Roger, the Director of Operations and Financial Management for the Law School and Don's direct supervisor, came into the office. He and Don discussed the Law School's disaster plan. Roger left and Peter was still not back from picking up the audio recordings. I commented to Don, "[Peter] must have been shanghaied." Don replied, "It happens".

Peter's afternoon exemplifies how the various types of support provided by the Law IT staff could blend into one another. In general, the types of support provided by the IT staff can be classified as: immediate support, maintenance, long term projects, consultation, training, and innovation. Additionally, Don was responsible for setting the priorities of the Law IT staff and for working with the Dean's office to integrate the efforts of the Law IT staff with the rest of the Law School.

Peter had spent the earlier part of the day finishing revisions to the system that allowed faculty publications to be posted to the Law School website. The system itself was created at the request of a faculty member, and the revisions to the system were done to satisfy the Dean's desire that faculty accomplishments be more apparent on the Law School website. Completing and revising the system were both long term projects completed by Peter.

Up until this day, Peter had also been responsible for updating and maintaining the list of publications. At some point, Don had decided this was not a good use of Peter's time and had worked with the Dean's office to have this responsibility shifted to another staff member. The task of training Jodi to do this work fell on Peter. As Peter was leaving the office to meet Jodi, he was momentarily delayed as a student walked into the office needing a few seconds of help. As Peter showed Jodi how to use the system, he observed problems with it and set himself the task of further modifying it so it would be more useable by non-"techies". When Peter returned to the office, he relayed to Don the need for additional work on the project. Peter started by working on a project but was interrupted by an immediate task. Peter's project included maintenance tasks, and the need to move this maintenance to a staff member led to training, which, in turn, inspired Peter to do more work on the project.

Peter's next task had a similar trajectory. Peter went to the Dean's office a second time to retrieve audio recordings. He and Don had established a system of checking out audio recorders to faculty and posting class recordings to the Law School's website. This system was setup at the request of the Dean's office as a way of dealing with the possibility of large absences due to an expected flu outbreak. While the large numbers of absences never occurred, the faculty found the system useful, and Peter continued to spend time maintaining the process by retrieving and posting the recordings multiple times each week.

While Peter was gone, Don worked with Roger on the Law School's disaster recovery plan. This placed Don squarely in his role as a consultant, providing Roger and the Dean's office with information and advice about how the Law School's IT could continue to function following a fire or other catastrophic event. When Peter failed to return to the office in a timely manner, Don and I both assumed he had once again been pulled aside to help a faculty or staff member deal with an immediate support issue.

IT Support Roles and Activities. Within the figured world of technology use at the Law School, each member of the IT staff generally fulfilled a specific role tied to a specific support activity: Don and Peter focused on infrastructure and projects, Don on management and setting priorities, Peggy on faculty training, and Michael on solving more immediate faculty and staff hardware and software issues. These roles were recognized by both the IT staff themselves, such as when Peter referred to setting up printers as “Michael’s world” and to some extent by the faculty and staff, who knew to schedule classroom trainings with Peggy, look for Michael first when seeking immediate help, or go to Peter for advice about a research website.

There were also accepted and expected times when these roles were suspended and shifted. The most apparent examples of this were when Don, Peggy, and Peter were caught up in the “hustle of IT”. In most situations, immediate support activities took precedence over other support activities, and IT staff were expected to drop or postpone any projects or plans to take on this role. Faculty, staff, and student’s demonstrated this expectation by simply asking for help from whomever was available in the IT office or recognized as an IT staff member. The IT staff encouraged this expectation by responding to these requests, as opposed to sending individuals to Michael or another troubleshooter. Don explicitly expressed his expectation that individuals

should come to him for any support issues, and even extended this expectation to visitors and students who were not officially supported by the Law IT Office.

The primacy of immediate support activities was a source of tension for Peggy, Peter, and Don. Peter tried to avoid requests for immediate help by working at home or in a more secluded location, and Peggy was struggling to find ways to reorient her relationships with faculty from immediate support to innovation and collaboration. Don tried to address this tension by providing the IT staff with “innovation days”, which would exempt them from immediate support activities on a given day. Despite these attempts, as evidenced by Peter’s busy day, projects, training, setting priorities, and immediate support often flowed into one another.

A Guiding Narrative of IT Support. My discussions of teaching, research , and administrative technology activities at the Law School focused on the ways shared narratives and concerns and local understandings of certain roles and activities affected technology use and on how particular technologies were integrated and adapted into the local context of the Law School. These discussions assumed technology and technology use were secondary and instrumental to the roles of faculty and staff as teachers, researchers, and academic professionals.

Evaluating the activities of the Law IT staff presents a different challenge. To understand how the Law IT staff’s technology centric activities fit into the social context of the Law School, I will explore how they themselves articulate their role in technology use and how these self descriptive narratives are reflected in the IT support activities I describe above. In general, I will show how the Law IT staff’s highly contextualized knowledge of technology use at the Law School fosters and enables a concern with not merely addressing specific technology issues but with attending to the technology needs of the faculty, staff, and institution.

In our first interview, Don elaborated one clear relationship between technical support activities and the social structure of the Law School:

What we do is based on authority... There is a tier of authority. And the Dean's at the top and students are at the bottom. And there are even different levels of faculty based on either position, power... or political power... And I'm always weighing those options in deciding what we do... If the Dean is asking for something, it doesn't matter what it is, we do it. And if a student asks for something, it doesn't matter what it is, we rarely do it. And staff are in the middle. (Don, int 20100212).

Don referred to this tailoring of support based on social and political clout within the Law School as a "hierarchy of service" (Don, int 20100212). He asserted it affected not only how individuals were treated, but also extended to different groups within the Law School such as the various research centers and the Law Clinic and Law Library: "The main thing that we need to figure out... is project priority. So, what happens and what doesn't." For example: "There's this new Experiential Learning thing. That guy wants to do a project and database – web interface stuff. That would be us doing the work... I haven't done a thing with it because it's a lower priority." (Don, int 20100212).

In a later interview I asked Don to tell me more about the "hierarchy of service" and how it affected support at the Law School. He clarified, "So, what it is not... is that it's not that we're ever withholding service. So I think there's a baseline of service that the IT department provides. And I think that baseline is exceptional. I really do." (Don, int 20100602).

Don asserted the hierarchy of service was only an issue when individuals requested extra service and support, service going beyond what the Law IT staff would normally provide: "The

difference is how much extra do we do... starting at a baseline of excellent service, who gets extra stuff... it's just basically related to power." (Don, int 20100602). Don went on to tell me he had been to the Dean's house to work on a computer. Neither he nor the Dean were comfortable with that situation, but he had done it because it was the Dean. "I guess I'm not proud of this... but if the Dean asks us to do something, he has the most power, and no matter what it is, we'll do it... I would think that if a research assistant asked us, asked me, to come to their house, I don't think I'd jump at that opportunity." (Don, int 20100602).

Don's articulation of the relationship between power and IT support tells a compelling story: He and the Law IT staff are tuned in to the political structure of the Law School and prioritize their efforts according to this structure. Don's later clarification of this story could seem to reflect a discomfort with his earlier explanation. By claiming to provide "excellent service" to everyone and only consider position and clout when doing "extra stuff", Don seems to be back peddling on his assertion that the quality of technical support at the Law School depends on one's political position.

My observations of technical support at the Law School and my interviews and conversations with the Law IT staff tell a different story. Don's dissatisfaction with his explanation of a "hierarchy of service" is justified not merely because it gives the appearance of unequal or subpar treatment of some members of the Law School faculty and staff, but because it is not generally reflected in the actions and attitudes of the Law IT staff, including Don himself.

The first hint that political clout may not be guiding Don's actions appeared in his primary example of an "extra" provided to the Dean. Though Don stated his trip to the Dean's home was an extra service afforded to the Dean due to his position of power, as compared to a Research Assistant or staff member, it is clear from Don's description and characterization of the

event that it was far from a standard occurrence, was outside of any normal support activities, and was perceived as uncomfortable and odd by both him and the Dean.

Don first mentioned his trip to the Dean's house when I asked if the "hierarchy of service" had ever caused any problems. He replied:

One time we got into trouble with it was when [Michael] was fixing the Dean's home computer... but he did it in a way that's ready to put the Dean's computer on the campus network. So then it didn't work at home. And then I ended up going way beyond our – we try to draw the line at we don't go into people's houses, right. But with the Dean, I ended up going into his house and fixing the computer... That didn't feel the best, but it worked out ok. (Don, int 20100212).

In his second interview, returning to the topic, Don related the Dean's feelings on the subject:

I've been to his house helping him with computer stuff. He has expressed discomfort with that, right. "Oh, I don't want to ask for any favors". I'm like, "Hey listen, anything you want, we want to help you. It's no big deal." So, on my own time, just no big deal. (Don, int 20100602).

Don's characterizations of this event as "trouble", "way beyond" the line, not "feeling the best" about it, and "on my own time" make it apparent it was an anomaly and not part of a regular pattern of going to extraordinary measures to support the Law School's upper echelon of faculty and administrators.

Rather than Don's "hierarchy of service", the activities and the attitudes of the Law IT staff were better described by an alternate phrase the IT staff repeatedly used to describe the way they approached technical support: "There's a joke, it's turned into a joke, but I really believe that our job in the IT department is to never say no." (Don, int 20100212). The "never say no" ideal

was repeated by Don, Peggy, Peter, and Michael to express their concern with customer service: focusing on supporting and solving problems for individuals at the Law School rather than on the technology itself.

When I asked Michael if he had restrictions on how he could solve problems at the Law School, he replied:

In a way I do, but, we've taken them off (laughing). [Don] has taken them off. I'll put it like that. Because of ITS's thing, they have a way of saying no... It's out of my scope of support or something like that. [Don] doesn't really ever use those words. Whether, you know, shoveling the sidewalk to putting some tiles on the roof. He likes this office to never say no... That's just a part of my customer service before I got here, and it's worked with [Don]... So that's why I end up doing a lot of things that are sometimes way out of my scope. (Michael, int 20100311).

The Law IT staff's focus on customer service and attending to the needs of the Law School was reflected in both the development and prioritizing of projects and the support of individual faculty and staff. As described above, the Law IT staff, but especially Don and Peter, worked on long term technology projects which could take days or months to complete. Some of these projects were generated by the Dean's office, such as the revamp of the publication system, or were required by University or University System-wide changes, such as the admissions system update, but many were initiated by the Law IT staff's recognition of a problem or shortcoming and their attempts to address it.

I observed two instances in which the Law IT staff's training activities led to new projects. The first instance involved the classroom AV systems. Don and Peggy prepared

pamphlets explaining how to use the AV systems in the Law School classrooms and courtroom and provided these as PDFs on the Law School website and as color handouts available from the Law IT Office or from Peggy's cubicle on the fourth floor. Don and Peggy both spent time training faculty and outside users how to access and use these AV systems.

Don shared two ideas the Law IT staff had to make these systems easier to use. Don planned to reprogram the Crestron touch screen controllers to streamline their operation and simplify access to common tasks: "We're going to... allow them to still do it the old way, the current way, but then add a layer of easy to use stuff on top." (Don, int 20100212). Training visitors to the Law School put the Law IT staff in a unique position to recognize the need for simplified controls:

The chair of the [faculty] tech committee is saying, "Ah, you don't need to. It's fine. It's working great. Just keep it working. You don't need to do that." But the other people we support are people who just walk in off the street... I think that we can support them better. (Don, int 20100212).

Along similar lines, Don reported Peter's suggestion that they create instructional videos to augment the PDFs and instruction sheets.

Simplifying the use of the Crestron controllers and producing instructional videos were both project ideas designed to increase the usability of Law School technology for those least familiar with it, namely outsiders and guests. Rather than responding to the needs of influential or powerful faculty, the Law IT staff showed a concern with making Law School technology accessible to all comers.

A similar concern is evident in an episode described above. Peter's project to update the faculty publication database was requested by the Dean's office, but his assertion that the system

needed additional work to make it less "techie" arose from training Jodi, a staff member, to use it. Peter satisfied the requirements of the Dean's request, but found the maintenance of the system overly cumbersome and confusing for Jodi and planned to spend additional time making it work in a way more suited to her skills.

The IT staff's development of projects meant to improve IT at the Law School went beyond addressing specific shortcomings. When I asked Don to tell me about a project or idea he had initiated and which he thought had been successfully implemented, he described the Law IT Office itself as a self-guided endeavor, driven by a desire to provide better service and support rather than by an explicit external charter or directive:

Well, in one sense... the IT department itself was that. I was hired to just make it and go... So the whole idea of the department and all of our direction seems like that way... It feels like everything is that way. "Oh, we need to do this, and we need to do that." So I have a list of that that is just an ongoing list of, "Oh wow, look at that, that reminds me, I need to do that." And that turns into a project.

(Don, int 20100212).

The Law IT staff's concern with providing appropriate technology and technology support was even more apparent in their individual support activities. Their "never say no" approach manifested in individual support activities which attended to the particular needs of individual faculty and staff by both providing for their technology needs and recognizing their personal use of technology. In other words, the Law IT staff attempted to provide the technology faculty and staff needed in a way which would be useful to them.

This concern with taking care of individuals was expressed by Michael as he related two experiences in which his ITS-defined "scope of support" conflicted with the Law IT department's

"never say no" attitude. The first example involved Claire's PDA – an issue Peter and I encountered on my first day of field work:

One of our professors had a brand new E6400 Dell machine. Designed for Vista, but it works well with [Windows] 7. So, of course, my procedure when I get a new machine is reformat, reinstall, send it out the door with Windows 7 on it. She got the Windows 7 machine – uses a Palm PDA – had previously used it on her XP machine, and it would sync with her Outlook and task and calendar no problems. We come along with this new operating system, and we get the new software from Palm for her device and install it. It syncs, but, however, this time it syncs, it's giving personal appointments and putting a lot of things – because she allows students to see her calendar – allowing a lot of things through on this calendar that she was allowed to not let them view in the past versions and couldn't figure out a way to get that to not show. So, according to the user, she just – she wasn't crazy about the new operating system because of a little bit of learning curve, but she was really comfortable with XP. Her request was, "Take me back to XP and give me the old software I need for Palm."... which I did. It was a challenge... The new hardware did not like the old drivers, and I really had to go outside of Dell's website to find some drivers... and it's working.

However, our Active Directory – we've got an inventory scan that runs on it and gives... my bosses [in ITS] an idea of what operating systems I've got running over here and who's under them, and everything like that. And so, with one of the reports, they got to talking with different [troubleshooters] and found out that I had rolled this machine back to XP, and their thoughts were, "Hey, that isn't really

what we do... because we don't support that. You're going against us," so to speak... Their strong recommendation was to never do this again, and, in fact, get with them if I need to figure out a solution for the Palm as opposed to the operating system... I'll take that direction.

In this case, Michael recognized the importance of Claire's PDA working in a very particular way, and was willing to spend additional time and effort on her new laptop to satisfy her specific requirements. Satisfying Claire's request caused Michael to stray outside of ITS's "scope of support" by rolling her back to an older operating system, and he was taken to task for this by his ITS supervisors.

However, it was exactly this type of service and attitude which made Don value Michael's presence:

ITS views the positions more generically, but it's all about the relationship... the fit is critical because they're the people... actually providing the service...

[Michael] does everything I ask him to do... because of his personality and his orientation. He feels that he's part of the Law School. We like that. (Don, int 20100212).

Despite taking "direction" from his ITS supervisors, Michael's willingness to place customer satisfaction above policy was not an isolated incident:

On a similar case, a user got a new MacBook and went from Windows to Mac for the first time. Thought he would love Mac and didn't. Of course – Macintosh operating systems – you're allowed to Boot Camp it to Windows. ITS does not officially support Boot Camp. We support Parallels and VMWare, but we do not support Boot Camp. However, [Don] supports Boot Camp, and so it was, "ITS

doesn't support it, but we support it, so put it on there!" And that's how the conversation went. And you know, my response was, "Yes sir." Simple as that. No questions asked after that. After he said, "Do it." It's done. So in another meeting over at ITS with all my [troubleshooters], it came to the table, "Hey, anybody run Boot Camp?" And I didn't raise my hand. But [one of my supervisors], "[Michael], where's your hand at?" "OK. Well, I'm running it for one user," and I told the situation. And that's where, like I said, a little bit of contention. ITS does not support it. Here I am going outside of ITS's lines for my school. [Don] says we support it, and we don't say no. So it was a done deal. (Michael, int 20100311).

The first time Michael told me about these conflicts between what was expected of him at the Law School and what he was supposed to be doing according to his ITS supervisors, we were headed to the Dean's Office to finish working on a staff member's personal laptop, another task outside of Michael's ITS-defined scope of service. The hard drive in Phyllis's laptop had failed, and both Don and Michael had spent time trying to recover her data, particularly her photos. They had broken the news to her that her photos were unrecoverable and advised her to purchase a new hard drive for the machine. Michael had installed the new drive and setup her computer with Windows 7. I watched as Michael sat with Phyllis at her desk in the Dean's office and helped her configure her freshly installed system.

Michael started by asking Phyllis if she would prefer to setup the machine herself with his assistance or if she would rather he set it up for her. She responded, "I'd love for you to do it." (obs, 20091230), and Michael sat down at the machine and began working. He noticed she had Internet Explorer open to her Gmail account. He offered to setup her Microsoft Outlook to check

her Gmail email. She agreed. He started by setting up her Outlook to check her University email, handing her the machine to enter her username and password. Michael browsed to the Gmail support pages and found the help page that showed him how to setup Outlook to access a Gmail account. He configured Outlook according to the help page and handed Phyllis the machine again to enter her Gmail username and password.

Phyllis asked if the machine would still recognize her printer at home. Michael told her Windows 7 is better at recognizing and automatically setting up printers, and it would probably work. Phyllis asked if she could have a shortcut on the desktop to access her Gmail account. Michael explained that he would put a shortcut for Outlook, and Outlook will access both her University and her Gmail email. As Michael continued to configure Outlook, he talked to Phyllis about the different ways she could access both her University and Gmail email: through a web browser and through Outlook.

At Phyllis's request, Michael did some research to find out how to add a shortcut to Google on her desktop and added the Google toolbar to her Internet Explorer. As he was doing this, he talked to her about issues with search providers collecting and selling her information and advised her to be careful about installing toolbars and free software downloaded from the internet. Phyllis and Michael also talked about her son's new iPod, and Michael downloaded and installed iTunes for her. Michael also told her about his use of Skype and some upcoming IT projects in the Law School.

During an interview, I asked Michael about his value to the Law School, and his response described the kind of support he provided to Phyllis:

From what I've heard, it's the relationship. That I come in and develop a relationship with the people, and truly try to figure out how the communication

needs to happen in order to assist them... You know, not everybody's a computer tech... and they feel like their problem is always fixed when they talk to me because they don't have to go technical and I don't come back technical with them. They understand what happened and what we did to fix it. And that's what I feel has been my kind of way in what's kept me around... As opposed to me being super technical, it's been about customer service and just trying to help people, whether or not I had the answer. It's been trying to help them and truly caring about the end... I feel like from A to Z they were taken care of. (Michael, int 20100311).

While Michael focused on communicating with faculty and staff to understand and address their immediate issues, Peggy spent time getting to know how each faculty member worked with technology in general:

So every semester I do rounds, and I go to all the faculty to try to be proactive and to get myself out there so that people who don't think about coming to me can still get help... I ask them, you know, how are things working with you... But then I might also ask them are there any stumbling blocks with teaching any of your subjects, your topics that you're covering in class this semester. Are you working on anything that I can maybe brainstorm with you about different ways technology may be able to help you. (Peggy, int 20100217).

I asked Peggy if she had any specific goals for reaching a minimum level of technology skills among the Law School faculty. She replied that she did not think in those terms, but was instead concerned with each faculty member's individual progress:

I never really thought about it as a specific place to get them... I always really approach this job as, like a project, a work in progress... I came in and then I wanted to get to know the faculty and have them be comfortable with me. I didn't want them to think that I was pushing technology. I didn't want them to think that I thought they were stupid or anything like that. I was here to help them in whatever way each of them wanted me to help them when it came down to using technology for teaching and research. (Peggy, int 20100217).

Peggy also told me she planned to design a faculty survey which would further her knowledge and understanding of each faculty member's technology use, skills, and goals.

I observed Peggy putting her knowledge of faculty into practice in a variety of ways. When she was scheduled to meet with Angela, the busy Associate Dean, from 10am to 11am, she told me she had actually scheduled her from 10 to 11:30 because Angela was usually overbooked. As it turned out, Angela first postponed to 10:30 and then cancelled due to a scheduling conflict. When Don let Peggy know Sandra was still having issues with the laptop Michael and Don had just returned to her, Peggy jumped in and took over. Peggy not only worked with Sandra on issues Michael would normally address, but also listened patiently as Sandra vented her frustrations with Don and Michael's inability to make her laptop work exactly as she wanted.

Peggy also accepted and worked within faculty members' self-imposed limits. When Noah stated he had had enough TWEN training and wanted to play with the system on his own, Peggy let him. In the extreme, she even adapted her behavior to a faculty member who wanted nothing to do with technology:

The first semester I was here, I introduced myself to everybody. And when I introduced myself to this guy and told him what I did, the first thing he said was, "I'm done learning." (laughing)... He told me he had his faculty assistant print his email... I'm not going to try to turn this guy over to embracing technology, so I just made him a deal. I said, "How about this, whenever you see me coming down the hallway... you don't go running in the opposite direction?" And he's like, "That's a deal." So we've been fine. (Peggy, int 20100520).

Peggy's knowledge of and respect for the faculty members' technical knowledge was also evident in the technology brown bag training sessions she and Don had organized. As mentioned earlier, many of these sessions were peer based and faculty led, reflecting a recognition of faculty technical knowledge as well as a valuing of faculty members' perspectives over those of the IT staff. Don and Peggy used this same venue to accommodate faculty and staff nervousness over a major Microsoft Office upgrade, offering multiple training sessions, a lot of "handholding" and "assurances that no one would be left behind" or forced to upgrade before they were ready. (Peggy, obs 20100120).

The Law IT staff's guiding narrative of "never say no" could be interpreted shallowly as the primacy of immediate support activities and the expectation that IT staff will prioritize individuals' immediate support needs over other work. However, Don and Peter's commitment to providing customized local solutions through often complex and difficult IT projects, Michael's willingness to step outside of accepted ITS support limits to keep people working in the manner they find most effective, and Peggy's interest in faculty's individual IT practices and challenges, suggest a deeper meaning.

Rather than focusing on specific technologies or solutions, “Never say no” places the IT staff in the position of responding to the specific and local technology needs of the Law School faculty and staff. The Law IT staff possess a great deal of knowledge about the complex set of artifacts, narratives, roles, concerns, and activities I refer to as a figured world of technology use as well as knowledge about the specific technology practices of individual faculty and staff at the Law School. Pairing this understanding with technical knowledge and experience, the IT staff play a central role in shaping the figured world of technology use at the Law School; adapting technologies and technology use into the social and cultural landscape of the Law School, and guiding others through its complexities.

A Figured World of Technology Use

In this chapter I have provided a detailed description of four areas of technology use at The Law School and pointed out aspects of technology use that suggest this activity is part of a system of shared meanings and common practices comprising a figured world. Within these four areas of use, I observed many examples of the five elements I propose make up a figured world: artifacts, activities, narratives, characters and roles, and concerns.

Among Law School faculty, PowerPoint and TWEN were both artifacts with a special status as de facto standards of pedagogical practice. These items were also significant as markers of the Law Schools link to the legal profession. Though PowerPoint is common across the University and elsewhere, both Angela and Mohinder recounted that their use of PowerPoint in teaching directly resulted from their use of it while working as legal professionals. The use of TWEN, while standard in the Law School, was a departure from the campus-wide learning management system, and was directly linked to the Law School's contract with the Westlaw legal research service.

Law School faculty also shared a common concern with the use of AV technologies in their teaching. All four teaching faculty reported experimenting with adding video presentations to their teaching. AV equipment was included in all classrooms at the Law School, especially in the large courtroom auditorium which included multiple projectors, speakers, microphones, and cameras as well as a separate AV control room. A concern with AV technology was also reflected in the activities of the IT staff, who spent time developing a new system for streaming video from the Law School website, provided audio recording equipment to faculty, posted classroom recordings on the Law School website, and worked to make the AV equipment more accessible to users by reprogramming the AV control equipment and updating their support materials.

Interviews with faculty also revealed a common method or process of adopting new technologies for teaching: a shared narrative of choice for educational technologies. Faculty members listened to a few trusted sources to suggest new technologies. These sources included the IT staff as well as a few faculty members recognized as technology leaders. This peer-based learning had also been formalized into a series of brown bag sessions organized by Peggy and Don.

Once a faculty member chose to try out a new technology, they would experiment with it in a non-critical venue and evaluate its usefulness or benefit compared to their current practices. If a substantial benefit was perceived, the faculty member might incorporate this technology into their teaching. However, they would also plan for a failure and develop a contingency plan that would allow them to accomplish their teaching goals if the technology was unavailable or ineffective.

While these steps may not be unique to the Law School, faculty members' shared understanding of this narrative, shared recognition of technology leaders, and linking of this narrative to their identity as members of a particular pedagogical tradition – the Socratic method of Law School teaching – marked it as a local construct indicative of a figured world of technology use.

Compared to teaching with technology, faculty members' use of technology for research appeared much more individualized and isolated. While I observed a common concern with using websites to publicize or communicate research, both Mohinder and Niki used outside contractors, not the Law IT staff, to create their sites. These websites were also outside of the Law School's internet domain space, and, in Niki's case, the websites were physically hosted outside of the Law School. Niki and Tina also reported using non-Law School and non-University tools, such as Google Docs, to facilitate their communication with these contractors as well as with other local and remote research partners.

The array of technologies used to complete administrative tasks at the Law School was an extremely varied and complex set of artifacts. Many of these technologies originated from sources within the bureaucracy of the University, University System, and state. Required administrative technologies such as the purchasing and accounting systems linked the work of the Law School staff to these other organizations and contexts. Changes to these systems cast Law School staff into a role of adapting their professional practices to these new systems; finding ways to accomplish their duties within the Law School using these external and externally mandated systems.

Other technologies were more flexible and adaptable to the Law School context. The Law IT staff took advantage of University systems such as the Microsoft Exchange server, Active

Directory, and enterprise storage system. Don brought these campus-wide technologies into the Law School as services, and in some cases adapted and modified them to satisfy specific Law School needs. In cases where University technology was insufficient, such as with the Law School web server, or where the Law School had extremely specific requirements, such as with the private data server and LSAC admissions system, the Law IT staff took on the task of augmenting University technologies with local solutions.

I spent a great deal of time with the Law IT staff, and identified how their specific support roles were expressed and, at times, subverted in their daily practice. Each member of the IT staff was identified with particular support tasks: Don managed and set priorities for the IT staff, Don and Peter worked on long term projects and infrastructure, Peggy focused on faculty technology training, and Michael and the other troubleshooters responded to immediate requests for technical assistance.

Michael identified the activity of constantly responding to an unending stream of requests for assistance as the "hustle of IT". Despite their acknowledged roles, Don, Peter, and Peggy could all be caught up in the "hustle of IT", and responding to immediate requests for help from faculty and staff took precedence over any other roles or tasks. Don, Peter, and Peggy all recognized and expressed that responding to immediate requests was interfering with their ability to perform other tasks and to maintain or develop their technical skills.

Peter often worked from home or avoided the Law IT Office in order to focus on projects and avoid requests for help. Because Peggy's role as a faculty trainer precluded a similar strategy, she was still struggling to find a way to focus more on collaborating with faculty to find innovative solutions while not spending all of her time providing basic technical support. To allow Peter, Peggy, and himself time away from the "hustle of IT", Don instituted a policy of

"innovation days", which effectively exempted a particular staff member from the "hustle" on a given day.

Finally, I identified among the Law IT staff a guiding narrative of support. The idea that the IT staff "Never says no" served as a guiding principle for the IT staff. Specifically, this idea was implicated in the precedence of providing immediate support. It was also invoked by both Michael and Don to explain and justify multiple occasions in which Michael provided support or implemented technical solutions outside of what his supervisors at ITS would accept.

In a more general sense, "Never says no" expressed the Law IT staff's orientation toward providing IT solutions and support. Rather than focus on maintaining or providing specific technologies, the Law IT staff focused on attending to the needs of the Law School faculty and staff. "Never says no" was a responsive stance; a way of expressing the Law IT staff's desire to provide faculty and staff with technical solutions adapted to their needs and the local context of the Law School. While I have provided a systematic description of some of the important artifacts, activities, narratives, roles, and concerns that made up the figured world of technology use at the Law School, the IT staff were the real experts in navigating and shaping technology practice at the Law School and in assisting the Law School faculty and staff in doing the same.

Chapter 5: Cultural Forms and Technology Identity at the Law School

In my previous descriptions of technology use at the Law School, I have focused on accurately portraying the practices, attitudes, and technologies I observed. I have followed these descriptions with discussions of how these practices may be considered or understood as aspects of a figured world of technology use. In this section I will discuss two particular aspects of the figured world and identity theory which emerged as important concepts in my data. First, the concept of artifacts, items or objects with special significance within a local cultural context, is particularly relevant to my observation of the variety of technologies in use at the Law School. I will describe how some of the technologies and technology practices I observed serve as markers of a figured world of technology use at the Law School and reflect the Law School and Law School faculty and staff's positions within a complex array of institutional and organizational structures.

Beyond simply providing evidence of a figured world, I will explore how Holland et al.'s (1998) description of the process of local adoption and adaption of cultural forms to local contexts and individual identities may apply to technology use. Conceiving of technologies and technology practices as cultural forms will provide a situated and dynamic characterization of local technology use.

Second, I will return to the Law School faculty's shared narrative of choosing technologies for teaching. This narrative encompasses a number of aspects of a figured world of technology use at the Law School and suggests a relationship between technology identity and the various roles of faculty, staff, and IT staff. I will explore how variable access to technology choice across these groups affects one's technology identity within, and to some extent outside of, the Law School. I will also suggest technology choice may be an important expression of

agency and explore some of the power and identity issues involved in organizational decisions about technology.

Artifacts and Practices

In Chapter Two I proposed that the existence of artifacts and practices with special local and shared significance could serve as markers of a figured world of technology use. I described some examples of Holland et al's (1998) concept of artifacts in the existing education literature: Jurow (2005) showed how graphs and floor plans helped students pivot from the classroom into a hypothetical figured world of architectural design. Hatt (2007) described participants' identification of smartness and academic success with specific items such as diplomas and test scores. I also pointed out the importance of contextualized practice in some descriptions of figured worlds: Robinson (2007) reported on the creation of local linguistic practice: the creation of the "dirty pilgrims" idiom, and Luttrell & Parker (2001) identified contextual differences in students' literacy practices: their emotional attachment to personal reading and writing in contrast to their relationship with academic activities.

In the observations and interviews I reported in Chapter Four, a number of technologies and technology practices emerged as similarly significant aspects of a figured world of technology use at the Law School. In activities related to teaching with technology, two technologies were particularly important to Law School faculty: PowerPoint and TWEN.

Beyond a de facto standard, the use of PowerPoint for classroom presentations was actually synonymous with classroom technology. All four teaching faculty discussed its use. Peggy, whose job involved helping faculty improve their classroom practice, named it as a vital technology. Mohinder called it his "bread and butter" (Mohinder, int 20100409). Difficulty

integrating videos into PowerPoint even led Mohinder and Lyle to question the usefulness of video rather than any lack of functionality in PowerPoint.

TWEN, the online learning system offered by the Westlaw online legal research tool, was similarly a de facto standard for online learning systems at the Law School. Despite the University providing and supporting a different campus-wide solution, Peggy reported TWEN was by far the most popular system at the Law School, with no faculty using the University system and only one faculty member using an alternate system offered by the LexisNexis online legal research system.

Data about teaching with technology at the Law School also revealed a common concern, almost fascination, with the use of audio and video technology. Though integrating video into classroom practice was reportedly problematic in a variety of ways, AV hardware and ideas about its use, if not its use itself, was ubiquitous at the Law School. Every classroom in the Law School contained projectors with connections for laptops, a DVD player, and a touchscreen remote control. When fears of a flu outbreak prompted concerns about wide spread absences, the IT staff responded by making digital audio recorders available to the faculty. Despite the lack of any epidemic, Peter spent time each week collecting, processing, and posting digital audio of class lectures.

The ultimate expression of the Law Schools' concern with AV was the large and highly wired courtroom. This room included multiple projectors, screens, microphones, speakers, and cameras as well as an AV control room. It was recognized as a unique and special resource of the Law School. The control room was originally setup to record events directly to DVD, but an ongoing IT staff project aimed to shift the output to digital video which would be immediately available on the Law School's website. Though Mohinder was the only faculty member to

express interest in using streaming media, Peter, who spent a great deal of time capturing and editing video of Law School courses and events, reported the streaming media project was a response to faculty demand.

A number of administrative systems at the Law School were similarly topics of conversation and concern. Staff members in particular were concerned with the personnel, accounting, and student information systems. Each of these systems had undergone major revisions, and staff members' thoughts about technology use at the Law School focused on how changes to these externally mandated systems would impact their daily work and their ability to perform their jobs effectively.

The new campus-wide student information system presented particular challenges to the Law School. The Law School used a web appliance provided by the Law School Admissions Council, or LSAC, to manage the admissions process and link it to all other American Bar Association approved Law Schools. Managing the relationship between the University's new student information system and the existing LSAC system was a major project for Don and the Law School admissions office.

Technology as Cultural Form

Taken individually, each of the technologies listed above represents an important aspect of shared technology and technology practice at the Law School. Wide usage, common concerns, and shared practices surrounding these technologies are evidence of a figured world of technology use at the Law School.

The variety of sources of these systems and the relationship of these systems to organizations, hierarchies, and contexts outside of the Law School suggests these technologies also serve as important links between the Law School and the rest of the world. In Chapter Two I

described how Holland et al. (1998) adapted Bourdieu's cultural dialectic into both a practice theory of the self and a description of the cultural processes that form figured worlds. In their model, identity is a process in which cultural forms are enacted, rejected, internalized, and orchestrated by individuals within local contexts of power and practice. Figured worlds are patterns of local practice in which, "the idioms of the world realize selves and others in the familiar narratives and everyday performances that constantiate relative positions of influence and prestige" (p. 60).

Both ideas focus on the processes through which cultural forms are transcribed in local practice. These cultural forms are imagined as extant models for thought and behavior. These forms can originate in historical processes that give rise to social and economic structures such as gender, ethnicity, and class. Cultural forms can also originate in more local contexts such as other figured worlds and even individuals' identities. All of these forms can be adapted and transplanted into new contexts, especially as individuals move fluidly between multiple locals. Individuals exposed to these forms use them as models for their own behavior. Expressed through individual identity and practice, and adapted to local context, these forms can develop into locally shared patterns of practice. Holland et al. (1998) propose this on-going process of reproduction and adaptation of cultural forms, as well as the innovation and improvisation of new forms, as the basic process of constructing identity and figured worlds. (See Figure 1).

I propose technology and technology practices at the Law School follow a similar process. These technologies function as "idioms of the world", entering the Law School in a number of ways, from a number of sources. They are adapted to the local context and incorporated into local practice. Conceiving of technologies as cultural forms recognizes the dynamic nature of technology practice, the historical nature of technology adoption, and the

ongoing links between the Law School and the multiple external sources of its key technologies. (See Figure 2).

A technology such as PowerPoint, which is common, ubiquitous, possibly even hegemonic, nonetheless entered Law School practice in historically discoverable ways, and its use reflects ongoing links with other contexts. Both Angela and Mohinder identified personal histories surrounding their use of PowerPoint in the classroom. Angela traced her adoption of PowerPoint to her time in private practice and her use of it in the courtroom. Mohinder linked his reliance on PowerPoint to its use at professional conferences.

These personal histories of technology practice parallel Holland et al.'s (1998) dialectic process of the coconstruction of self-in-practice and figured worlds: cultural forms or practices in one context are adopted and re-expressed by individuals in a new context. In the case of PowerPoint, Angela and Mohinder encountered a supportive environment for their individual decisions to use PowerPoint in their teaching: a peer group which also widely used and accepted PowerPoint in classroom practice, a University campus which provided them with essentially free access to the software, and a new building with a well developed audio and video infrastructure.

Through the lens of self-in-practice and figured worlds, the common use of PowerPoint in classroom presentations at the Law School may be understood beyond its significance as a de facto standard for classroom presentation. For any individual faculty member who chooses to use PowerPoint, there is a discoverable personal history behind that practice. At the organizational or institutional level, the use of PowerPoint links Law School technology practice to wider patterns of practice at the University as well as in business and the law profession.

Figure 1: The Figured World & Identity Dialectic

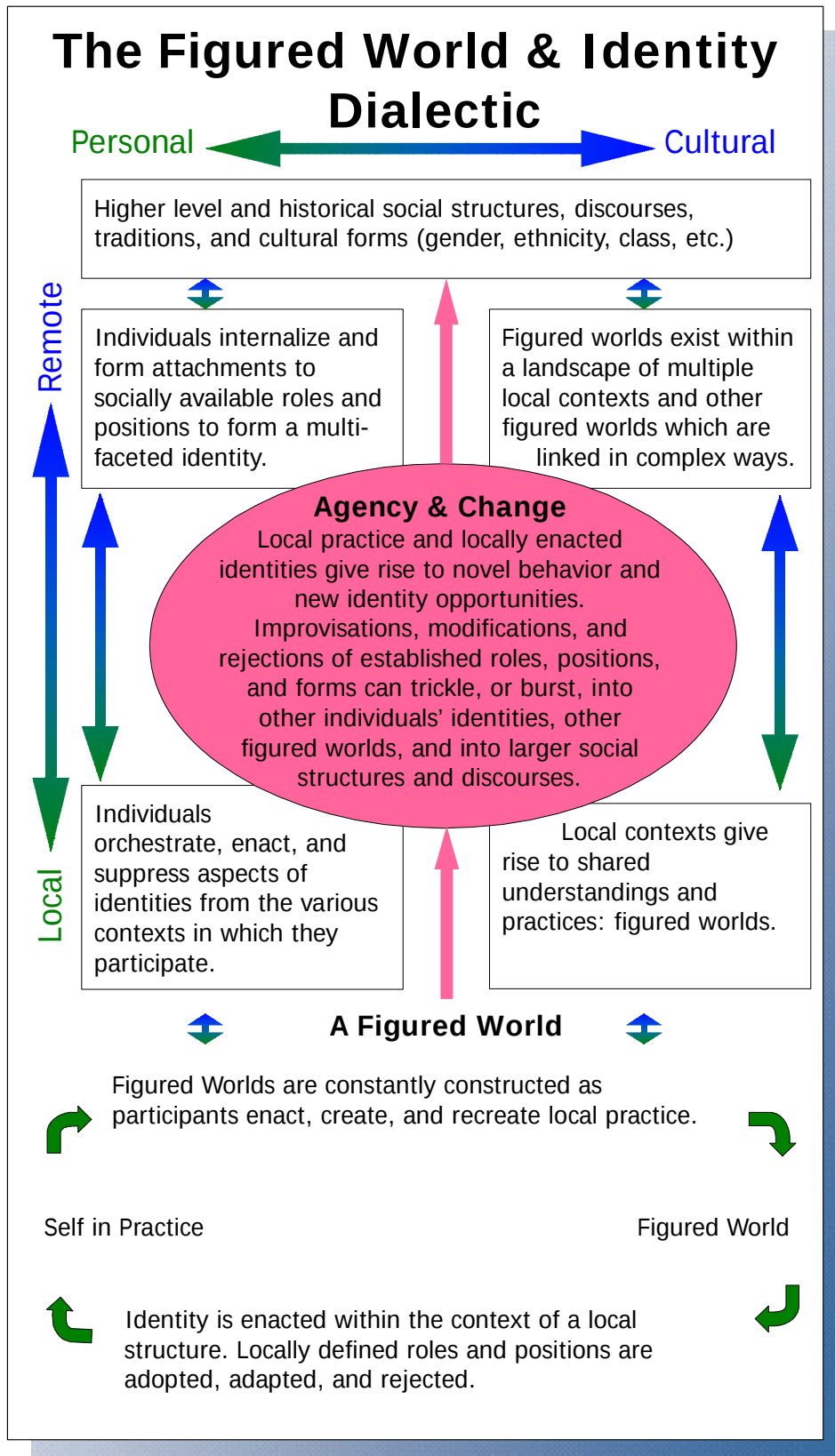
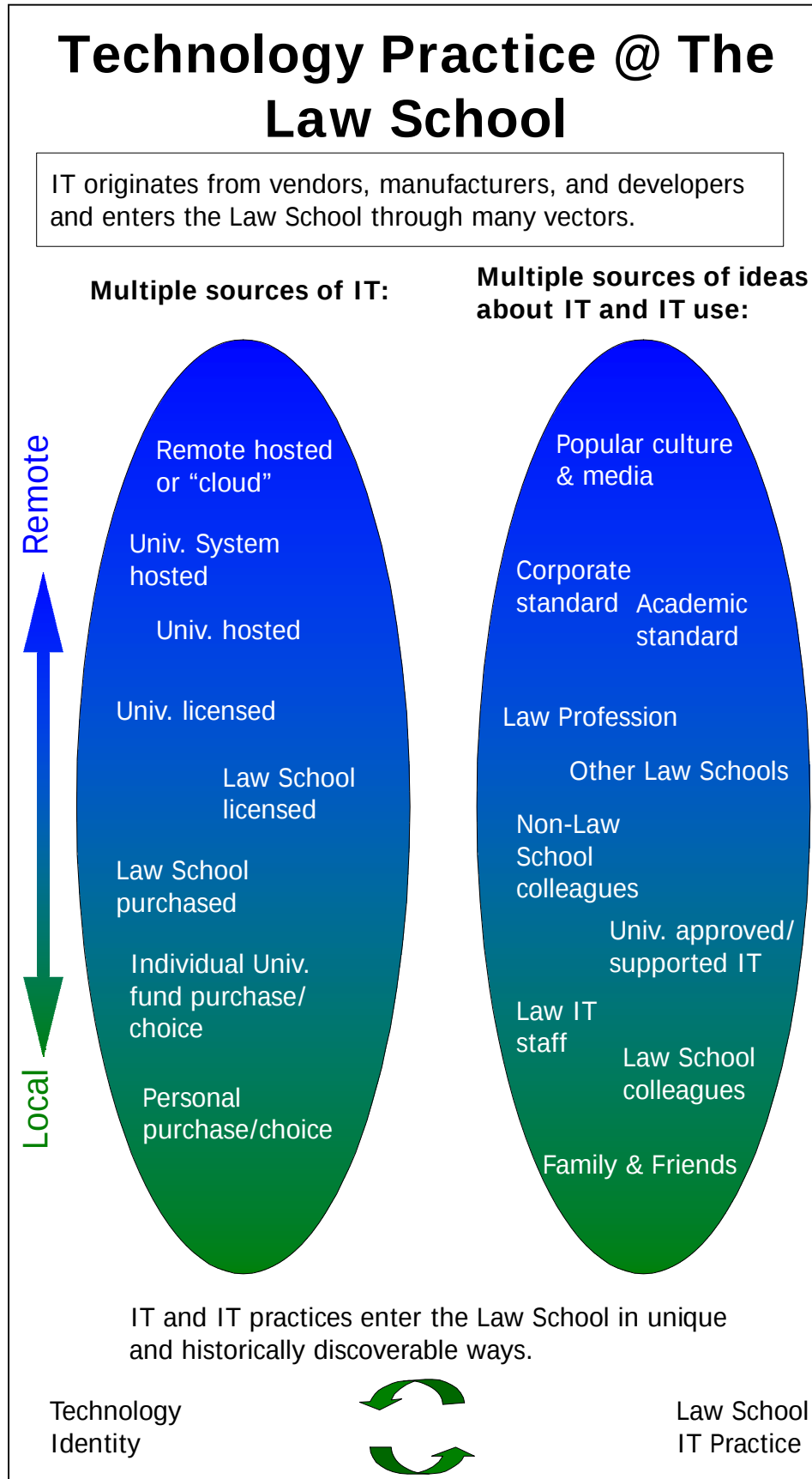


Figure 2: Technology Practice at the Law School



Similarly, local use of mandated administrative systems such as the personnel and accounting systems reflects structures of power and hierarchy surrounding the Law School. The history of recent changes to these systems lies outside of the Law School; decisions made and implemented in the University System. However, these changes are expressed locally through changes in the personal technology practices of Law School staff. For Helen these changes were disruptive and arbitrary: a remote decision limiting her ability to access information she needed to accomplish her goals. For Alice, access to new systems was an opportunity to learn new skills and make her entire department more efficient and streamlined. For Bette, these changes were simply par for the course: another in a long line of system changes reflecting current trends in technology, privacy, and security. Though their reactions differed, each staff member recognized the inevitability of these changes and was in the process of modifying her personal technology use to accommodate them: finding ways to use new systems to accomplish the same tasks.

Holland et al. (1998) propose that individuals and local context exist within a "landscape of objectified (materially and perceptibly expressed) meanings, joint activities, and structures of privilege and influence" (p. 60). As individuals move between different local contexts, so do local contexts exist within a landscape of other contexts as well as social, political, and cultural structures. The bringing together of the LSAC's admissions system with the University's new student information system epitomized the technological expression of the Law School's position within multiple contexts. The hybridization of these two distinct systems was a clear example of local technology practice reflecting and adapting to the unique position of the Law School with regard to the network of other ABA approved law schools, the ABA and legal profession itself, the University System, and the University.

While the use of mandated administrative systems exemplifies technology linking the Law School to remote contexts, the popularity of a relatively uncommon piece of software at the Law School illustrated how local technology practices can originate in individual practice. Peggy told me the story of how Mindjet's MindManager – "the world's leading information mapping software" (MindJet, 2012, para. 1) – became a well-known Law School technology largely through the actions of Sam, a faculty technology leader:

So, [Sam] actually was one of the first ones to use MindManager here, and he was one of the ones who got that whole three year pilot launched. But he had, I think he had seen someone use it in a presentation, so he started dabbling with it. Then he started using it in his class, and I think he ended up showing [Don] and me and a few others... It was the same year – it was the first that I was working here – and we had started the Technology Topics Brown Bag series, and that was a place where we could show faculty... what kinds of innovative technologies are out there that you might be able to use for teaching and learning and scholarship... [Sam] ended up doing one on MindManager, and it went really far because of the fact that, here was a faculty member that everybody respects, using something new that no one had ever seen before, in his classroom. And so being that he was a faculty member here, a lot of people were thinking, "Huh, maybe I should try using it." Or, when they saw the product, they were thinking, "I think that way. I want to use it." So we actually got a handful of people to get started... And then over the last couple of years... they approached MindJet and said, "Hey, would you be interested in giving us free licenses if we help you promote this within law

schools?” and they thought, “Yeah, this would be mutually beneficial.” So that is how it got started. (Peggy, int 20100217).

Angela experimented with using MindManager for presentations in class and faculty meetings and for writing research papers. She told me how she was introduced to the software: “It was by accident. I was sitting next to a younger faculty member who said, ‘I have something that’s going to change your life. Try this.’ And I had never heard of it... [he] said, ‘I think this helps me a lot. You might like it.’ And so, that was it.” (Angela, int 20100503). Similar to other technology she used, Angela valued MindManager because, “It does some work in helping me sort of make connections that work and don’t work.” She had been using MS Word documents to organize her research papers, and this had replaced her “index cards in a box” method, but “it didn’t have that visual piece of reorganizing and rearranging things and connecting relationships.” (Angela, int 20100503).

MindManager had come into the Law School through a single user: an influential and respected faculty member recognized as a technology leader. As described in the narrative of faculty technology adoption, use of the software was popularized through both informal and formal faculty peer networks: faculty showing each other an interesting technology and Sam sharing his experience at a Technology Topics Brown Bag organized by Don and Peggy.

Peggy reported the software itself was a good fit with the way many Law School faculty liked to work, and it had an apparent benefit:

That product, actually, because of the fact that these faculty members have been able to showcase their work with others, it really turned a lot of other people on to it, because all of a sudden it was the mechanism that allowed for non-linear thinking. Non sequential thinking. But also that, huh, this could be a way that I

could get more efficient. So that took off like wild fire almost. (Peggy, int 20100217).

Don reported Sam and Nathan had urged him to work with MindJet to obtain and distribute free licenses to any faculty or staff wishing to use MindManager, and I observed Don working with Michael to streamline the installation process.

All of these Law School technologies – PowerPoint, AV hardware, University and University System administrative systems, MindManager, and the others I describe in Chapter Four – have unique histories and pedigrees. As Holland et al. (1998) propose for cultural forms, the local practices and significance of these technologies can be understood as coconstructions of personal and organizational history and practice. As cultural forms may transcribe structural hierarchies into local contexts and daily practice, mandated administrative systems bring institutional values and decisions into the technological practice of Law School faculty and staff. As cultural forms may be moved from one context to another, reinvented, and repurposed, individuals like Sam can expose the Law School to new technologies like MindManager, and, if MindJet is lucky, the practices developing around MindManager at this Law School may spread to other law schools and academic settings.

It is clear from these examples that technology practice at the Law School can be characterized as a figured world of technology use. Technology artifacts and practices have special and shared significance within the Law School context. Additionally, individual and organizational technology practices are dynamic codeveloping processes. Individuals are linked to each other, and the Law School is linked to other contexts, in complex yet discoverable and describable ways.

The application of Holland et al.'s (1998) theoretical lens to technology practice facilitates this description and illuminates a number of institutional and personal realities regarding technology use at the Law School. Individual technologies and the technology practices connected to them are not only artifacts with a local shared significance, they are also cultural forms that link the Law School to remote locations and contexts. As with Holland et al.'s concept of cultural forms, these technologies may enter the figured world of Law School technology use through the actions of an individual, as with Sam's introduction of MindManager, or as part of an established social structure that situates local practice within a landscape of other contexts, as with the LPAC admissions system or the University System administrative systems.

These technologies also serve as a way for remote values, practices, and concerns to be imported and expressed within the Law School. As Helen and Bette explained, the new administrative systems were the result of staffing and technology decisions made by the University System and expressions of new concerns about security, access, and privacy. The necessity of setting up a Law School private data server with security requirements exceeding even the new administrative systems was a clear example of a the legal profession's concern with protecting client confidentiality being incorporated into the Law School's technology use.

Following Holland et al.'s (1998) concept of cultural forms, these remote technologies may be adapted and adopted to local and individual practice in various and multiple ways. Angela and Mohinder encountered PowerPoint in their professional lives, but developed a unique PowerPoint practices specific to their use at the Law School. Law School staff had fewer options for adapting the new administrative systems to their established ways of working, and they were still figuring out how to adjust their own practices to meet the requirements of these new systems.

Considering technology practice to be a cultural form not only focuses attention on the significance of integrating remote technologies into local practice, but also at the individual and personal nature of this process. In the above examples, PowerPoint and the new administrative systems are part of a figured world of technology use in that they have a special significance shared among the Law School faculty and staff. However, the actual adaption and adoption of these technologies, whether by choice or by necessity, is essentially a change in individual behaviors. Holland et al.'s (1998) identity theory provides a useful lens for examining the dialectic process of cultural forms entering a figured world through their expression and interpretation in individual identity.

Technology Identity

In Chapter Two I described Holland et al.'s (1998) concept of “self-in-practice” as a theory of identity focusing on the enactment of cultural forms within particular social contexts. Holland et al. drew on both Bourdieu and Foucault to see the self as continuously and dynamically constructed enactments, rejections, adaptations, and even novel generations of cultural forms or practices within contexts of power and position. An individual's immediate context can include the local figured worlds in which he or she participates as well as other figured worlds and aspects of durable identity encountered and internalized throughout one's personal history. The expressions constituting any given “self-in-practice” are an orchestration of these multiple and possibly competing or contradictory streams of cultural forms, discourses, and identities.

I described some ways this concept of identity has been applied in educational research: Rubin (2007) describes the figured world of Oak City High School as a disempowering environment. The high school reproduced structural inequalities by failing to offer students any

way to construct meaningful identities as successful learners and students. Urrieta (2007b) and Hatt (2007) describe how durable identities constructed in one context were enacted and adapted to different figured worlds. Urrieta examines educators' expression of their Chicano activist identity within a figured world of academics, while Hatt reports participants' reflections on their "academic identity" and the concept of "smartness" as it applied in and out of an institutional setting. Fecho et al. (2005) and Jurow (2005) focus on immediate identity production and orchestration. Fecho et al. shows exposure to even slightly different school contexts forced teachers to examine their practices and values, and Jurow explores students' ability to engage in hypothetical identities as Antarctic architects within the context of a classroom project.

I also provided some examples of researchers incorporating identity concepts into education technology research. Clausen (2007) and Virnoche & Lessem (2006) explore whether and how teachers' beliefs and feelings about technology interact with the local context and affect decisions about classroom technology use. Levin & Wadmany (2006) describe the effects of a three year technology program on teachers' attitudes and beliefs about constructivist pedagogy and education technology. They report a generally positive shift in attitudes, but stress the process of change was unique to each individual. Ottesen (2006) describes student teachers negotiating a tension between their roles as inexperienced classroom educators and sophisticated technology users with more educational technology training than their mentor teachers. Finally, Windschitl & Sahl (2002) observed eleven teachers over a three year period in a school that had just implemented a program to provide every student with a laptop. They conclude choices about classroom technology practice were related to each teacher's personal experiences, beliefs about learning and pedagogy, perceptions of the institution's expectations, and opportunities to learn about the technology.

This previous research shows the concept of identity is a useful heuristic for describing and understanding relationships between personal history, beliefs and attitudes, and personal practices within specific contexts of custom and power. At the Law School, with regard to technology use, the most apparent marker of identity is an individual's role as either a faculty member, staff member, or IT staff member. While there are clear links between these three groups of users and the types of activities I described in Chapter Four – teaching with technology, research with technology, use of administrative technology, and technology support – there are also more complex relationships between individuals' technology practices and this important aspect of identity.

In Chapter One I proposed individuals might construct persistent identities as technology users within a particular context. In Chapter Two I expanded on this by describing Holland et al.'s concept of identity as situated in contexts of practice, possibly limited by that context, yet multiple, orchestrated, and a potential source of agency and change. In the observations and interviews I presented in Chapter Four, these identity issues are most apparent in two important areas: technology choice and change and the distinction between professional and personal technology use. At the Law School, individuals' positions as either faculty, staff, or IT staff are linked to how they experience and participate in choosing which technologies they use at work and to the ways these technologies are related to their activities outside of the Law School.

Faculty. Law School faculty were largely free to choose which technologies they would use for teaching and research, but this choice was accompanied by a pressure to make informed and considered decisions about technology while remaining efficient and keeping up with quickly changing trends. All of these issues are apparent in the faculty's shared narrative of choosing educational technologies. Individuals' reliance on trusted peers to guide them to

possible new technologies shows that the group as a whole was free to explore a wide variety of technologies, and, in some cases, such as MindManager, to introduce previously unknown technologies into the Law School context. At the same time, the faculty's careful process of evaluating new technologies and technology practices against the efficiency and efficacy of well-known solutions, and their tendency to implement new solutions in limited ways and to provide themselves with backup plans in case of failure, point to their personal accountability for these choices.

Both Angela and Mohinder explicitly described a pressure to remain current:

I have some very smart, thoughtful colleagues who are very very smart, and I see that they do their jobs better because they're able to use certain technologies... I don't want to be left behind doing my job less good, less well, because (laughing) I can't learn technology... So I think that's seventy five to maybe eighty percent, maybe even more, of why I get that feeling I don't want to be left behind. I don't want to be a bad teacher. I want to be a good teacher. I want to keep going and that's kind of what I like about teaching. I learn, and I change, and it's dynamic. The other part is just getting grey hair... I don't want to be left behind (laughing) because it's just an instinct of human survival that you'd like to continue to be relevant and conversant and part of the mix. I'd like to think that's a smaller part of it, but, I'm sure it's there. (Angela, int 2010503).

You can't not use technology in today's day and age... The world is bursting with all kinds of things, you know... I'm not as backward as some of my colleagues are, but I certainly don't feel myself at the frontlines when I go out, go to universities,

meet, you know, professionals who come up with all kinds of things. (Mohinder, int 20100409).

While Angela had at one point put herself on "a self-imposed program to try one new technology per year" (Angela, int 20100503) and Mohinder was looking for a way to be "kept abreast of new technologies that can be used for educational purposes" (Mohinder, int 20100409), exploring new technologies came naturally to Lyle and Nathan. Lyle, who had begun blogging about Law topics prior to coming to this Law School and was recognized as a technology leader among the faculty, complained that his technology options were constrained by demands on his time and by financial concerns within the Law School. He had to "fight" to buy a Mac rather than Windows-based PC and to spend money on dictation software (int 20100408). Though Lyle felt resistance when spending Law School funds on new technology, Don was excited when Lyle became the first person at the Law School to buy the recently released Apple iPad.

Nathan, who described a complex system of Google Calendar use for tracking his family's schedules, was similarly recognized as a technology leader. Nathan's use of Google Calendar rather than the University supported Microsoft Exchange calendar system, his use of a test version of Microsoft Office 2010 prior to its release, and his experiments with using Adobe InDesign for document creation, were all examples of Nathan's freedom to choose and experiment with non-standard solutions. However, like Lyle, Nathan reported being somewhat constrained by the Law School. His use of InDesign was limited by the fact that Microsoft Word was overwhelmingly the standard document creation and editing tool. To share documents with his colleagues, Nathan was forced to continue using Microsoft Word despite finding it inferior in a number of ways. While these constraints no doubt limited Nathan and Lyle's use of technology

to some extent, their minimal nature also serves to point out the relative freedom of choice they enjoyed in most technology decisions.

Don, Michael, and Peggy mentioned three cases in which Law School faculty did have to modify their technology use in order to comply with changing campus standards, but in each of these cases the changes were implemented in a way that maximized the faculty's control over the situation. Don told me he gave a presentation to the faculty proposing they change from a 100 point to 4 point grading scale so the Law School could integrate their grading with the newly implemented campus-wide student information system. The faculty were allowed to vote on the change, and they unanimously agreed to it. Don did not tell me what would have happened if the faculty had not agreed to the change. Peggy told me the IT staff had used the Faculty Technology Brown Bag series to conduct a number of Office 2007 training sessions for the faculty and staff. This included a lot of "handholding" and assurances that no one would be forced to switch, despite Don's assertion that they would eventually stop supporting Office 2003 (obs 20100120). Finally, Michael discussed both the recent Office upgrade and the ongoing process of migrating the Law School faculty from the previous campus-wide email solution to the new Microsoft Exchange email system:

[Don] cares about how our users are going to get into the newer technology or release the old. Because that's a point sometimes, to allow them to release the old. And you have to sometimes do it carefully and a lot of times make them feel like they're the ones driving this change (laughing), you know, so they can get on board with it. (Michael, int 2010311).

In addition to having a great deal of flexibility in choosing which technologies to use at the Law School, faculty also had flexible boundaries between their Law School and more

personal technology practices. Angela's worry of being left behind and her caution in adopting new technologies were both reflected in her description of technology use in her family. She described her husband and son as "saturated" with technology. While admitting to sometimes feeling "inferior" and "thinking, I don't want to be left behind", she also joked about her husband's rush to get an iPad on the first day, commenting, "It's going to be obsolete in a week" (Angela, int 20100503).

Similarly, Mohinder's opinion about the necessity of technology was echoed in his response to my question about his technology use outside of work: "Well, I use this damn iPhone because I can't manage – I realize, without it, I couldn't manage" (Mohinder, int 20100409). Mohinder stated that the technology he used outside of the Law School, his iPhone, and a home office setup with a laptop and monitor similar to his Law School office, were used primarily for work, "It's not a hobby of mine. Not at all." (Mohinder, int 20100409).

Unsurprisingly, Nathan and Lyle both reported using and experimenting with technology outside of the Law School. Lyle admitted, "I'm always buying toys... I have 25 old PDA devices. I'm trying to resist buying the iPad 1.0. I'm on my second iPhone. It is costly being an early adopter, but it is more fun." (Lyle, int 20100408). As described above, Nathan used Google Calendar to organize both his family and work schedules. Claire also used a PDA to organize both her work and personal schedules, a practice which caused problems when she became unable to hide personal appointments from her students.

To manage and develop her research projects, Niki used a variety of technologies based outside of the Law School and University. To ease communication with colleagues at multiple companies and institutions, she had begun using cloud-based technologies such as Google Docs. She reported using some of these same technologies to organize personal projects and volunteer

work. She had created "Google websites... for a particular project" and "a Gmail account for a particular purpose." (Niki, int 20100510). Though her Law School work focused on website creation, she avoided too much use of technology at home:

I spend so much time looking at web-based information on the area that I'm working on... I tend not to deal with many of those outside... Relatives sending me all sorts of youtubes, and articles, and this and that and all that, I don't look at most of them... I've got to go outside and play in the garden instead (laughing). (Niki, int 20100510).

While Niki, Angela, and Mohinder reported avoiding recreational technology use, and Nathan and Lyle embraced their early adopter status both at home and at work, all of them exhibited a continuity of technology use inside and outside of the Law School. Angela's "smart, thoughtful colleagues" to whom she looked for technology leadership at work were mirrored at home by her "gizmo wiz kid" husband and son (Angela, int 20100503). Her wariness about technology for its own sake was also apparent at home. Niki worried about spending too much time in front of a computer, but adapted the most useful communications tools she found at work to her personal volunteer work. Afforded a great deal of choice and flexibility in choosing which technologies they would integrate into their daily practice at the Law School, these faculty members had little need to transform or modify their approach to technology in their personal lives.

Staff. Technology use for the staff at the Law School was a very different experience. Staff were afforded very little flexibility or choice of which technologies to use at the Law School. As described in Chapter Four, use of University and University System applications for tasks like accounting, personnel, and student information were mandated by University policy.

Even Alice, who tried to maximize the ability of the new systems, recognized they were not widely liked by the staff: "Nobody wants to login to that expense system... nobody wants to touch it unless they absolutely have to." (Alice, int 20100224). As Helen explained, the systems were often not ideally suited to the staff's locally defined responsibilities: "They're useless... if you have any responsibility to any institution, you have to be able to slice and dice the data." (Helen, int 20100511).

Part of Helen's issue with the new expense system was that it would not provide her with access to the data she was required to provide to external funding organizations. Helen was not just negotiating her Law School assigned job functions with limitations on data access imposed by the University System Comptroller's decision to modify the expense system, but was also dealing with the requirements of a third organization – grant providers. The University's student information system and the Law School Admissions Council admissions system placed the Law School's staff in a similar position: the local mission of managing student admissions required the manipulation and reconciliation of both external systems.

Rather than keeping an eye out for new technologies which might make them more efficient and then carefully evaluating any issues or problems, staff members tended to have changes thrust upon them. Like the systems themselves, these changes were often based on decisions made outside of the Law School. Staff were then responsible for learning the new systems and adapting their technology practices. Bette, who took pride in her familiarity with University processes and in having weathered a number of system changes through the years, described one such disruptive change:

When the change was first made from... Cullinet... over to PeopleSoft, it was very difficult. The training was poor. There were changes constantly being made

and the personnel were not being notified of these changes, and all of a sudden you'd get things kicked back to you... you just hadn't been notified of the change.

(Bette, int 20100302).

Even Tina, who was hired due to her familiarity with web development and her history as a GIS developer, was relatively removed from decisions about which technologies she was using, and she was spending time learning the applications and programming language used by Niki's external website developers.

Staff members' use of technology beyond their Law School work presented a stark contrast to the issues they faced at work. While they had little flexibility or opportunity to modify the remotely managed systems they encountered at the Law School, staff generally displayed a high level of familiarity, comfort, and strong opinions about the technology they encountered in their personal lives. Bette, Helen, and Tina all discussed their early and prolonged use of technology. Helen told me about getting an early PC at home:

People back then were, "Why would you want a computer at home? To keep your recipes on your computer?" They had no idea. I mean, we had no idea... I did have a computer at home, like a year after I was exposed to it at work, and most of it was because I was intrigued by (laughing)... I mean they're ridiculous programs now, but just simple little games. (Helen, int 20100511).

Helen's early fascination with personal computing persisted, and she laughingly referred to herself as an "information junky":

Just to have information at your fingertips... I like data (laughing). You know, we're always talking about, "let's just google that and see if that's really true

(laughing). I can check my husband's sources quickly. I like that (laughing).

(Helen, int 20100511).

Tina told me her earliest exposure to computers had come through her father, and she attributed her continued comfort with technology to these early experiences:

I kind of went through a lot of my schooling with doing basic word processing, but computers weren't a big deal. But my father, he had a computer back in like the late 70s, and it was this huge thing that took up this whole room... He did a lot of programming back then, so I was always around it, and I did some. In the summers, I remember, I would do some basic – I don't even know what language he was in – but it was just basic work for him on the computer. And so, maybe, I just was exposed to it when I was younger... When desktop computers came around, it was so much easier than what I had kind of fooled around with on my Dad's computer, that maybe it wasn't as intimidating for me. (Tina, int 20100519).

Like Helen, Bette had also purchased an early PC for home use, but her involvement in personal computing went beyond Helen's:

At home I started on an IBM PC when they first came out. My husband worked for IBM, and we got one. I was a tax preparer... One of the women that I was working with decided that she would start programming, and actually programmed most of the tax forms we needed in DOS... That's how we started, and it was probably 1983... As the software was developed we actually acquired software that was integrated, and it would work more, not intuitively, but more accurately and more conveniently for us. And I continued on that through 2003. (Bette, int 20100511).

Like Bette, Tina and Alice also used technology in a professional capacity outside of the Law School. Tina, who was a part time employee at the Law School, also worked as a free lance web developer. She had previously worked as a full time GIS analyst and cartographer. Though Alice herself was not a software developer, she was working with a partner to develop a new software product for the healthcare industry.

These staff members were clearly comfortable working with technology outside of the Law School and expressed strongly held opinions about the role of technology in their personal lives. They made calculated and informed decisions about their personal technology practices. Bette and Helen were both concerned with online privacy and avoided using certain technologies because of this. Helen was wary of sharing too much information on Facebook: "The trend seems to be towards... less privacy...I have a Facebook account... I think I may close it just because it seems a little bit exposed to me." (Helen, int 20100511). Bette was similarly concerned with online banking: "I don't allow myself to be dragged into things that I don't want to be dragged into. I'll pay my extra two dollars a month to get my cancelled checks back... I won't do the online stuff if I can help it." (Bette, int 20100511).

Staff members reported more positive experiences with technology as well. Helen had recently decided to purchase an iPod Touch because, "We were actually getting one for my son for Christmas, and I thought, hmm, that's pretty good." (Helen, int 20100511). She used her new iPod to listen to podcasts and was learning how to check out audio books from the library and transfer them to the device. Alice told me she was, "Using the internet to talk to my latest love interest," and said, "I have a pattern of dating international guys (laughing). So, my last boyfriend was from France, and we Skyped, and that worked out well." (Alice, int 2010520).

IT Staff. Law School faculty and staff faced pressure to continuously update their technology practices at work: Faculty to choose and learn efficient and innovative new technologies to remain current and effective teachers and researchers. Staff to continue to perform their jobs while learning and adapting to systems whose modifications and changes were outside of their control and influence. For faculty and staff, technology change was a necessary part of their jobs.

For the Law School IT staff, technology change was their job. In the most bi-directional senses of the words, IT staff were professional technology changers and technology adapters. As professionals adept at affecting change and adapting technologies to their own needs and the needs of the Law School faculty and staff, they considered and oversaw technology change at the institutional level and guided and supported technology change at the individual level. The Law IT staff's ability to quickly learn, adopt, and adapt new technologies to their own practice enabled their support of others. Using themselves as guinea pigs for unproven systems, they were constantly experimenting with and learning new technologies,

In Chapter Four I classified the IT support activities of the Law IT staff as maintaining the technology infrastructure of the Law School, providing immediate and emergency support to faculty and staff, training and consulting, and working on long and short term projects. I described the Law IT staff as attending to the technology needs of the Law School with a "never say no" attitude; valuing customer service and prioritizing the needs of individuals over a focus on particular technologies or systems. The Law IT staff approached technology choices and changes with this same attitude of service and support.

Don especially felt responsible for making choices about Law School technology at the institutional level. He, "claimed all technology" and described his job as essentially, "making

sure that everyone has what they need." (Don, int 20100212; int 20100602). When I asked Angela, an Associate Dean, about her plans for encouraging the faculty to keep up with changing technology, she responded, "Somebody ought to be thinking about this more... If you had this conversation with [Don], he's probably thought, you know, fifteen years down the road from what I'm worried about right now." (Angela, int 20100503). Some of Don's technology choices, such as upgrading the Law School web server to allow for more locally hosted dynamic content and contracting with ITS for University managed enterprise storage and email, affected the technology practices of everyone in the Law School. Don's ability to enumerate, evaluate, prioritize, and ultimately recommend or act on these choices was at the core of his responsibility as Director of IT.

At a more individual level, Don and the rest of the Law IT staff directly supported the faculty and staff's technology choices and changes. The most apparent example of this was Michael and the others dealing with the "hustle of it": responding to immediate requests for service for everything from setting up Alice with access to University System applications and installing MindManager for a faculty member anxious to try it out, to working with Claire to get her new laptop working in an old way and ordering a just-released iPad for Lyle. Michael defined success at his job in this way: "It's been trying to help them and truly caring about the end... from A to Z they were taken care of." (Michael, int 2010311).

For Peter and Don, taking care of people often meant coming up with technical solutions to their problems. Developing a database driven solution to quickly advertise faculty publications on the Law School website and implementing a new system for processing videos from the Law School courtroom were both responses to requests from faculty members looking for a better or more efficient way of accomplishing their goals.

In addition to projects and responses to official requests for help, Law IT staff often supported faculty and staff with an offhand comment, an impromptu training session, or a quick answer to a simple question. In one case, a mere, "look of derision" from Don convinced Angela to give up her pen and paper todo list and learn about the task management capabilities of MS Outlook (Angela, int 20100503). For the Law IT staff, this appeared to be second nature. Setting up Phyllis's new operating system on her personal laptop was an opportunity for Michael to draw her attention toward online privacy issues and suggest she look into using Skype. While I was in a meeting with Don and Roger, Don's direct supervisor, Don noticed Roger had a new smartphone. With little discussion and no argument from Roger, Don picked up Roger's new phone and began playing with it. He started asking Roger if he was able to get his University email on the phone, whether he liked it, and why he decided to go with that model.

For Peggy, involvement in the individual technology practices of Law School faculty was deliberate and systematic. She did "rounds" at the beginning of the semester to check in on each faculty member, find out if they had any problems or challenges she could help with, and just to remind them she was available as a resource (Peggy, int 20100217). She scheduled individual training sessions with faculty and researchers to help with a variety of technologies, and, along with Don, had organized a series of lunch time presentations to foster peer learning about technology and prepare faculty and staff for specific impending technology changes.

This concern with others' technology use and the desire to act as a resource for information and guidance on technology was apparent in the Law IT staff's own technology practice at the Law School. The Law IT staff often treated their own use of technology as an opportunity to learn about tools and solutions they believed might be useful to others. Peter, Don, Michael, and Peggy were all interested in using Mac laptops as part of a desire, "to be

comfortable in both worlds." (Peggy, obs 20100128). While Don was the only one using a Mac on a daily basis, both Peter and Michael had older machines to play with, Michael was taking online courses on the Mac OS, and Peggy was considering the purchase of a Mac laptop as an upgrade to her current one.

Michael told me his recent purchase of a smartphone was partially driven by the number of times he had been asked to help faculty and staff with their phones. Peggy was similarly frustrated with her lack of smartphone experience, "I actually just ended up buying my own iPod Touch to play with... I thought, I need to get on the bandwagon. I need to know how to play with all these apps, and what's available, because faculty are starting to ask me." (Peggy, int 20100520). Don was an avid iPhone user, even pitching specific apps to IT staff visiting from the University's Business School.

A desire to be constantly learning and evaluating new technologies meant the Law IT staff often used their own technology practice as a test bed for unproven tools. Don was particularly prone to this behavior. While setting up Peter's new computer with a tool called ImageX, Don told Michael he wasn't particularly familiar with how to use the software, but, "I'm a little more cavalier because it's just [Peter]." (Don, obs 20100420). Don was learning how to use SharePoint to setup a Law School intranet in response to a request from Angela, but started by implementing it as an internal resource for the Law IT department. He also volunteered to be a "guinea pig" for a campus-wide upgrade of the Microsoft Exchange email and calendar system.

Don's willingness to modify his own practice in the interest of learning about new technologies stood in stark contrast to Angela's careful and wary consideration of incorporating new tools into her technology practice. Unlike Angela, Don and the Law IT staff were professional technology learners.

Don also sought to formalize experimentation by assigning "innovation days" on which a particular staff member could forego any concrete goals or tasks and take time to follow an interest or learn about something new. The structure of Michael's work for ITS did not allow him to take an "innovation day", but he spent a great deal of time working with ITS's online training system and pursuing the technical certifications offered by ITS. When Peggy expressed doubt about her technical knowledge to Don, saying, "There are so many technologies I have to be familiar with that I'm not great at any of them anymore," Don quickly summarized his goal for the Law IT staff, telling her it was their job to "know just enough about everything." (Peggy and Don, obs 20100128). He repeated this sentiment while assessing his own technology skills: "It plays out that I usually know more about technology than the people I serve. Even if it's just a little bit more." (Don, int 20100602).

The Law IT staff's technology practices within the Law School were highly flexible and fluid and often valued experimentation and the possibility of learning something new over efficiency and personal preference. In some very specific ways, the Law IT staff's personal technology use mirrored their use at work. However, outside of the Law School, they valued their own utility and interests and tailored their technology use to their own purposes.

Don, the most experimental of the Law IT staff, admitted to playing with new technology when he was at home and even on vacation: "Oh I have a free day – What am I going to do? – and mostly it involves something on the computer." (Don, int 20100602). A personal project could be an excuse to play with something new: "That would be a really cool idea for a website, but I really want to learn Drupal, so, let's see if Drupal can do this website" (Don, int 20100602), but Don also told me about setting up a home theater and music system with very specific goals and functionality in mind.

Peter, an avid hiker, bicyclist, and mountain climber, also spent time capturing and editing video of his adventures. I asked Peter if he had worked with video a lot before coming to the Law School. He told me he had, "started doing it on my own just as a hobby" but that with the recent demand for streaming video, he has "brought it more into the job here" (Peter, int 20100525). Peter described his strategy for editing video at the Law School as, "Get it done. Move on with your life." (Peter, int 20100525). He told me the technology he used for his personal film making was similarly limited: "I just set it up to where it works, and it's there, and then I don't need to mess with it anymore." (Peter, int 20100525).

Michael was a professional DJ in his spare time. His adamant support of a particular digital DJ software package, Serato Scratch Live, echoed his feelings on customer service at the Law School: "What I really like about them is their support... they support you basically until you die. They've got ultimate – they've got just great support." (Michael, int 20100311). Michael spent hours working with ITS's online training system, devoting downtime in the Law School to increasing his technical skills, and applied this same strategy to his DJ'ing:

If I've got a few moments that I don't spend with my family, I've been trying to sneak away somewhere and do something with the music... There's so much to learn in that world, and it's getting bigger and bigger, so that's where I've been spending my efforts, if I'm not learning desktop support, is learning digital DJ'ing. (Michael, int 20100311).

Peggy's technology use outside of the Law School was also similar to her use at work. Like Mohinder, Peggy had replicated her Law School computer at home: "When I got this setup here at work, I loved it. And then, when my laptop died... I got everything exactly like it was here just because I loved it so much." (Peggy, int 20100520). She used this home setup to run an

education consulting business and to teach online education classes on topics such as course development. Just as she tried to expose Law School faculty to ways technology could improve their teaching and research, she had instructed students in her class to try a number of web-based tools. She was gratified when she heard some of her students had applied what they had learned in her class to facilitate group collaborations in another online course. Also like Mohinder, Peggy did not report using technology for any hobbies or personal interests. When I asked her if she had an enduring interest in technology that led to her working in IT she replied, "I wouldn't call myself a major techie... I don't have to have the latest and greatest and be the first one to have it and know how to use it before everybody else... I'm not intimidated by it, and, actually, that's how I fell into it." (Peggy, int 20100520).

To summarize, faculty members have the freedom to choose which technologies they will use at the Law School, but this freedom is accompanied by a pressure and desire to keep up with the latest technology and to use technology in effective and efficient ways. This pressure is reflected in the shared narrative of choice described in Chapter Four. Because they mostly use administrative systems mandated by the University and University System, staff at the Law School have very little choice in what technology they will use. However, when these systems change, they must adapt their work practices to fit the new technology; finding new ways to accomplish the same goals and complete the same tasks. The Law School IT staff embrace technology change and choice at another level. They modify and experiment with their own technology use as a way of evaluating and learning about technology. Their technology use is extremely flexible and fluid, and their choices reflect a desire to remain knowledgeable and to facilitate the technology use and choices of others.

These differences in technology choice and change are reflected in the relationships between technology use at and outside of the Law School. Faculty members' personal preferences and attitudes toward technology are similarly expressed in their Law School and personal technology use. While staff members' technology choices at work are constrained, many are highly engaged with technology outside of the Law School. Many have worked with technology on a professional basis, and they express considered and strongly held opinions about their personal technology use. At the Law School, the IT staff often use themselves as guinea pigs for testing out new technologies and modify their own practices to learn about tools that might be useful to others. Outside of the Law School, the Law IT staff are generally less experimental, and they allow their own preferences and goals to dictate their personal technology use. In the following section, I will examine how these differences in technology choice and technology use in and out of the Law School may be understood as a technology identity.

Technology Identity and Agency at the Law School

In their works on technology adoption, Clausen (2007) and Virnoche & Lessem (2006) conceive of technology identity as a user's personal feelings and attitudes toward technology, including self-assessments of skills and proficiencies. This identity concept incorporates aspects of the self as a factor in technology adoption, but does little to illuminate the relationships between a particular context of technology use and any ongoing process of attitude and belief development. In other words, a static concept of technology identity decontextualizes the attitudes and beliefs expressed by the participants. Levin & Wadmany (2006), Otteson (2006), and Windschitl & Sahl (2002) employ a more complex concept of identity focusing on how technology practice might influence other aspects of identity. However, their studies largely focus on the impact of technology use on pedagogical belief and classroom practice. In other

words, they recognize a dynamic relationship between technology practice and identity, but focus on attitudes and practices related to teaching.

Holland et al. (1998) stress the dynamic coproduction of identity and figured worlds, with a focus on the cultural forms and power relationships within that figured world. I have proposed that individuals produce a technology identity within a figured world of technology use at the Law School. This technology identity is a constant orchestration of attitudes, beliefs, and practices drawn from the cultural forms available within the figured world of technology use at the Law School and enacted with regard to individuals' roles and positions within that community.

In other words, technology choice is not a discrete process influenced by an abstract technology identity consisting of essential attitudes and beliefs. Rather, individuals' ongoing technology choices constitute a process of producing and enacting a technology identity within the figured world of technology use at the Law School. Individuals' technology choices at the Law School, as well as the relationship of these choices to their technology identity in other contexts, is in large part defined by their role as faculty, staff, or IT staff and by the technologies, considered as cultural forms, available to them within that figured world.

For faculty, technology identity at the Law School is about making good decisions about which technologies to integrate into their personal practice, and these decisions translate into their technology identity outside of the Law School. Technologies encountered and preferences or opinions developed in faculty members' academic, professional, and personal lives may be integrated across these various contexts.

For staff, technology identity at the Law School is about effectively responding to changes in the technology they use and adapting their work practice to the tools made available

to them. Both in terms of the specific technologies available, as well as with regard to their personal choices, staff members' process of adapting to technology within the Law School has little or nothing to do with their personal technology use.

For IT staff, technology identity at the Law School is largely about other people's technology use. They learn, experiment, adopt, and adapt technologies with the goal of facilitating and enabling the technology practices of the Law School faculty and staff. In their personal lives, they apply this same evaluative and learning process, but make reasoned and careful decisions about what technology works best for themselves.

Within the identity process, Holland et al. (1998) define agency as the ability of individuals to inject their own will and creativity into their practice and construction of self. This often takes the form of asserting and inserting important aspects of identity or practice from other contexts. The position and roles of individuals within a figured world affects the extent to which they can exercise agency to shape and reshape the local context. In the figured world of technology use at the Law School, marked differences in agency between faculty, staff, and IT staff are evident in both aspects of technology identity presented above: the nature of individual technology choices and the relationship between technology use inside and outside of the Law School.

Law School faculty have a lot of freedom to choose which technologies they will use and how their technology practices will be incorporated into their professional lives. They determine how much of their own time and effort will go into developing and modifying their Law School technology practice. They evaluate the efficacy of technology according to their own standards and goals. In most cases, they set the pace and priorities for their own technology change. Further, faculty's professional goals are most in line with the goals of the Law School as a whole.

They determine the priorities of the organization and are most connected to the other contexts linked to the Law School through technology, including the University and the wider academic and professional legal communities.

In Holland et al.'s (1998) terms, Law School faculty have a high degree of agency in their technology choices at the Law School. As in any context, there are pressures to reign in or direct this personal agency. This is evident in the pressure to keep up felt by faculty such as Angela, Noah, and Mohinder and the pressure to not push technology too far from the norm felt by Lyle and Nathan.

Within these relatively minimal limits, faculty's technology practice at the Law School is largely self-directed. This is reflected in the continuity between their technology use inside and outside of the Law School. At the Law School, faculty have the freedom to express their personal technology choices and preferences and incorporate aspects of their identity and technology practice from other aspects of their lives. Their Law School technology identities are not highly distinct from their personal technology identities.

While faculty are free to bring in multiple aspects of other identities and figured worlds to develop ideas about who they are as technology users and determine how they will integrate technology into their Law School practice, staff technology practice at the Law School, outside of Law IT, is relatively determined. Staff members have few options in deciding which tools they will use to accomplish their work. Staff members exercise a limited agency in their technology practice at the Law School as they react to the technology choices and changes that happen to them. Alice and Tina describe the introduction of new technologies as an opportunity to learn new tools, and Bette takes pride in her ability to adapt to the multiple systems and changes she has experienced throughout her career. Staff members' limited opportunities for

choice and agency in technology use at the Law School has little to do with their use of technology outside of the Law School. Bette, Helen, Tina, and Alice all described a significant engagement with technology. Outside of the Law School, staff members were involved in technology-centered professional pursuits including software and website development. They also expressed strong and considered opinions concerning their choice of personal technology use in areas such as online privacy and security and social media use. The discontinuity of staff members' technology practices across multiple contexts highlights the idea that the production of a technology identity is rooted in a particular figured world of technology use.

Unlike other staff members, the Law IT staff have a great deal of influence on technology use at the Law School and a great deal of freedom in deciding which technologies they incorporate into their own practice. Because evaluation and experimentation are central parts of their job, they have the greatest leeway and most time to explore and learn new technologies. However, their agency is largely exercised in service of others' needs and interests. The Law IT staff's focus on customer service and their role as professional technology learners means their technology choices attend to and satisfy the needs of the faculty, staff, and Law School in general rather than their own preferences or productivity.

Predictably, the Law IT staff reported applying their technology skills to their personal pursuits in a way that mirrored their Law School technology practice, with one important difference: they focused on their own priorities and preferences. While Don appeared to treat technology experimentation itself as a hobby, Michael and Peter were more interested in using their skill at carefully evaluating and choosing technology to find and stick with personal solutions that worked best for them.

Like Mohinder, Peggy had duplicated an effective Law School computing setup at home, and her interest in technology was mostly professional. Unlike Mohinder, Peggy's professional pursuits were not limited to the Law School, and her consulting and teaching pursuits provided her a venue to implement some of the solutions she supported and suggested to the Law School faculty. Interestingly, Peggy was considering some experimental changes to the Law School setup that she "loved" so much she had replicated it at home: switching to a Mac laptop or from a full PC laptop to a netbook. Mohinder had recently ordered an updated Lenovo laptop for his Law School office that was as close as it could be to the models he was already using at home and work.

Using Holland et al.'s (1998) dynamic concept of identity to describe technology practice at the Law School captures important factors which may be glossed over by static accounts of individuals' attitudes or beliefs about technology. The primary utility of treating technology identity as a process of ongoing choice is that it contextualizes individuals' technology practice within a figured world of technology use. Beliefs and attitudes are not essential to actors, but part of a system of roles, narratives, and artifacts with local significance. My brief comparison of faculty, staff, and IT staff's practices in and out of the Law School make it clear that technology practice is highly contextualized in ways that are closely tied to individuals' roles at the Law School.

The dialectic nature of Holland et al.'s (1998) concept of identity and figured worlds, in which systems of local significance are maintained and constantly recreated as the individuals engaged with them constantly enact, adapt, and recreate their identities within these systems, also captures the dynamic and fast paced change of technology practices. For faculty members, being a competent and efficient technology user is a constant process of looking around for new

technologies while maintaining and utilizing proven tools. For staff, despite the glacial rate of change associated with some administrative systems, change in these systems, as Bette points out, is somewhat constant and periodically massively disruptive. Finally, for the IT staff, maintaining some sense of expertise amongst the incredibly fluid rush of new technologies – knowing, as Don puts it, "just enough more" than the people they are trying to support – is a large part of their job.

Finally, Holland et al.'s (1998) concept of identity prompts an examination of the relationship between technology identity and agency. Viewing technology identity as a process of choice focuses attention on individuals' ability to shape their own technology use, while questions of agency expand this view to how individuals' may or may not be able to shape and reshape the figured world of technology use in which they are operating. Faculty members' not only have a great deal of freedom, but their personal pursuits are generally aligned with the institutional goals of the Law School. Faculty run the Law School, and honoring their technology choices and meeting their technology needs is a priority. Staff members' agency is largely limited to modifying their own and others' practices surrounding the technologies they are provided. They are generally given goals or tasks and tools, and their creativity and skill is directed at using one to fulfill the other. IT staff have the most ability to direct and influence technology practice at the Law School, but this agency is exercised in service of the faculty and staff they support.

Two goals of Holland et al.'s (1998) concepts of identity and figured worlds, and of practice theory in general, are to locate the sites of both personal agency and remote structural influence within the particularities of daily practice and local contexts. By characterizing technologies themselves as cultural forms imported into local contexts through specific historical

events and from specific remote contexts, and by characterizing technology choice as a process of identity production linked in complex ways to both the local context and to individuals' identities in other contexts, the above discussion illuminates both of these processes. This type of detailed examination of daily technology practice and technology identity can replace more static and vague descriptions of the relationships between individuals' technology choices, the institution in which these choices are made, and the larger social settings in which these institutions and individuals function.

Chapter 6: Summary and Conclusions

I began this dissertation by introducing Holland et al.'s (1998) related concepts of figured worlds and identity. I summarized the concept of figured worlds as a localized culture-in-miniature. Figured worlds are highly contextualized and more or less bounded systems of significance which are also intimately linked to individuals' identity and agency in a particular context. According to Holland et al., figured worlds and individuals' identities within these worlds are co-constructed in an on-going process. Individuals enact identities specific to a figured world, but also import and export aspects of those identities to other figured worlds or contexts. Also, because figured worlds are more bounded and describe a smaller system of meanings and traditions, individual choices about how to act within a figured world, or how to express or adapt aspects of identity, may shape or alter a figured world in dynamic and creative ways.

I finished Chapter One by defining my research questions in terms of figured worlds and identity: Do faculty, staff, and IT professionals working with technology at a particular university form a figured world of technology use and have technology identities? Are there differences in the figured worlds of technology use and in the technology identities of the faculty and staff versus the IT staff, and does this affect the relationships between these groups?

In Chapter Two I delved into Holland et al.'s (1998) complex definitions and descriptions of figured worlds and identity, examined how these concepts had been implemented by other educational researchers, and described the work of a few researchers who had applied ideas of culture and identity to educational technology and educational technology support.

I highlighted a few of the most important features of Holland et al.'s (1998) figured world concept: Figured worlds are socially and culturally constructed contexts within which individuals

act on a daily basis. The shared meanings and significances within a figured world are cultural forms through which individuals construct and enact identities tied to a particular context. Though figured worlds describe a local context, the meanings they impart for those participating in them can be extremely important. Individuals participate in multiple figured worlds, and individuals may construct, enact, and express different identities within different figured worlds.

Any given figured world exists within a landscape of multiple figured worlds as well as on a larger stage of history and social and economic structures. Figured worlds often contain local and contextualized expressions of historical and structural constructs such as race, gender, and class. Historical processes of production, reproduction, and rejection of these constructs may be described in the daily practice of individuals acting and constructing identities within and across these local contexts.

By looking at the ways a number of different researchers implemented figured worlds in existing educational research, I operationalized these complex concepts into five observable features: artifacts with a shared significance, shared narratives or stories, characters or roles that might be fulfilled by participants in a figured world, practices or activities, and common concerns or attitudes. I provided examples of these features from the existing figured worlds literature and described how previous researchers had utilized traditional ethnographic methods to observe and describe these features in various contexts.

I also described how some of these researchers had utilized Holland et al.'s (1998) concept of identity, focusing on three key aspects: Identity is produced through participation in a figured world; participation in a figured world can limit or shape individuals' options for identity production within the context of that figured world; and individuals' identities are multiple and mutable, especially across multiple figured worlds. The identity constructions described by

previous research could be long-term and deeply held, such as the activist identities constructed by Urrieta's (2007b) academics, or experimental and ephemeral, such as the architect identities played at by Jurow's (2005) students. Similar to figured worlds, I showed that researchers used traditional methods such as life history interviews to gain insight into participants' identities.

Finally, I returned to the issue of daily practice and agency. I cited Bradley et al.'s (1996) statement that "understanding how human agency operates under powerful structural constraints" (p. 14) has remained one of the challenges of social science research. I reiterated the idea that Holland et al.'s (1998) concepts of figured worlds and identity focus attention on how remote and local social constraints are produced, reproduced, enacted, adapted, rejected, and modified through daily activity and within highly localized and contextualized realms of significance.

I then moved on to an examination of a small sample of the literature dealing with educational technology. I focused on a few researchers who applied concepts of identity, culture, and practice theory to technology use in educational settings. I described how Clausen (2007) and Virnoche & Lessem (2006) described static concepts of technology identity and classroom context as factors in technology adoption. I suggested a more dynamic concept focusing on the construction of identity within a co-constructed context of meaning might capture the ways technology affects teachers and classrooms as well as how teachers and classrooms adopt technology.

I then examined three works that applied such dynamic concepts to educational technology questions: Levin & Wadmany (2006), Ottesen (2006), Windschitl & Sahl (2002). These articles found that the introduction and use of technology in schools is a complex personal and social interaction between local practice, educator identity, and the given technology. Belief

and context can affect technology practice and adoption, and the use of technology can have a transformative effect on teachers and schools.

I also looked at four articles that provided a rare focus on the role of IT support staff in the use of technology in schools. Otero et al. (2005) and Marcovitz (1999) examined how graduate students and student teachers, respectively, could affect and support the use of technology by university faculty and mentor teachers. Otero et al. found graduate students given an official mandate to aid faculty in examining their technology use were able to support faculty through developing and implementing technology in their courses. Marcovitz found that student teachers, in a largely unofficial role, were also able to increase classroom technology use by providing on-site, immediate technical support.

Strudler (1996) and Marcovitz (1998) provided the sole examples of research dealing directly with professional IT support staff in education. Strudler and Marcovitz found that effective IT support staff served a number of functions including "Nuts and Bolts" (Strudler, 1996, p. 249) maintenance and updating of equipment and infrastructure, immediate assistance or "support by walking around" (Marcovitz, 1998, p. 1041), setting policy, and technology planning. Both Marcovitz and Strudler pointed out the important role of IT support staff as technology collaborators, sources of information and guidance, and "local facilitator[s]" of teachers' technology use (Marcovitz, 1998, p. 1042).

Finally, because Holland et al.'s (1998) concepts of figured worlds and identity might allow an examination of how local and remote power structures are expressed through local technology practice, I examined some of the literature that makes claims about the relationship between educational technology and power. Though they do not include empirical research, Bromley (1998) and Apple & Jungck (1998), which both appear in the edited volume *Education*

/ Technology / Power: Educational computing as social practice, both warn of possible negative effects of educational technology. Bromley argues that technology is implicated in the take over of schooling by business interests. Technology shapes schools as businesses with a focus on efficiency rather than quality, casts students into roles as technology users and future technology laborers, turns schools into sources of profit for technology companies, and takes away local control over curriculum and methods replacing it with a centralized, technical control. Apple & Jungck continue this argument with a focus on educators. They claim technology deprofessionalizes teaching and alienates teachers from the task of educating. I suggest that application of the figured worlds and identity concepts to the context of technology in education may provide a way to observe and describe whether and how any of these power processes are being enacted within a local educational setting.

In Chapter Three, I describe the methods I used to examine technology use and the site where I conducted my research. My research site was a Law School at a public university in the Western U.S. The Law School has approximately 50 resident faculty, 50 administrative staff, and six IT support staff in various roles. Using traditional ethnographic methods, I conducted 36 hours of participant observation over 17 sessions and 22 hours of interviews with 14 participants over a seven month period from December, 2009 to June, 2010. I analyzed this textual data by coding it in ATLAS.ti, grouping these codes according to the five aspects of figured worlds or identity, and performing a thematic analysis to further identify significant patterns in the data.

In Chapter Four I presented this data as thick descriptions of technology use at the Law School. I related stories and examples of technology use in four main areas of activity: teaching with technology, research and technology, administrative technology, and supporting

technology. I identified interesting features and aspects of a figured world of technology use in each of these areas.

Teaching with technology at the Law School involved use of two de facto standards, PowerPoint for classroom presentations and TWEN as an online learning management system. PowerPoint and TWEN were significant not only as accepted and supported ways of accomplishing certain tasks, but because their use was linked to faculty members' identity as legal professionals. Faculty members also expressed a common concern with the use of AV technology for teaching, and this concern was reflected in their attempts to integrate video into their classroom practice, their use of audio recorders to post recordings of lectures online, the integration of AV hardware into the infrastructure of the Law School, and the IT staff's project to provide more efficient video streaming of Law School events.

Law School faculty members also followed a common narrative when choosing new technologies for teaching. They looked to local users identified as technology leaders, evaluated new technologies in low-stakes situations, based their decisions on the perceived benefit and time investment of the technology, and implemented new technologies with a backup plan in case of failure. While this may be a common narrative for technology adoption, the identification of local technology leaders, the linking of efficiency to billable hours in the legal profession and the time constraints of academia, and the IT staff's formalization of peer-based learning through organized brown bag sessions all indicate a highly contextualized version of this adoption narrative.

Unlike teaching with technology, technology use for research appeared to be individualized and somewhat isolated. Though there was a common concern with publishing and sharing research results on the web, both Niki and Mohinder's websites existed outside of the

Law School's own website. Outside contractors were used to create and maintain these sites. Niki and Tina also relied heavily on outside tools, such as Google Docs, to communicate with contractors and collaborators outside of the Law School.

The administrative systems in use at the Law School highlighted the complex landscape of technology artifacts in use and showed that these artifacts can represent important links between the Law School and other organizations. Changes to University and University System administrative tools used for functions such as purchasing, accounting, and student information forced staff members to adopt the roles of technology learners and adapters. Faced with new tools to accomplish the same tasks, staff had to adjust their own practices and find new ways of working. Other technologies were more flexible, and I described a number of situations in which IT staff customized or modified campus IT solutions to fit the Law School. I also provided examples of technologies which were specific to the Law School. Systems like the LPAC admissions system and private data server were only in use at the Law School, and were particularly illustrative of certain technologies' links to the legal profession.

Finally, I examined IT support activities at the Law School. Similar to what had been observed by Marcovitz (1998) and Strudler (1996), I observed multiple roles fulfilled by the IT staff. These roles were generally associated with particular people: Don focused on management and setting priorities, Don and Peter on projects and infrastructure, Peggy on faculty training, and Michael on solving immediate issues. However, one particular activity, providing immediate support to faculty, staff, students, and even visitors, took priority. Michael referred to this as the "hustle of IT", and the primacy of getting caught up in the "hustle" was a source of tension for Don, Peter, and Peggy.

Responding to immediate requests for support was a priority for IT staff because it was part of the guiding narrative they used to describe technology support: the IT staff "never says no". "Never say no" expressed the IT staff's focus on customer service: attending to the technology needs of the Law School faculty and staff rather than concentrating on providing or maintaining particular services or systems. This guiding narrative was expressed in Peter and Don providing custom solutions such as dynamic website content and the private data server, in Michael stepping outside of the support boundaries imposed by ITS, and in Peggy's interest in each faculty members' particular IT use. This type of support meant the IT staff were experts on the figured world of technology use at the Law School and on the technology identities of the faculty and staff they supported. Their focus on the specific role technology played at the Law School and on the relationship each faculty and staff member had with the technologies they used mirrored my interest in these issues.

In Chapter Five I went beyond describing aspects of technology use at the Law School as parts of a figured world, and proposed a novel application of Holland et al.'s (1998) concepts of figured worlds and identity. First, rather than simply recognizing that technologies are artifacts in a figured world that carry a particular local significance, I proposed treating technologies and technology practices as cultural forms.

In Holland et al.'s (1998) theory, cultural forms are imagined as extant models for thought and behavior which are the basic building blocks of identity and figured worlds. Cultural forms can originate in historical processes as expressions of structural factors such as race, gender, and class or as local traditions situated in specific contexts. Individuals can adapt and modify these forms as they express them in a particular context, and forms can be imported and exported across figured worlds. The dialectic process of cultural forms being expressed, adapted,

and reinterpreted through individuals identity processes in various figured worlds is the basic process of Holland et al.'s practice theory.

I proposed that technologies and technology practices follow a similar process. This conception of technology within a figured world of technology use recognizes the remote sources of locally implemented technologies and the ongoing links across contexts represented by the adoption of particular technologies. In some cases, these links are the clear channels of power suggested by Bromley (1998) and Apple & Jungck (1998). For example, the use of mandated administrative systems at the Law Schools is a way for the University System to control the information and business processes implemented by the Law School staff. However, in other cases, the nature of these links is less hegemonic. In many cases, Law School faculty members' personal technology choices, as well as institutional requirements such as the use of the LPAC admissions system, are influenced by technology use in the legal profession and wider world of legal education.

Treating technologies as cultural forms also focuses attention on the historical processes through which individual technologies enter a particular context. At the Law School, MindManager, a relatively uncommon type of software, had entered common usage through the actions of one faculty member. Its wider use could even be traced back to one particular brown bag training session. Treating technologies as cultural forms recognizes that all technology practices in a given context have unique histories and provenance particular to that figured world of technology use.

Second, I proposed equating the process of technology choice within a figured world of technology use at the Law School to Holland et al.'s (1998) concept of identity. Rather than a static notion of technology identity that describes how an individual's attitudes or beliefs about

technology might affect their choices or behaviors in a given context, I proposed thinking of technology identity as the ongoing process of choosing technologies and enacting technology practices within that context.

At the Law School, the most important relationship between the figured world of technology use and individuals' choices about technology is the individuals' role as either faculty, staff, or IT staff. For faculty, technology identity is about making good choices about what technology to use, and faculty bring outside experience to these choices and export those choices into their personal and professional lives. For non-IT staff members, technology choice at the Law School is about choosing how to respond and adapt practices to technology changes and technology tools over which one has little or no control. These adaptations have little meaning or influence on staff members' non-Law School technology use. For IT staff, technology choices at the Law School revolve around considering which technologies will be best for others. Facilitating and enabling others' technology practices, as well as experimenting and learning about new technologies, take precedence over personal productivity or preference. IT staff translate these technology choice strategies into their use of technology outside of the Law School, essentially becoming their own customers.

In Holland et al.'s (1998) theory, an important aspect of the relationship between figured worlds and individuals' identity within them is agency and power. Agency is expressed as an individual's ability to shape their own identity and to influence the shape of a particular figured world, often by inserting or importing aspects of their identity taken from other figured worlds. Within the figured world of technology use at the Law School, it is clear that the faculty have a great deal of agency. They have the freedom to choose technology and to set priorities for Law School technology use according to personal preference and their experience as educators and

legal professionals. Non-IT staff have very little agency in terms of technology choice, but exercise a limited agency as professionals adept at learning and adapting to new technologies.

The Law IT staff have a great deal of freedom to choose technologies for themselves and for the Law School in general, but this agency is exercised in the service of the faculty and staff.

Back to Beer

Every Monday, when I'm not writing a dissertation, I play in a pool league at a local pool hall in Longmont. They serve food and liquor and beer, but there are 20 pool tables and the word "billiards" is in the name. So it's a pool hall. As anyone who has spent time in a pool league knows, beer is an inevitable and necessary part of any league night.

This pool hall has beer from Longmont, beer from other places around Colorado, and, of course, a few national and international brands in bottles and on tap. Most of the time, when our waitress, Amy, asks me what I want, I ask her right back. I say, "I don't know, what do I want?" The interesting part of this story isn't that I'm indecisive or that I can't give a straight answer to a hard working waitress. The interesting thing is that most of the time Amy has an answer for me. Amy knows me, and she knows what kind of beer I like. She also knows what the bar has on tap this week, and she helps me out by putting that knowledge together and making a suggestion.

At the beginning of this dissertation, I proposed that a bunch of guys sitting around talking about beer was a good example of practice theory. We could all agree on some pretty specific characteristics of certain beers, and we all knew what role those beers – or beers with those characteristics – played in our lives. We had a shared knowledge about beer that was learned from years of shared environment. That knowledge was, until we were asked to articulate it by a marketing researcher, simply embedded in our – let's be honest – daily beer related practices.

Besides rhetorical symmetry, why am I talking about beer again? And why pool? My league buddies and I go to the pool hall to play pool. We even pay cash for the privilege of participating in a nationally organized league. Throughout the country, and at regional and national tournaments, beer is an accepted part of our pool league activity. I drink more beer playing pool than I do at home. When I'm at my local pool hall, Amy is my beer expert. She is my beer support staff. She knows me, she knows the pool hall's beer, and she helps bring those things together.

George, the owner, can bring in beers from around the world. George pays attention to what the pool players drink, and his taps are usually populated with a few national brands and a few local brands. Being from Colorado, some of our local brands are national brands, and George definitely runs through some kegs of Coors. However, George also caters to some hipper folks, myself included, who prefer more of a micro brew selection. Being in Longmont, he also has to have available a few varieties from Left Hand and Oskar Blues, our local breweries.

So there we are on Monday nights, gathered together to play pool and drink beer at a local pool hall. Billiards, specifically 9-ball, is the main attraction, but there is definitely an entire figured world of alcohol consumption happening within the pool activities. Alcohol and billiards have a history, and there are reasons why we're playing league pool in a bar instead of, say, a church basement. This is part of the context of the figured world of alcohol consumption in the pool league.

Within that figured world, I exercise beer preferences that are also expressed when I'm at a liquor store or at a bar where I'm not playing pool. However, when I'm at the pool hall, my choices are constrained by what George chooses to bring in. I can request a specific brew from George, but his decisions are based on a whole set of other criteria.

Finally, within this particular, highly contextualized, world of beer drinking, in which my behaviors are guided by league norms, and my choices are constrained by location, I've got Amy. She knows what George has available, she can help me make informed choices based on her knowledge of what I like and how I'm feeling, and, if I get something I don't like, spill my drink on the floor, or even just finish one off, she's right there to bring me another.

Answering the Research Questions

I have shown that I construct an identity of beer drinking within a figured world of alcohol consumption at league pool. Can the same be said for technology use at the Law School? Is there a figured world of technology use at the Law School? Across multiple technology activities, I have described a number of aspects of a figured world as I defined them in Chapter Two. I have also shown that a number of these aspects, including technology artifacts, roles, practices, and narratives link the figured world of technology use at the Law School to technology use in other contexts. Holland et al. (1998) state that figured worlds exist within landscapes of multiple figured worlds, and I have shown how the figured world of technology use at the Law School is linked to networks of other law schools, the legal profession, the University, the University System, and even to personal and consumer technology use.

Do individuals form and enact technology identities within this figured world? I have equated the ongoing process of constructing a technology identity to the ongoing process of technology choice, adaptation, and adoption displayed by all of the participants. In this sense, technology identity describes a dynamic process of incorporating technologies and technology practices into one's life. Identity, as defined by Holland et al. (1998), is a continuous co-construction with the figured world within which it is enacted. I have shown that the nature of one's technology choices at the Law School are inseparable from the role one has at the Law

School and from local practices and meanings defined within the figured world of technology use.

Finally, are faculty, staff, and IT staff functioning in different figured worlds and do any differences affect their relationships or interactions? The answer to this question is less clear. There are drastic differences in technology use and technology choice across the three groups of participants I worked with at the Law School. Though I focused on activities and technologies that were not shared by faculty and staff, namely technologies for teaching and administrative technologies, many of the more general technologies, such as the Microsoft Active Directory, Exchange email, and SharePoint intranet, were shared. Additionally, non-IT staff were involved in a number of faculty technology activities, such as checking in and out portable recording devices or working on the faculty publications web systems.

What is clear is that the IT staff were actively participating in the figured world of technology use, and in the enactment of technology identities, of both faculty and non-IT staff members. Given their expert knowledge and unique roles, I expected that the IT staff were the most likely to have a separate or unique view of technology. Instead I found that the IT staff were actually experts on the technology use of the faculty and staff. Far from being separate from faculty and staff members' figured world of technology use, they were instrumental in helping to shape this world: aiding with the adaptation of remote technologies to the local context, making suggestions about which technologies would be useful for specific individuals, providing custom solutions to unmet technical needs, and generally assisting faculty and staff to negotiate the complex set of technologies available at the Law School.

Practical Ramifications

As a professional IT support person myself, one of my interests in conducting this research was to evaluate whether or not examining technology through the lens of figured worlds and identity might provide any practical benefit. As with the findings on figured worlds and identity, the possible practical applications of my conclusions are different for each of the three groups I examined.

My first hint at a possible application of my research came while I was attending a campus wide gathering of IT support personnel on my own campus. The keynote speaker, a guest speaker from a large educational technology non-profit, was discussing how campus IT departments were losing control of campus technology as commercial and personal technologies, for example, cloud-based services and smartphones, became ubiquitous on campus. He offered a number of strategies he believed would allow a central university IT department to regain control over and assert influence on individual faculty technology use.

Given my work in the Law School, my gut reaction was that limiting faculty technology choice is a limit on faculty freedom and therefore a limit on intellectual creativity. When the speaker asked for questions, I stood up and asked about the tension between control over technology and academic freedom. The speaker replied that academic freedom is always curtailed to some extent by university policy. I did not feel he adequately or specifically addressed my concern.

I brought this concern to my supervisor, the chair of the department where I work, and we discussed it at some length. I suggested that faculty technology choice is an expression of intellectual freedom, and should not be limited. He suggested I take it one step further. He felt faculty had a duty to stay engaged with the professional world in which they worked. Whether

they are lawyers, engineers, or English professors, faculty are paid by the university to maintain a relationship with their field and to bring their knowledge of that field back to campus where it can be put to use in research and teaching.

What my supervisor referred to as a duty, I referred to as an identity. Faculty members' identities as professionals should be allowed to impact their technology choices. Law professors should know what technology is used by lawyers, and they should use that same technology in their work within the Law School. While this may lead to a lack of standardization across a given campus, it is a vital part of maintaining a university's links to the professional and wider worlds of technology use.

A few weeks after this campus-wide event, I attended a much smaller gathering of IT support professionals. I was invited to attend an informal focus group in which the Chief Information Officer of my university would meet with a dozen IT professionals from various places on campus and simply discuss whatever issues happened to come up. This particular "breakfast with the CIO" was dominated by the complaints of an IT staff member who worked on long term projects for the central campus IT group. He was upset that the campus IT organization was not able to implement large scale changes to central systems as quickly as they were needed. He felt the technology provided by the central campus IT group was out of date not because the IT staff on campus were slow to implement changes, but because the faculty and staff on campus were resistant to change. He stated that staff in particular had a vested interest in maintaining the status quo because their job skills were based on particular technologies. Staff did not want to learn new technologies because they were simply not interested, regardless of the technical or other advantages new technologies and systems could provide to campus.

Again, my work at the Law School prompted me to speak up. I explained that technology change is disruptive. University staff have a job to accomplish, and that job is to do the accounting, or purchasing, or hiring, for a particular department or school. Often, that job takes up all or more than all of the time a staff member has available. Asking staff to learn a new technology in order to accomplish the same task is not only a draw on their time. From a technology identity standpoint, it forces staff members to step outside of their normal roles to not only learn a new system, but to modify and adapt their daily practices to that system. I pointed out that many staff have been through multiple changes, and they know it will be a massive expenditure of time and energy that gets them no closer to completing their given tasks. Allowing staff the time and effort to deal with these disruptions means sacrificing staff productivity in other areas, and this is a real cost associated with technology change.

Theoretical Ramifications and Future Research

This research has shown that the figured worlds and identity concepts are a useful framework for describing and observing particular realms of practice within a bounded context. Operationalizing the complex figured worlds concept into five observable aspects and using traditional ethnographic methods to collect data on these five aspects and identity yielded useful results.

Using Holland et al.'s (1998) theoretical lens, I was able to capture dynamic aspects of the relationship between technology practice, technology identity, and the specific context of the Law School. I was able to describe aspects of the relationship between shared meanings and individual practice within the realm of technology use at the Law School. I was also able to describe some specific ways in which this context is linked to other contexts through artifacts, individual practice, and individual identity.

This research was an early attempt to apply the figured world and identity framework to issues of educational technology and technology support. Given the findings, future research is warranted in two specific areas. First, based on the important role of local IT staff in supporting a figured world of technology use at the Law School, it would be useful to conduct similar research in a variety of contexts with different levels of local technology support. This might provide a more robust understanding of the different roles of local and centralized technology support on a university campus and may prove useful in IT policy and planning decisions.

Second, given the narrow context in which I was able to observe technology identity production, it would be useful to expand this aspect of the research. As discussed by the keynote speaker, consumer and personal technologies are quickly becoming ubiquitous across all contexts. A better understanding of how individuals contextualize technology use and transfer technology practices across various contexts is an increasingly vital part of understanding and managing technology use in any given institutional context.

References

- American Bar Association. (2011) In Alphabetical Order | Section of Legal Education and Admissions to the Bar In *ABA Section of Legal Education and Admissions to the Bar*. Retrieved from http://www.americanbar.org/groups/legal_education/resources/aba_approved_law_schools/in_alphabetical_order.html.
- Apache Tomcat - Welcome!. (2011). In *The Apache Software Foundation*. Retrieved from <http://tomcat.apache.org>.
- Apple, M. W., & Jungck, S. (1998). "You don't have to be a teacher to teach this unit": Teaching, technology, and control of the classroom. In H. Bromley & M. W. Apple (Eds.), *Education / Technology / Power: Educational computing as social practice* (pp. 133-154). Albany: State University of New York Press.
- Best Law School Rankings | Law Program Rankings | US News. (2011) In *U.S. News and World Report LP*. Retrieved from <http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-law-schools/law-rankings>.
- Bromley H. (1998). Introduction: Data-driven democracy? Social assessment of educational computing. In H. Bromley & M. W. Apple (Eds.), *Education / Technology / Power: Educational computing as social practice* (pp. 133-154). Albany: State University of New York Press.
- Bradley, L. A., Foley, D. E., Holland, C. H. (1996). *The cultural production of the educated person: Critical ethnographies of schooling and local practice*. Albany: State University of New York Press.

Clausen, J. M. (2007). Beginning teachers' technology use: First-year teacher development and the institutional context's affect on new teachers' instructional technology use with students. *Journal of Research on Technology in Education*, 39(3), 245-261.

Fecho, B., Graham, P., Hudson-Ross, S. (2005). Appreciating the wobble: Teacher research, professional development, and figured worlds. *English Education*, 37(3), 174-199.

Geertz, C. (1973). *The interpretation of cultures: Selected essays* by Clifford Geertz. New York: Basic Books.

Get Started with ASP.NET: The Official Microsoft ASP.NET Site. (2011) In *Microsoft ASP.net*. Retrieved from <http://www.asp.net/get-started>

Hatt, B. (2007). Street smarts vs. book smarts: The figured world of smartness in the lives of marginalized, urban youth. *The Urban Review*, 39(2), 145-166.

Holland, D., Lachicotte, W., Jr., Skinner, D., & Cain, C. (1998). *Identity and agency in cultural worlds*. Cambridge: Harvard University Press.

Innocence Project. www.innocenceproject.org.

JavaServer Pages Overview. (n.d.). In *Oracle Technology Network*. Retrieved from <http://www.oracle.com/technetwork/java/overview-138580.html>

Jurow, A. S. (2005). Shifting engagements in figured worlds: Middle school mathematics students' participation in an architectural design project. *Journal of the Learning Sciences*, 14(1), 35-67.

Levin, T., & Wadmany, R. (2006). Teachers' beliefs and practices in technology-based classrooms: A developmental view. *Journal of Research on Technology in Education*, 39(2), 157-181.

- LLM GUIDE - What is an LLM? (2011) In *LLM GUIDE Master of Laws Programs Worldwide*. Retrieved from <http://www.llm-guide.com/what-is-an-llm>.
- Luttrell, W., & Parker, C. (2001). High school students' literacy practices and identities, and the figured world of school. *Journal of Research in Reading*, 24(3), 235-247.
- LSAC www.lsac.org/AboutLSAC/about-lsac.asp.
- Marcovits, D. M., (1998). Supporting technology in schools: The roles of computer coordinators. *Technology and Teacher Education Annual*, 1041-1045.
- Marcovits, D. M., (1999) Support for information technology in schools: The roles of student teachers. *Technology, Pedagogy and Education*, 8(3), 361-374.
- Michael, A., Andrade, N., & Bartlett, L. (2007). Figuring “success” in a bilingual high school. *The Urban Review*, 39(2), 167-189.
- MindManager for Windows – Overview. (2012) Retrieved from <http://www.mindjet.com/mindmanager?p=win>.
- MySQL :: MySQL Editions. (2010) In *MySQL*. Retrieved from <http://www.mysql.com/products/>
- Otero, V., Peressini, D., Meymaris, K. A., Ford, P., Garvin, T., Harlow, D., Reidel, M., Waite, B., & Mears, C. (2005). Integrating technology into teacher education: A critical framework for implementing reform. *Journal of Teacher Education*, 56(1), 8-23.
- Ottesen, E. (2006). Learning to teach with technology: Authoring practiced identities. *Technology, Pedagogy and Education*, 15(3), 275-290.
- Overview: The Official Microsoft IIS Site. (2011) In *IIS*. Retrieved from <http://www.iis.net/overview>

Robinson, C. (2007). Figured world of history learning in a social studies methods classroom. *The Urban Review*, 39(2), 191-216.

Rubin, B. C. (2007). Learner identity amid figured worlds: Constructing (in)competence at an urban high school. *The Urban Review*, 39(2), 217-249.

SSRN Social Science Research Network: Tomorrow's Research Today (2011) Retrieved from <http://www.ssrn.com>. Social Science Electronic Publishing, Inc.

Strudler, N. B. (1996). The role of school-based technology coordinators as change agents in elementary school programs: A follow-up study. *Journal of Research on Computing in Education*, 28(2), 234-255.

Urrieta, L., Jr. (2007a). Figured worlds and education: An introduction to the special issue. *The Urban Review*, 39(2), 107-116.

Urrieta, L., Jr. (2007b). Identity production in figured worlds: How some Mexican Americans become Chicana/o activist educators. *The Urban Review*, 39(2), 117-144.

Virnoche, M., & Lessem, M. (2006). The ABCs of internet negotiation: U.S. teachers on the fringes getting wired. In K. Sarikakis & D. K. Thussu (Eds.), *Ideologies of the internet*. (265-281). Cresskill: Hampton Press, Inc.

Windschitl, M., & Sahl, K. (2002). Tracing teachers' use of technology in a laptop computer school: The interplay of teacher beliefs, social dynamics, and institutional culture. *American Educational Research Journal*, 39(1), 165-205.

Appendix A: Data Collection Instruments

Part 1: IT Professional Artifacts and Activities Observation Guidelines

Goals

1. Describe the technology artifacts present in the school and school district:
 - A. Have a list and/or typology of what the IT professionals consider technology.
 - B. Have a map of where this technology is located.
 - C. Have information on the intended users and purposes of the technology.
2. Describe the activities of the IT professionals as they relate to these artifacts.
 - A. Have a list and/or typology of what the IT professionals do all day.
 - B. Describe which actors and artifacts are involved in what activities.
 - C. Describe the impetus for performing certain activities.

Guidelines

(Artifacts)

1. What “technology” items are encountered and identified by the IT professionals in their daily work?

2. How do the IT professionals identify and categorize these various artifacts?
3. How are these artifacts distributed across the district? Where are these items located and why?
4. Who has access to these artifacts?
6. What is the intended purpose of the technology?
7. How is the technology being used or engaged in the current situation (repair, replacement, intended use, testing, instruction, etc.)?

(Activities)

8. What are the IT professionals doing and how do they refer to their activities?
9. What other actors and artifacts are involved in this activity and how?
10. What prompted the activity (regularly scheduled, told to do it by supervisor, asked by end user for help, on-going project)?
11. What is the purpose of the activity and is it accomplished?

Part 2: IT Professional Extended Observation Guidelines

Goals

1. Describe any attitudes, thoughts, or feelings the IT professionals express concerning particular artifacts.
2. Describe any attitudes, thoughts, or feelings the IT professionals express concerning particular activities.
3. Describe any attitudes, thoughts, or feelings the IT professionals express concerning themselves or other actors in the situation.

Guidelines

(Artifacts)

1. Do the IT professionals make any judgments about the merit, quality, or usefulness of artifacts they encounter?
2. Do the IT professionals express any general concerns or kudos for specific technology or groups of technology (for example: “We need to redo all of these labs” rather than “This lab computer is broken and needs to be replaced”)?
3. Do the IT professionals express any opinions about the purposes and/or users of a particular artifact or group of artifacts?

(Activities)

4. How do the IT professionals feel about performing different activities (enjoy it, don't enjoy it, resent it)?

5. Do the IT professionals make any general comments concerning their use of time and the activities they perform at work?

6. Do the IT professionals make any comments concerning their own or other's roles or abilities in performing the activity?

Part 3: IT Professional Short Interview Schedule

Goals

1. Follow-up on topics from observations by requesting additional information on artifacts, activities, or situations in which the participant was involved.

2. Allow participants to generate topics of interest to them concerning technology and their recent activities.

Questions

1. (Follow-up questions based on observations)

2. Tell me about what you have been doing at work lately? What activities have been occupying your time over the last few weeks?

3. What has been a topic of conversation at work lately?
4. In the last few weeks, have you done anything at work that you are particularly proud of or excited about?
5. When you get to work in the morning, what are you thinking about happening that day?
6. When you leave work, is there anything that you continue to think about?
7. Is there anything we haven't talked about that you think I might be interested in? Is there anything interesting or important going on related to technology that we haven't discussed?

Part 4: IT Professional Life History Interview

Goals

1. Learn how participant came to be an IT professional and get a short work history.
2. Explore how participant sees their role in school district. What do they think they do all day and what is valuable and/or not valuable about what they do.
3. Explore participant's feelings about education technology. Thoughts, concerns, personal experiences both positive and negative.

4. Learn about use of technology in participant's life. How has the use of technology affected their lives.

5. Learn about roles participant plays as a technology user. How they relate to other people as a technology user.

6. Learn about how the participant sees other IT professionals and others in the school district as technology users.

Questions

1. Tell me about your current position in the district and how you came to work here.

2. Why did you decide to become an IT professional? Have you had other types of jobs prior to doing this?

3. What are your responsibilities in the school district?

4. Tell me about a typical work day or work week. What are some typical things you do at work?

5. In your opinion, what role does technology generally play in the school district?

6. Tell me about a specific piece of technology you have worked with that you think is particularly important or useful.

7. Is there anything coming up or happening now with technology in the district that you think is really interesting or that you think will have a large impact on the district and its goals?

8. Do you work with anything that you think is not useful or needs to be changed?

9. What do you think the biggest challenges are for this district with regard to using technology effectively?

10. Tell me about supporting the teachers and others in the district?

11. Can you tell me about specific things you've done to make technology use easier for folks in the district?

12. Can you recall a specific time when someone came to you for help or had a problem and it didn't go so well? How did you eventually work that out? Were you able to find a way to solve the problem?

13. Tell me a bit about your use of technology outside of work. What sorts of things do you use it for? Is there something particularly interesting or exciting that you've done lately? Anything that frustrates you?

14. Compared to other people you know at work and outside of work, how would you characterize yourself as a technology user?

15. Is there anything we haven't talked about that you think I might be interested in? Is there anything else you would like to tell me about your own use or experiences with technology?

Part 5: Teacher Artifacts and Activities Observation Guidelines

Goals

1. Describe the technology artifacts present in the school and available to the teachers:

- A. Have a list and/or typology of what the teachers consider technology.
- B. Have a map of where this technology is located.
- C. Have information on the intended users and purposes of the technology.

2. Describe the activities of the teachers as they relate to these artifacts.

- A. Have a list and/or typology of the teachers' technology related activities.
- B. Describe which actors and artifacts are involved in what activities.

Guidelines

(Artifacts)

1. What “technology” items are encountered and identified by the teachers in their daily work?
2. How do the teachers identify and categorize these various artifacts?
3. How are these artifacts distributed across the school and district? Where are these items located and why?
4. Who has access to these artifacts?

6. What is the intended purpose of the technology?

7. How is the technology being used or engaged in the current situation (pedagogy, student use, administrative duties, etc.)?

(Activities)

8. What are the teachers doing and how do they refer to their activities?

9. What other actors and artifacts are involved in this activity and how?

10. What is the purpose of the activity and is it accomplished?

Part 6: Teacher Extended Observation Guidelines

Goals

1. Describe any attitudes, thoughts, or feelings the teachers express concerning particular artifacts.
2. Describe any attitudes, thoughts, or feelings the teachers express concerning particular activities.
3. Describe any attitudes, thoughts, or feelings the teachers express concerning themselves or other actors in the situation.

Guidelines

(Artifacts)

1. Do the teachers make any judgments about the merit, quality, or usefulness of artifacts they encounter?
2. Do the teachers express any general concerns or kudos for specific technology or groups of technology?
3. Do the teachers express any opinions about the purposes of a particular artifact or group of artifacts?

(Activities)

4. How do the teachers feel about using the technology for these activities (better than without, harder than without)?
5. Do the teachers make any general comments concerning their use of technology?
6. Do the teachers make any comments concerning their own or other's roles or abilities in performing the activity?

Part 7: Teacher Short Interview Schedule

Goals

1. Follow-up on topics from observations by requesting additional information on artifacts, activities, or situations in which the participant was involved.
2. Allow participants to generate topics of interest to them concerning technology and their recent activities.

Questions

1. (Follow-up questions based on observations)

2. Tell me about what technology you have been using lately?
3. Have you recently started using something new or learned how to do something new?
4. In the last few weeks, have you done anything with technology that you are particularly proud of or excited about?
5. Is there anything that has been bothering you about the technology you have been using at school?
6. Is there anything we haven't talked about that you think I might be interested in? Is there anything interesting or important going on related to technology that we haven't discussed?

Part 8: Teacher Life History Interview

Goals

1. Learn about history of teachers' technology use. When did they first start using it, how their use has progressed, and any training or special efforts they have made concerning use of technology in their teaching.
2. Learn about how teachers currently seek training and help with new technology or when they have problems.
3. Explore participant's feelings about educational technology. Thoughts, concerns, personal experiences both positive and negative.

4. Learn about use of technology in participant's life. How has the use of technology affected their lives.

5. Learn about roles participant plays as a technology user. How they relate to other people as a technology user.

6. Learn about how the participant sees other teachers and others in the school district as technology users.

Questions

1. Tell me about when you first started using technology in your teaching and work.

2. Tell me about a time you remember doing something new with technology. What made you decide to use it? How did you learn about it? Where did you go for training and help? How did it go?

3. Can you tell me about another time that you used technology in your teaching and it went really well?

4. Can you tell me about a time you used technology at it did not go so well? What did you do?

5. In what ways have you learned about technology and how to do new things with technology? Do you think these methods are effective for you?

6. How do you normally seek help when you have a problem with technology? Does that work for you?

7. Tell me about a time when you had to ask for help and you think it went really well; a time when you were really happy with the how the problem was resolved.

8. How about a time when you had a problem with technology and you had a hard time getting effective help?

9. How do you think the use of technology has affected your job and your teaching?

10. In your opinion, what role does technology generally play in your school and in the school district?

11. Is there anything coming up or happening now with technology in your school or the district that you think is really interesting or that you think will have a large impact on your work?

12. What do you think the biggest challenges are for this district and school with regard to using technology effectively?

13. Tell me a bit about your use of technology outside of work. What sorts of things do you use it for? Is there something particularly interesting or exciting that you've done lately? Anything that frustrates you?

14. Compared to other people you know at work and outside of work, how would you characterize yourself as a technology user?

15. Is there anything we haven't talked about that you think I might be interested in? Is there anything else you would like to tell me about your own use or experiences with technology?