Distributed Writing:
A Study of Tools, Artifacts, and Bodies

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Abstract

This dissertation investigates the question, "How is writing distributed across tools, artifacts, and bodies for writers collaboratively planning a written document?" After setting up the research problem and reviewing relevant literature, I describe the methods I used to collect and analyze data to answer my research question. I used a grounded theory approach; I collected and analyzed video and audio data from a group of workplace writers collaboratively planning an annual report, the Midwest Community College Association (MCCA). I found that these writers distributed their writing practices across tools, artifacts, and bodies in order to create representations of varying durability that served them in the writing process. This finding has several implications for writing theory, for practicing technical and professional writers, and for student writers.

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CHAPTER ONE:

THE RESEARCH PROBLEM

The widespread availability of cloud technologies has enabled more workplaces to distribute work, and hence writing, across distance than ever before. In fact, in 2013, the Wall Street Journal reported that as many as 13.4 million Americans worked from home at least once a week—almost 10% of the American workforce (Shah, 2013). This rise in distributed work has led to some disagreement among business leaders about best practices for distributed work. Some executives operate their companies with 85% of employees working from home, for example, while others have recently ended their work-from-home programs (see, e.g., Swisher, 2013; Vance, 2013). Educators, too, have debated the merits of online, distanced education (see, e.g., Wojciechowska, 2010). Writing scholars in particular have been invested in conversations about distanced education, cognizant of its potential benefits, while insisting that it be approached with the deliberate attention and care it warrants, as evidenced by the Conference on College Composition and Communication's (2013) position statement on online writing instruction. In addition to recommending teaching strategies, the position statement emphasizes that online writing instruction requires unique training for instructors, tutors, and administrators (principles 7 and 14) and recognizes that online writing instruction may in fact require more labor than onsite instruction (principles 8 and 9).

These discussions of distanced work and education tend to conflate the terms *distributed work* with *distanced work*, and thus also distributed and distanced writing.

Conflating terms in this way is problematic, I argue, because it takes for granted other ways in which writing is distributed and in doing so, misconstrues the nature of writing. Equating distributed writing with distanced writing suggests that, for example, face-to-face collaborative writing is not also distributed in any way, which, I will argue in this dissertation, is misguided.

In this dissertation, I examine the concept of *distributed* writing, drawing from research on distributed cognition to reframe the discussion. Scholars in distributed cognition (as I will discuss below) argue that all cognition is distributed across tools, artifacts, and bodies (e.g., Hollan, Hutchins, & Kirsh, 2000). Similarly, I will argue that all writing is distributed across tools, artifacts, and bodies. Specifically, I conducted an empirical study of workplace writing practices in order to explore and document the multiple ways in which face-to-face writing is distributed, asking, "How is writing distributed across tools, artifacts, and bodies?" Addressing this question will contribute to writing theory by bringing together theories of materiality and embodiment, and will point the way toward best practices in workplace writing, teaching writing, and the development of writing technologies.

In this chapter, I review scholarship in writing studies and distributed cognition in order to lay the groundwork for my empirical study of writers at work. First, I describe the central problem that this dissertation addresses in more detail, then I argue for how my approach addresses this problem, and finally I review related literature in writing studies which supports my approach.

I. THE PROBLEM: A CONFLATION OF TERMS

In this section, I begin by reviewing scholarship on distributed writing. My purpose is not to critique these, frankly, excellent and necessary studies of writing. Rather, I want to point out the assumptions that undergird any claim that conflates distributed writing with distanced writing. If distributed writing and distanced writing are synonymous, this logic goes, then writing which is not distanced is also not distributed. In this section, I will demonstrate these assumptions in recent scholarship.

Within writing studies, the phrase *distributed writing* often indicates writers separated across distance, organizations, and/or disciplines (see, e.g., Spinnuzi, 2007; Swarts, 2007; Slattery, 2007, and Paretti, McNair, & Holloway-Attaway, 2007). These writers work across geographic, organizational, and disciplinary boundaries via telecommunications technologies that allow them to coordinate their work efforts. To provide examples of how distributed writing has been discussed in this way, I will review scholarship from the 2007 *Technical Communication Quarterly* Special Issue on Distributed Work. Spinnuzi (2007) opens the Guest Editor's Introduction by describing the shift from more stable workplaces (Nardi, Whittaker, & Schwartz, 2002) to distributed work. Almost immediately, his focus is on the distribution across geographic distance, though he also stresses that distribution takes place across people as well—across organizations and disciplines. He contrasts distributed work with *modular* work, which arose from the industrial revolution and separated work activities into neat modules and proceeded temporally from one module to the next. Distributed work, he argues, breaks down this modularity, and through telecommunications technologies,

distributes work practices such that they are networked and *interpenetrated*, meaning that information and practices flow in multiple directions across many organizations and people.

The distinctions that Spinnuzi makes between modular and distributed work are important. I want to draw attention to the assumption undergirding his discussion: that modular and distributed work are distinct, different types of work processes and practices—work that is distributed is not modular, and vice versa. Similarly, using this reasoning, distributed/distanced writing is distinct from other types of writing, such as face-to-face collaborative writing.

Slattery (2007) also discusses distributed work as a new phenomenon with which technical writers must contend. He notes that distributed work is often achieved through the sharing and management of texts, and that the job of technical writers is often to assemble and reassemble information from these texts, which come from subject matter experts (SMEs) across a variety of disciplines who may also be located across distance. Based on an empirical study of technical writers composing technical documentation from hundreds of pre-existing texts, Slattery notes that managing texts in this way requires enormous technical skill. His concern is that the work of the technical writer may be reduced (in the eyes of executives) to technological rather than rhetorical skill and eventually automated. Slattery's stance toward distributed writing is that it is new, unique, and has important challenges and implications for technical writers. Distributed writing is implicitly contrasted, again, with the work that became before distributed writing, which was centralized, hierarchical, and temporally linear.

Like Spinnuzi, Swarts (2007) emphasizes place in his discussion of distributed work. He focuses on the personal data assistant (PDA) as a tool for distributed work. His study of vet students emphasizes how PDAs provide the students with access to information wherever they require it. In this example, information is not bound to a physical place, and so work can be distributed across locations, especially across *non-places* (Augé, 1995), environments of transition or overlap. PDAs, Swarts argues, can aid the distribution of work across non-places. Again, in this study, the emphasis is on mobility and fluidity over stability, distribution over non-distribution; the implicit warrant is that the two types of work are different and require different work practices.

Despite Spinnuzzi's, Slattery's, and Swarts' focus on the new-ness of distributed work, Paretti, McNair, and Holloway-Attaway (2007) remind scholars that distributed work is also a historical phenomenon. They agree, however, with the previous authors that its ubiquity is new and warrants further study. Their work is pedagogical, featuring a case study of global student collaborative writers. They focus primarily on distanced collaboration—the struggles students encounter with distanced collaboration and the need for appropriate pedagogical strategies. I agree with the authors that such work is necessitated by the increasing globalization of work practices; we must prepare our students for these types of workplaces and practices. However, perhaps because their focus is on globalization, they implicitly conflate distributed and distanced writing.

These studies all provide excellent examinations into work practices that give scholars vital insight into the contexts studied and further theories in technical communication. However, my purpose in reviewing them is to point out that these studies

are based upon a warrant—sometimes explicit, sometimes implicit—that distributed writing is a *particular kind* of writing, synonymous with distanced writing and different from face-to-face collaborative writing and individual writing. It is this conflation of distributed writing with distanced writing and its characterization as something new and unique that I am arguing against. *Distanced* writing may be new and unique, and I agree that the writing examined by these authors reflects a shift in writing and work practices in the ways these writers describe. However, I argue that the adjective *distributed* can accurately and effectively describe *all* writing—even face-to-face and individual writing—in such a way as to remind scholars of the material, embodied nature of writing. I base this claim on how scholars studying distributed cognition use the term, which I will discuss in the next section.

II. DISTRIBUTED COGNITION

To further explain the problem of conflating "distributed" with "distanced" writing, I turn to theories of *distributed cognition*, in particular, those developed from studies by Hutchins (1995), Hutchins & Palen (1997), and Kirsh (1995; 2009; 2010). In these studies, the adjective *distributed* in the phrase *distributed cognition* does not signify a special kind of cognition but rather qualifies *all* cognition as distributed (Hollan, Hutchins, & Kirsh, 2000). Cognition, Hutchins (1995) argues, does not just occur inside the mind, but is mediated by materials and people in the environment—specifically, tools, artifacts, and bodies. In his study of naval navigation, Hutchins (1995) examines the navigational instruments, charts, maps, and other artifacts used by sailors to chart a

ship's course, and describes the complex collaborative process of navigating a ship. He explains how the presence of those tools, artifacts, and other people affect the cognitive processes of both individuals and the group in the navigational task. He examines distributed cognition in airline pilots as well (Hutchins & Palen, 1997), focusing on the interaction between gesture and navigational instruments in cognition.

I am interested in distributed cognition because of its emphasis on the environment. Hutchins (1995) argued that artifacts, tools, and other people in one's environment do not simply *aid* cognitive processes; they fundamentally *change* them. As an example, Hutchins describes the differences between contemporary Western and Micronesian naval navigation. Western navigators rely on systems of external representation that include charts and instruments, and so their mental processes require measurement and manipulation of these charts and instruments. The Micronesian navigators in Hutchins' study rely on the identification of natural landmarks and superimposed mental models; these mental processes required *internal* computations based upon the natural landmarks, rather than the external computations enabled by Western navigational instruments. Both sets of processes rely on the environment surrounding the navigator(s), but because of the differing ways the environment is involved, the mental computations of navigation are fundamentally, materially different. I suggest that such may also be the case with writing, as studies of writers' use of tools demonstrate that different tools fundamentally change writing practices (e.g., Haas, 1996).

Where Hutchins primarily focuses on groups of people distributing cognition,

Kirsh (1995; 2009; 2010) examines how individuals use the environment and their bodies in cognitive processes. He suggests *why* humans distribute cognitive processes across environments: it is more efficient than not doing so. In a coin-counting experiment, Kirsh (1995) found that participants who were allowed to use their hands to think through their assigned task (thus distributing cognitive processes across their hands and the environment) experienced better memory, attention, and perception. Kirsh (2009) examines *projection*, a phenomenon wherein individuals interact with their environment in order to augment a problem space in some way, as a method of reducing cognitive cost in complex problem-solving. Kirsh (2010) examines a particular *kind* of projection: hand marking, a technique used by dancers to rehearse choreography with their hands rather than their whole bodies. From a cognitive ethnography conducted in cooperation with the Royal Ballet in London, Kirsh (2010) argues that hand marking may provide a physical scaffold that enables dancers to think through phrases more clearly than mental rehearsal, while simultaneously conserving the energy required to rehearse the phrase with their full bodies. Additionally, Kirsh (2010) argues, it may serve as a method of *neural priming* for the muscle memory that develops when dancers learn a phrase. The hands, in studies by Kirsh, are crucial for distributing cognition and conserving cognitive resources.

I draw on these scholars' studies of distributed cognition for their particular use of the word *distributed*. Their use of the word, as Hollan, Hutchins, and Kirsh (2000) argue, denotes not a special kind of cognition but all cognition, which is distributed across tools, artifacts, and bodies, for both groups of people and individual bodies. I use this same approach in studying writing. Other writing scholars have drawn from theories of

distributed cognition as well. In the next section, I describe how scholars have adapted theories of distributed cognition thus far and explain how my approach is different.

III. CURRENT THEORIES OF WRITING AND DISTRIBUTED COGNITION

Writing and distributed cognition have been explored by scholars before (e.g., Cronin, 2004; Klein & Leacock, 2012; Alexander & Williams, 2015; and Angeli, 2015). I will first review this literature and then describe how my approach differs from these scholars' approaches. Cronin (2004) uses the concept of distributed cognition to explore the social nature of so-called single authorship in the academy. Cronin's focus is on how even single authorship is distributed across other human bodies due to the social nature of writing. He argues that single authorship is slowly becoming less relevant in the social and hard sciences in the wake of increasing collaboration, which he equates to distributed cognition. He also postulates that even single-authored monographs are products of distributed cognition, as evidenced by the acknowledgements sections in published articles and books. In the acknowledgements, he argues, readers can trace the quasi-collaborative, or distributed, nature of writing for even single authors; this argument is similar to LeFevre's (1984) treatise on the social nature of invention.

Klein and Leacock (2012) focus more directly on cognition than does Cronin. Using Flower & Hayes' (1981) cognitive process model of writing, Klein and Leacock describe how planning, translating, reviewing, and monitoring (the stages in Flower and Hayes' cognitive process model) are distributed cognitive processes. They review several studies of writing in K12 and post-secondary schools and argue that the written artifacts

and tools in these studies help distribute writing processes to improve things like writing speed, writing quality, and writing to learn. Klein and Leacock distinguish distributed writing from what they call *sequestered writing*—writing done alone, relying primarily on a single author's cognitive processes, like long-term memory.

Alexander and Williams (2015) take a more narrow approach than Cronin and Klein and Leacock, combining theories of distributed cognition with theories of invention to create a theory of *distributed invention*. Alexander and Williams argue that distributed invention is enabled by what they call *proximal composing*—composing within the physical presence of another composer. Using their experiences at the Digital Media and Composition Institute, they describe the material conditions for distributed invention, explain its benefits, and propose principles of distributed invention. For these scholars, distributed invention happens when *two or more* writers are working within physical proximity and exchanging ideas about their work. This is a different approach to Cronin's but similarly encourages the idea of distributed cognition or collaboration in the academy.

Angeli (2015) also takes a narrow approach to distributed cognition and writing, looking in particular at memory. Her study of the writing processes of emergency medical services (EMS) professionals demonstrates the distributed nature of three kinds of memory—individual, collaborative, and professional—which they use in composing patient reports. Importantly, Angeli argues that all three of these kinds of memory are distributed, even individual memory. She found that individual memory is distributed in the environment by the professionals' inclination to note pertinent information wherever

they could—pieces of medical tape, bedsheets, sometimes even the patients—to help them remember details when composing reports after several successive emergency runs. This inclusion of individual memory in her examination of distributed cognition makes Angeli's approach different from Cronin's, Klein and Leacock's, and Alexander and Williams'.

My views on writing and distributed cognition and writing align more closely with that of Angeli than to Cronin, Klein and Leacock, and Alexander and Williams; I will articulate my approach more fully in the section below.

IV. MY APPROACH TO DISTRIBUTED WRITING

While Cronin, Klein & Leacock, Alexander and Williams, and Angeli present excellent discussions of distributed cognition and writing, my approach differs significantly from theirs. These scholars apply theories of distributed cognition to theories of writing in order to demonstrate the distributed cognitive processes present in writing practices. I, on the other hand, borrow *terminology* from theories of distributed cognition and compare distributed writing to distributed cognition. Just as Hollan, Hutchins, and Kirsh (2000) argue that all cognition is *distributed* cognition, distributed across tools, artifacts, and bodies, I argue that all writing is *distributed* writing, distributed across tools, artifacts, and bodies.

This approach, I argue, provides a full picture of the distributed nature of writing, whereas the previously discussed applications of distributed cognition to writing focus on particular aspects of distributed cognition and writing. Cronin and Alexander and

Williams focus on how individual writers distribute their writing practices across other human bodies, but they lack discussions of tools and artifacts. Klein and Leacock contrast sequestered writing with distributed writing, while I argue that even sequestered writing is distributed; even a single writer penning an essay about her summer vacation, for example, must distribute her writing practices across tools, artifacts, and her body. Angeli includes tools, artifacts, and bodies in her investigation, and includes both individual and collaborative memory in her study, but her focus is primarily on memory as a cognitive process enabled *through* writing, rather than distributed writing itself.

Previous literature in writing studies supports my approach to distributed writing. All writing, as Olson (1994) notes, puts "the world on paper": the action of writing *requires* tools (writing surfaces and implements), and in its wake generates a textual artifact—the "text so far" (Flower & Hayes, 1981, pg. 370). Haas (1996) posits writing as an embodied practice, noting the close interaction of writers' bodies with the material world (or the interaction of tools, artifacts, and bodies, in terms of distributed writing). Drawing from these and other scholars' discussions of writing, I argue that writing requires, at a minimum, a writing surface, a writing implement, and a human body and creates in its wake a written artifact—in other words, all writing is distributed across tools, artifacts, and bodies.

Scholars in writing studies have been examining the effect the environment—and the things and people in it—has on writing for quite some time. Such research might be divided into two major strands: work on materials (tools & artifacts) and work on writers themselves, either individual writers' bodies or writers in collaboration with other

writers. In what follows, I discuss some of this literature and how it supports my approach to distributed writing.

Before I begin a detailed explanation, however, I must briefly discuss what I mean by tools and artifacts. What is signified by the terms *tool* and *artifact* across disciplines varies. However, for the purposes of my study, I focus on material tools and artifacts like those examined by Hutchins (1995) in his study of naval navigation. In defining what I mean by a *writing tool*, I reference Haas' (1996) discussion of writing technologies, which include writing implements and surfaces, like pen and paper or keyboard and computer screen. By *artifacts*, I mean previously existing documents or documents created in the service of a given writing project, including the current draft or "text so far" (Flower & Hayes, 1981, pg. 370) itself. In the next three sections, I will first examine the existing literature on tools and then on artifacts before I discuss existing literature on how writing is distributed across bodies.

A. Tools

Writing necessitates the use of tools (Haas, 1996). Writing tools are implements and surfaces used to create written artifacts (see, e.g., the discussions of writing technologies in Haas, 1996), and are often operated by hand[i]. This definition leaves room for many types of writing tools, including computers (as in Haas, 1996; Paretti, McNair, & Holloway-Attaway, 2007; Fisher, Russel, Williams, & Fisher, 2008; and others), pen and paper (e.g., Haas, 1996), and mobile technologies like PDAs (e.g., Swarts, 2007). The definition can also include things like whiteboards and markers, like my study will

show, or other similar writing tools. It also includes computer and mobile software applications, such as groupware (Noel & Robert, 2004) and other digital composing tools.

Since the 1980s and 1990s, when many workplaces began adopting computers and other digital technologies, writing researchers have studied how tools impact writing practices. Haas (1996) examines the effects of different types of tools on writing practices, in particular, the differences between computer tools and pen and paper. Dave & Russell (2010) also examine the impact of computer tools; their study examines student writers' printing and revision practices. Recently, writing researchers have examined how writing tools enable and/or constrain distanced (e.g., Paretti, McNair, & Holloway-Attaway, 2007) or collaborative (Noel & Robert, 2004) writing practices.

These studies are only a sampling of how scholars have examined writing tools. Regardless of what kinds of tools writers use, however, these studies collectively demonstrate that writing practices are distributed across writing implements and surfaces. In the next section, I will discuss how scholars have examined another component of distributed writing—artifacts.

B. Artifacts

For the purposes of my study, I define "artifacts" as texts accessed (e.g., O'Hara, Taylor, Newman, & Sellen, 2002) or generated in service of the writing project at hand, including the "text produced so far" (Flower & Hayes, 1981, pg. 370). Scholars in writing studies have examined how writers use various artifacts in their composing processes.

They have examined both texts that writers bring into a writing situation, like source materials (O'Hara, Taylor, Newman, & Sellen, 2002), and texts generated by the author(s) in the practice of writing, such as notes (Haas, 1990) or deadline calendars (Cross, 2001). Though the ways that the artifacts in these studies were used varied, they all provide examples of writers distributing writing practices across artifacts.

The texts in the above studies are print documents, which makes them more easily distinguishable from the tools used to generate them than digital documents. When writers use digital tools to view digital artifacts, the distributed nature of writing is even more evident. For example, Neuwirth & Kaufer (1989) examine hypertext artifacts that writer use when composing a written synthesis; the hypertext artifacts artifacts are accessed via digital tools. Similarly, Slattery (2007) examines the unique nature of writers using PDAs to access electronic artifacts. In this study, veterinary students used the PDA tool to distribute the task of composing patient narratives across multiple digital artifacts. In these cases, the digital nature of both the tools and artifacts means that the boundaries between tools and artifacts are not always clear, but it is clear that writers distribute their writing practices across both.

In addition to the blurry boundaries between digital tools and digital artifacts, writing artifacts have posed another troubled boundary for writing scholars: the boundary between reading and writing. Reading and citing from source materials are often a part of writing practices, especially in academic writing (see, e.g., Flower, Stein, Ackerman, Kantz, McCormick, and Peck, 1990; Spivey, 1990; Spivey & King, 1989; O'Hara, Taylor, Newman, & Sellen, 2002). However, whether these reading practices are

considered to be distinct from writing practices (Flower, Stein, Ackerman, Kantz, McCormick, and Peck, 1990) or a hybrid part of them (O'Hara, Taylor, Newman, & Sellen, 2002; Spivey, 1990) has been debated. Regardless of how the relationships between artifacts and writing are defined, these studies indicate that artifacts are often important to distributing writing practices.

In the next section, I examine how existing literature in writing studies supports a theory that writing is distributed across (both individual and multiple) human bodies.

C. Bodies

There are two strands of scholarship in the field of writing studies that demonstrate the importance of bodies to writing: scholarship on individual writers' bodies (e.g., Fleckenstein, 1999 and Emig, 1978), and studies of groups of bodies working together—studies of collaboration (e.g., Ede & Lunsford, 1990; Day & Eodice, 2001) and the social nature of writing (e.g., LeFevre, 1984). Both sets of scholarship are crucial to understanding the ways in which writing is distributed across bodies.

Individual Writers' Bodies

Emig (1978) and Fleckenstein (1999) remark on difficulties in parsing out boundaries inside and outside of individual writers' bodies. Emig discusses essential *components* of the writing process inside the body: the hand, the eye, and the brain. She notes that each of these components works in conjunction with the others—the brain moves the hand, which is seen by the eye—making discussing them individually

"rhetorically satisfying" but "literally misleading" (p. 60). Fleckenstein, on the other hand, examines boundaries between the body and the outside world. She theorizes about an individual writer as a *writing-being-in-a-material-place*, arguing that the boundaries between the writer's body and the place in which she writes are blurred. These writers provide examples of how writing is distributed across even a single writer's body—among the hand, eye, and mind within the body and between the body and the world outside it.

Though her study is not of *writers'* bodies, Sauer (1998) emphasizes the importance of bodies in technical writing. In her study of miners' *pit sense*, she described the tensions between technical documents about mining safety and miners' own embodied senses of risk assessment. She found that the texts often made no reference to these embodied senses and argued that ignoring miners' embodied knowledge in favor of texts could put miners in danger. Sauer, Emig, and Fleckenstein demonstrate the importance of the body in writing. Even a single body is important to distributing writing practices; without the hand, eye, and brain (Emig, 1978) of the body, writing cannot happen[ii]. The body is required to manipulate the tools of writing (Haas, 1996).

Collaboration

Research on collaborative writing examines how writing is distributed across multiple human bodies. Studies of collaborative writers are numerous and have for their foci a variety of topics. Important for my study are two of those topics: studies of the

social nature of writing and studies of gesture and writing. I will briefly discuss each of these topics in the two sections that follow.

Collaboration: Social Nature of Writing

Like Cronin's (2004) argument that even single-authored scholarship requires distributed cognition, scholars of writing and rhetoric argue that all writing is social in nature (e.g., LeFevre, 1987; Miller, 1984; Ede & Lunsford, 1990). Alexander and Williams (2015) and Day and Eodice (2001) discuss how writers can affect other writers' composing processes, even when writers are composing individually. Writing directly about collaboration, Ede & Lunsford (1990) seek to understand the many different forms that collaboration can take—in several different stages where writers may or may not be working directly alongside one another. They found that writing within physical proximity of other writers rarely takes place at every stage of composing in workplaces; much more likely are workplace writers to brainstorm together, then compose individually.

These studies, then, demonstrate another way in which writing is distributed across human bodies. Not only does writing require the brain, eye, and hand of at least a single body along with the tools wielded by that body, it is also difficult to act in total isolation as a writer. Even individual writing is distributed across multiple human bodies.

Collaboration: Gesture

Studies of collaboration and gesture examine how writing is distributed across multiple human bodies in a very particular way. They examine how gesture aides the collaborative effort by either shaping the semantic content of group documents or by helping to create and maintain relationships. Interestingly, Thompson (2009), who does not study of collaboration *per se*, but looks at tutoring strategies in a writing center, examines both. After Bavelas, Chovil, Laurie, & Wade (1992), she calls the first type of gestures *topic* gestures (gestures which convey semantic meaning), and the second type *interactional* gestures (gestures which support building, maintaining, or distancing social relationships). She studies both kinds of gestures in relation to three tutoring strategies: direct instruction and cognitive scaffolding, which use topic gestures, and motivational scaffolding, which uses interactional gestures.

Though other scholars do not necessarily rely on Bavelas, Chovil, Laurie, and Wade's scheme, they also often focus on either semantic content (e.g., Haas & Witte, 2001) *or* social relationships (e.g., Wolfe, 2005). Haas & Witte (2001) look closely at how the gestures of a city employee conveyed semantic content that was used in revising a technical diagram of a channel easement. The gestures were integral to the revision process, conveying the city worker's embodied knowledge of channel easements to engineers who had less field experience with the easements. Wolfe (2005), on the other hand, focuses more on interactional gestures. She examines how, through gesture, students collaboratively planning a technical document co-constructed a *conversational interaction space* through gesture that both helped the group plan their document and

gave the participants self-reflected information about their own participation in the writing of the project.

These studies speak to many of the ways writing is distributed across human bodies, whether writers are working alone or in groups. In the next and final section of this chapter, I briefly summarize my argument and provide a preview of upcoming chapters.

V. SUMMARY AND RESEARCH QUESTION

In this chapter, I have argued that *distributed* writing denotes all writing, not just particular kinds of writing, like distanced writing. I have argued that conflating distributed writing with distanced writing is problematic and that writing requires distribution across writing surfaces and implements and human bodies. I have also argued that previous literature in writing studies lays a firm foundation for my claim that all writing is distributed. The question I investigate in the rest of this dissertation, then, is "*how* is writing distributed across tools, artifacts, and bodies?" In the chapters that follow, I describe a study I conducted to address this question. In chapter two, I describe my general methodological approach and the context of my study. In chapter three, I describe my methods of data collection. Chapter four contains early analysis, and chapters five and six contain more analytic methods and findings. In chapter seven, I discuss the implications of my findings for writing theory, for the development of writing technologies, for technical and professional writers, and for student writers.

CHAPTER TWO:

GENERAL METHODOLOGICAL APPROACH

In this chapter, I review the research question I introduced in chapter one, describe my general methodological approach, which uses grounded theory, and provide the empirical context for my study. In grounded theory analyses, each analytic step is predicated on findings from the step conducted before it. Therefore, methods, analyses, and findings are all tightly bound together, which makes discussing them together imperative. In this way, my approach differs somewhat from a traditional IMRAD (introduction, methods, results, analysis, and discussion) approach. In this chapter, I establish my general methodological approach and in subsequent chapters further detail my particular methods, analyses, and findings. That is, in addition to this chapter, I will present methodological specifics, analytic techniques, and findings across four chapters, corresponding to four analyses: Chapter Three, Data Collection; Chapter Four, Data Sampling, Description of Writing Session, and Developing Units of Analysis; Chapter Five, Analysis and Descriptive Findings; and Chapter Six, Analysis and Core Category Findings.

I. THE RESEARCH QUESTION

The research question driving this project is, "How is writing distributed across tools, artifacts, and bodies?" This question assumes that writing *is*, in fact, distributed, and that it is distributed across tools, artifacts, and bodies. In the previous chapter, I

argued that previous literature in writing studies sufficiently supports these assumptions, and in this chapter, I both describe my general approach to answering this question and describe the particular context in which I conduct my investigation.

II. GENERAL METHODOLOGICAL APPROACH

To address my research question, I used the analytic method known as grounded theory (Glaser & Strauss, 1967; Glaser, 1978; Strauss, 1987; Strauss & Corbin, 1990; Farkas & Haas, 2012; Corbin & Strauss, 2014). Grounded theory is a systematic, rigorous method of qualitative analysis which requires the constant comparison of data, and through which a researcher develops a theory which has been *grounded* in the data (Glaser & Strauss, 1967). In this section, I give a general explanation of grounded theory, its history, some of the assumptions that undergird it, and the mechanisms through which researchers develop it.

A. A Brief Explanation of Grounded Theory

Grounded theory refers to the end product of a long process of data collection, analysis, and integration into theory. A theory is *grounded* when it has been constructed through the systematic collection and analysis of data via the techniques of constant comparison as outlined by Glaser and Strauss (1967), Glaser (1978), and Strauss (1987), and other theorists (e.g., Farkas & Haas [2012], who provide an explanation of grounded theory and an application of it to a study of written texts). A grounded theory is thus closely tied to the data because it has been developed through close, iterative analysis of

the data. Glaser and Strauss (1967) offer this method as an alternative to attempting to retrofit *a priori* theories to data. Using the grounded theory method, researchers do not bring an *a priori* theory and theoretical categories *to* the data, but rather work with the data interpretively to build provisional theories directly from that data. Grounded theories, they argue, are better supported by their data than pre-existing theories which are then attached to data by logical deduction, again, because they are developed through careful analyses of the data at hand—in a sense, grounded theory *emerges from* the data (Glaser & Strauss, 1967).

B. A Brief History of the Origins of Grounded Theory

The grounded theory method was developed by Glaser and Strauss over decades of sociological work. They developed this method and its associated techniques in part as a response to what might be called a verification crisis in sociology. Glaser and Strauss (1967) express concern about the amount of sociological research being published at the time which was focused on verifying existing theory, rather than generating novel theories. They developed grounded theory as a way to aid sociologists in generating new theory through systematic qualitative analysis. Glaser and Strauss emphasize the need for qualitative analysis as a way to understand complex social phenomena in ways that quantitative data do not easily enable. They explain that their emphasis is borne not out of a disrespect, dislike, or distrust of qualitative data and analyses, but rather out of a concern for the ways in which qualitative analyses were being conducted at the time

(Glaser & Strauss, 1967). In fact, Glaser and Strauss emphasize the need for both qualitative and quantitative analyses in sociological research.

The methods and assumptions of grounded theory were influenced by two simultaneously occurring trends in sociology (Strauss, 1987). From the American Pragmatism movement, grounded theory borrowed an assumption that research should be grounded in a *problematic situation*—that research should seek to solve a problem (e.g., Dewey, 1938). From the Chicago Department of Sociology, grounded theory gained an emphasis on field observations and interviews as primary sources of data collection (Strauss [1987] suggests Hughes, [1971] as additional reading on this kind of fieldwork).

C. Assumptions of Grounded Theory

Two of the important assumptions of grounded theory are that research is understood as work and the researcher is understood as a skilled laborer (Strauss, 1987; Glaser, 1978). Glaser (1978) emphasizes the care with which the researcher must approach the data and the lengthy, detailed, systematic approach to data analysis that grounded theory entails. The assumption that grounded theorists are laborers highlights the expertise that the theorist brings to the analysis of data and acknowledges that expertise as useful; the rigorous work of grounded theory balances that expertise by continually applying it to the data at hand (Glaser, 1978). The researcher must at once approach her data with an open mind while also seeking out literature related to her subject so that her grounded theory will be sufficiently informed by related theory while

remaining properly grounded in the collected data, not inappropriately shoehorned into a theory *a priori*.

D. The Work of Grounded Theory

The labor of grounded theory involves the collection and analysis of data and the generation of theory from that data (Glaser, 1978; Strauss, 1987). In addition to field observation and data collection, Strauss (1987) suggests that data collection can involve many materials, such as documents collected from research sites, public records, and imagistic materials like paintings and photographs. Analysis of these materials involves the constant comparison of data and the continual memo-writing about that data in order to record observations and develop theory. In fact, Glaser (1978) asserts that "part of the method, itself," is writing (p. 7), including both theoretical memos and the final dissemination of the theory in conference presentations, papers, etc.

Glaser and Strauss describe many types of activities designed to aid the researcher in constant comparison, including but not limited to open coding, dimensionalizing, axial coding, selective coding, and integration. Farkas and Haas (2012) provide a succinct summary of how these activities work together in two main movements: pulling apart the data and putting the data back together. The first step in constant comparison, they suggest, is to *pull apart* the data via open coding and dimensionalizing. Open coding is an act of beginning to identify potential avenues for further exploration through unrestricted coding (Strauss, 1987). Dimensionalizing further pulls apart the data by requiring the researcher to attend to similarities and differences among data points,

collecting the data into dimensions—categories with similar properties that can be subdivided in a number of ways. Dimensions might be binary, they might have scales, they might lie on a spectrum, or they might be sorted in a number of other ways (Farkas & Haas, 2012).

Following the act of pulling apart the data, researchers begin to put it back together via axial coding and selective coding. Axial coding is the closer examination and coding of one particular category at a time. Selective coding occurs once a core category—a category with explanatory power to help theorists understand the social phenomenon at hand—has been developed, and it requires the researcher to look through the data exclusively for the core category.

Throughout these activities, researchers write theoretical memos detailing their observations, findings, and procedures at every stage. As the researcher progresses, the developing theory is integrated via the continual writing of memos and research reports. Writing is, in essence, the final act which builds the theory.

The primary goal in all of these phases, including memoing, is to constantly compare data to other data. The movements—pulling apart and putting back together—simply help the researcher know how and what to compare. The researcher is also guided by the *concept-indicator* model (see Figure 1; Glaser, 1978; Strauss, 1987, pg. 25). When

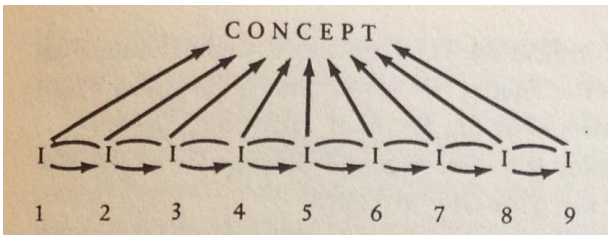

Figure 1: Concept-indicator model from Glaser & Strauss, 1967

comparing data points, the researcher examines pieces of data which point to or indicate an abstract concept; this act is, of course, an interpretive one on the part of the researcher. In comparing data points, the researcher begins to notice when multiple indicators point to similar concepts, and so a category is built/discovered by constant attention to empirical evidence and the interpretive act of determining a concept that fits that evidence.

In the chapters that follow, I will describe how I have used these techniques in support of constant comparison of my data. First, however, in the next section, I describe the empirical context from which I gathered my data—a group of workplace writers collaboratively planning a written document—and justify this methodological choice.

III. A SITUATED STUDY OF COLLABORATIVE WORKPLACE WRITERS PLANNING A DOCUMENT

For my study, I chose to examine writers' situated writing practices in the field, not a laboratory setting, or, "in the wild," as Hutchins (1995) describes the studies of situated cognition I discussed in the previous chapter. I am interested in situated writing primarily because, like Brandt (1992), Cushman (1996), Gere (1994), and Hull and Schultz (2002), I am interested in how writing happens in people's everyday lives. As Witte (1992) notes, theory developed outside the bounds of systematic, empirical observations of real world writing does not always sufficiently explain actual writing practices, though such theory may appear neat and tidy in the abstract.

My research question concerns *writing* writ large because I am interested in writing as a material, embodied practice across fields and disciplines. I am particularly interested in how writing happens where it is a part of everyday workflow and task completion. There are a number of venues that fit this description—e.g., professional academic writing, personal writing, workplace writing—but I chose workplace writing because it was news about workplaces that first piqued my interest in the notion of *distributed* writing. As I discussed in the previous chapter, there has recently been some debate in news media about pros and cons of so-called "distributed" workplaces, and my decision to recruit workplace writers naturally sprang from my interest in that debate. In studying workplace writing, I was not necessarily interested in workers who would self-identify as *writers*, such as technical or professional writers. I was more interested in people who write incidentally (but often extensively) as a part of the work of some other kind of profession.

I chose to collect collaborative data for two primary reasons. First, the impetus for this project arose in part from a cognitive dissonance regarding how researchers in writing studies discuss distributed writing—as collaborative writing that takes place across distance, with *distance* being the operative word. My understanding of cognitive psychology's use of the term *distributed*, as I discussed in the previous chapter, indicated that this exclusive use of *distributed* to describe writing that takes place across distance was problematic.

Second, I collected collaborative data because collaborative writing is materially different from individual writing, such that collaborative writing makes visible certain

things that individual writing[1] may obscure. Collaborative writers must externalize much of their work—they have to communicate with their collaborators *in order to* collaborate. In other words, they naturally externalize their writing processes in ways that writers working individually do not.

Additionally, I chose to study collaborative writers *planning* a written document. This interest stems from the rich history in writing studies of empirical research on writers' planning processes. Research on writers' composing plans peaked in the nineteen-eighties, mostly in relation to cognitive studies of writing, but scholars have studied many aspects of planning. Emig (1971) studied the planning (and other) practices of high school writers, finding that able writers often did more planning in self-directed writing than in writing for school. Matsuhashi (1981) and Flower & Hayes (1981) studied relationships between pausing and planning, finding, respectively, that writers' pause times were different for different composing activities and that longer pauses in composing sessions are where much rhetorical planning happens. Rose (1984) examined relationships between planning and writer's block. Haas (1989) studied the effect of composing technologies on writers' conceptual planning. These studies provide insight into planning, and my goal is to contribute to scholars' growing understanding of planning practices. I am interested in how writers use tools, artifacts, and bodies in planning their written documents, prior to the production of prose. My hunch is that the material needs of writers change when they shift from planning to producing prose—that once writers begin producing prose, using multiple tools, artifacts, and bodies might be less important.

[1] Keeping in mind, of course the social nature of "individual" writing (LeFevre, 1987).

IV. SUMMARY OF METHODS-ANALYSIS-FINDINGS CHAPTERS

In the next four chapters, I describe the particular methods of data collection and analysis that I used and what I found using those methods. As I describe my methods and analysis, I refer back to the techniques developed by Glaser & Strauss to aid researchers in constructing grounded theory. Because each round of analysis is dependent upon the findings of the previous round of analysis, I discuss my methods, analyses, and findings in the chronological order in which I conducted them. In chapter three, I describe my methods of data collection. In chapter four, I describe my earliest rounds of coding and provide a detailed description of the situated context of my study—a description which arose from the early *pulling apart* of my data. In chapter five, I describe several rounds of analyses from which arose descriptive findings. In chapter six, I describe the analyses which resulted in the development of my *core category*—the category with explanatory power to describe the phenomena I observed in my data.

CHAPTER THREE:

DATA COLLECTION

In this chapter, I detail the particular methods I used to collect data for my study. Data collection for this project took place in three major phases: recruitment, data collection of a collaborative writing session, and collection of a follow up interview with two participants from the collaborative writing session.

I. IRB APPROVAL AND RECRUITMENT

Before recruiting participants, I obtained IRB approval of the study from the University of Minnesota's Institutional Review Board. After the study was approved, I began recruiting participants using a snowball/convenience sampling method. I contacted colleagues and acquaintances in a variety of fields and asked them whether a.) they participated in collaborative writing in the workplace and b.) their workplace might be amenable to observational research. Of the several colleagues that responded, I made arrangements with one woman to observe a collaborative writing session at the nonprofit where she worked[2]. This site was particularly interesting and rich for two primary reasons. First, while other possible sites offered the opportunity to observe collaborative pairs, about which I have written elsewhere[3], this site offered the opportunity to observe a

[2] This snowball sampling method allowed us to collect video data of two other writing sessions, one of which is reported in Haas, C. & Clayson, A. (in Review)"Embodied Writing: Materiality, Physicality, and Corporeality in the Gestural Tableau."
[3] Haas & Clayson (in Review).

group of five writers. Second, the group was in the very early stages of planning the document—it would be the very first time the group had met to discuss the project.

II. SETTING AND PARTICIPANTS

The workplace in question is a student advocacy non-profit called the Midwest Community College Association (MCCA)[4]. The MCCA's mission, according to their website, is "to ensure accessible, quality, and affordable public higher education while providing students with representation, leadership development, and communication across the state" (n.d.). The organization works with student community and state college senates in a Midwestern state; their activities include advocacy at the state and federal level, student leadership development, and other activities common to nonprofits, such as fundraising and grant writing. MCCA operates through the efforts of a professional staff, including an Executive Director, an Associate Director, a Director of Communications, a Director of Government Relations, a Director of Policy, a Director of Development, and a Director of Training Operations; and a student cabinet, including a President, a Vice President, a Public Relations Coordinator, and a Treasurer.

I collected an hour and twenty minutes of audio and video data from a group within the MCCA which was collaboratively brainstorming topics for the upcoming MCCA annual report. Once published, this report would be sent to the group's alumni and other constituents. Participants in this group included three full-time staff and two elected student officials. Participants' names (which have been changed to protect their privacy) and roles in MCCA are listed below.

[4] The names of the non-profit and all associated participants have been changed to protect their privacy.

Jack Underwood is the Executive Director of MCCA.

Julie Merchant is the Associate Director of MCCA.

Stephanie Anderson is the Director of Government Relations at MCCA.

Stan Thomas is the student President of MCCA.

Sherri Henderson is the student Vice President of MCCA.

All group members contributed topic ideas verbally. Sherri and Julie each took a turn writing on the large whiteboard in the room (see Figure 2)—Sherri recorded content topics and sections, and Julie wrote who was assigned to compose each section once the meeting was over. Julie also ran the meeting.

Figure 2: Participants gathered around tables at writing session

The collaborative writing session took place in a conference room at the MCCA office building in a suburb of a major Midwestern city. The conference room (see Figure 1 below) housed two long gray rectangular tables, several office chairs, and a wall-

mounted flat-screen TV that remained off for the duration of the writing session. The two side walls were eggshell white, and directly across from the camera was an accent wall in a deep royal blue. Directly in front of the accent wall was a deep brown storage shelf with a vase of white lilies on top[5]. The wall across from the entrance way boasted a long whiteboard that stretched from one end of the room to the other.

When I arrived to collect the data, the team was already assembled at one of the two tables in the conference room, with Stan and Sherri (the students) seated with their backs to the whiteboard, Jack and Julie (the director and associate director) facing the whiteboard, and Stephanie (the director of government relations) at the "head" of the table position, directly in front of the accent wall. Both Stephanie and Sherri had laptops open in front of them, and the group had also collected an assemblage of various papers, pens, and other miscellanea (water bottles, Coca-Cola cans, etc.) in their respective places.

Before the group began their meeting, I was introduced by Julie, my contact, to each of the team members briefly and described my project to them. I explained that I was conducting a research project on workplace writing, and asked them to conduct their business normally—anything they did, I explained, I'd find interesting. After gaining informed consent from all participants[6], I set up my equipment: one digital camcorder placed at the opposite end of the tables from where the group was working, and two audio cassette recorders placed in the middle of their table. Once my recording

[5] The wall-mounted TV, the storage shelf, and lilies are not pictured in the figure for greater image clarity.
[6] Once I transcribed the interview, I discovered that the research component of their meeting had been a surprise to the student participants. Before getting down to business, Julie double-checked my consent process—reaffirming to the students that if they did not want to participate, they could of course opt out.

technology was in place, I exited the room. I did not observe the writing session in person; I waited in a smaller conference room down the hall, and only entered the room during the session once—to reset the audio cassettes when they had reached the end of the side. The participants met for over an hour, giving me one hour, nineteen minutes and forty-three seconds of video and audio data at this collaborative brainstorming session.

III. BRIEF SYNOPSIS OF THE WRITING SESSION

Though I will provide a detailed description of the writing session in the next chapter, I will provide a brief synopsis of it here as well, in order to provide context for the data and to illustrate the character of the assembled group. The group I observed met that day to brainstorm topics for the MCCA annual report, which is sent every year in July to a number of different constituent groups. These groups include alumni of the association and administrators in the state secondary educational system (like the Chancellor, who is mentioned frequently in the session as group members imagine his response to potential content), along with other constituents. During the session, the group composed a list of topics on the conference room whiteboard, devised section headings and assigned list items to sections, and assigned sections to individual group members for future drafting and composing.

At this point (at the end of May 2013), the group appears to have been working together for at least an entire academic year, if not an entire calendar year. The student group members' elected terms are coming to an end, and the MCCA annual report,

released regularly in July[7], covers the academic year during which the students have served. The group worked together collegially, and it was apparent from the collaborative writing session that the group had built good relationships and enjoyed working together. In fact, in a follow-up interview (which I will describe below), Jack noted that the group had a tendency to get off task with some frequency, presumably because of the group's collegial nature. In the session, there are a few places where the group distracts itself with jokes, anecdotes, and nostalgia. Though some personalities are more exuberant than others, many jokes, once begun, are picked up and continued by other members of the group. Disagreements and moments of tension within the group, which do occur, are also dissolved via jokes and playful banter.

IV. TRANSCRIPTION

After collecting the writing session data, I used the audio recording from the session to produce a written transcript from which to work. The cassette tapes provided mostly clear audio from which to transcribe, and when I could not glean any more from the tapes, I turned to the video in order to make the transcript as complete as possible. The completed transcript was 91 pages long, triple spaced, and 1414 lines long. I used the transcript mostly in my early analysis, which I will describe in detail in my next chapter.

[7] Jack does mention, however, that the reports have gone out "late" in the two previous years—to which Julie replies teasingly, "Then it's not late."

V. FOLLOW-UP INTERVIEW

After I had begun analyzing my data, I conducted a follow-up interview with two participants from the original writing session. Though I collected the interview and have found it valuable in my analysis, my primary focus in data analysis was the collaborative writing session because my primary interest is in writing in the field. I used the interview to gain further information about this group's writing processes, habits, and experiences, both as they related to the writing session I collected and as they applied to other writing experiences.

Significant time had passed between the time I collected the writing session data (May 2013) and the time I arranged the follow-up interview. To arrange the interview, in December 2014, I contacted Julie again, who I knew no longer worked at MCCA, to see if she still had ties there. She did indeed, and so I asked whether she and/or Jack would be interested in a brief interview about the previous collaborative writing session. She was interested, and over the next few months we arranged the meeting with her and Jack at the MCCA facility.

In between contacting Julie in December 2014 and meeting with her and Jack in March 2015, I began initial analysis of my data (which I will describe in the next chapter). This initial analysis enabled me to develop questions for the follow-up. To make the most of the interview, I conducted what has been called a *document-based* interview (Odell, Goswami, & Herrington, 1983). In document-based interviews, a document (though not necessarily a textual document) provides the focus of the interview; participants are asked about certain sections or features of the document. In

this interview, the document I used was the video from the previous collaborative writing session. I chose three short segments and video stills to show Julie and Jack and based most of my questions on those segments. Because I was using a semi-open ended interview style (Weiss, 1994), I also used follow up questions to prompt further response from participants. Below, I include a table of the interview questions I prepared and asked. The table includes a brief description of the video segment used to prompt questions and the questions themselves.

Table 1: Follow-up Interview Questions

Question Number	Video Start Time	Description of Video Segment	Question	Follow-up Questions
Q1	0:23	Video paused, all participants visible	Q1: Can you tell me a bit about each of these team members in terms of their roles on the team?	N/A
Q2	3:23 – 5:00	Group discusses how to proceed	Julie, you say here that you've done the report differently from year to year. Can you and Jack elaborate on that a bit for me?	N/A
Q3	36:33 – 41:30	Jack & Julie discuss an item; Sherri circles items on the whiteboard	I'm now going to show you a section of the video, and I want to direct your attention less to the conversation and more to what's happening on the whiteboard as we watch. [Watch segment] You've already taken one picture of this list and distributed it to the group, and later you take another picture of this list and distribute it. What happened to the list after this meeting?	How did writing the rest of the report proceed from there? Can you describe a typical session of writing after this session?
Q4	N/A		Q4: Can you tell me about some other documents you may write/have written on a regular basis, and how this writing session compares to writing those documents?	N/A

The follow-up interview took place at the MCCA headquarters in a much smaller conference room than the collaborative writing session, at a single small table where the three of us sat. Jack and Julie sat on one side of the table, and I and the camera sat on the other side. I also brought along my laptop computer in order to show Jack and Julie video segments. I positioned the laptop so that all three of us could see the screen, though I angled it primarily toward Jack and Julie.

At this interview I again gained Jack and Julie's informed consent, and then began asking my questions. For the follow-up interview, I video- and audio-recorded the participants and transcribed the audio data, which consisted of 728 lines and 45 double-spaced pages. In the transcript, I included dialogue from the original writing session as well. I then used the interview to do supplement my analyses of the primary writing session.

VI. CONCLUSION

These were the methods I used to collect data for my study. In the next chapter, I will describe my initial rounds of analysis and provide a description of the writing session, before presenting further analyses in chapters five and six.

CHAPTER FOUR:

EARLY ANALYSIS:

DATA SAMPLING, DESCRIPTION OF WRITING SESSION,

AND DEVELOPING UNITS OF ANALYSIS

In this chapter, I begin describing my earliest rounds of analysis. These early rounds include *pulling apart* (Farkas & Haas, 2012) the data and selecting data to sample from within the data set. The early rounds of analysis also entailed crafting a detailed description of the writing session, which I have included in this chapter. I have included this description within the chronological narrative of my analytic procedures, meaning that I present it after I describe my first rounds of open coding.

In this chapter, I will discuss four phases of open coding my data: coding during my initial viewing of the data, identifying episode boundaries, crafting narrative episode descriptions, and developing a list of data units, which I called the tools, artifacts, and bodies list, or TAB list for short.

I. OPEN CODING

Glaser & Strauss (1967) suggest that the first steps of analysis in grounded theory include open coding, or unrestricted coding. Farkas & Haas (2012) describe open coding as a sort of *pulling apart* of the data. In order to use the constant comparative analytic methods of grounded theory, data must be pulled apart into discrete units—of time, of behavior, of speech, or other possibilities depending on the data—which allows the

researcher to compare units one to another. For my data, the process of open coding took several steps, each predicated on the previous step. I will describe each step and its rationale in a narrative fashion, beginning with the coding I did during my first viewing of the data.

A. First Viewing

As the first step in open coding, I watched the video while taking notes, and I made more copious notes after the viewing regarding my initial reflections. I also wrote theoretical memos (Glaser & Strauss, 1967) about the first viewing. I paid special attention to tools, artifacts, and bodies that seemed significant. I also noted that it might be possible to reconstruct the group's brainstorming document, a list of content topics on the whiteboard, from the video. My notes included the observations below.

Notes taken while viewing:

- I can see much of the writing on the whiteboard, though some items might be hard to make out. Given that I have several digital photograph files of the final whiteboard lists, I can probably reconstruct a fairly close replica of the items on the list.
- The participants begin their writing session with several copies of the previous year's annual report, and early on in the session, Julie asks Jack to retrieve the reports from two years ago. Jack exits the conference room and returns with several copies of that report.

- After the group has established three preliminary lists on the whiteboard, Jack takes a picture of these lists using his phone, sends it to the wireless printer, and leaves the conference room to retrieve the black-and-white printouts of the whiteboard picture.

Notes that I made after the conclusion of the video included:

- The participants do not move around the table much, but there are a few instances (some mentioned above) of participants exiting the room to retrieve additional tools and artifacts.
- The main activity of the session is the development of three lists on the whiteboard and the subsequent dividing of items on one of those lists into further sub-categories.
- There seem to be more artifacts than tools present in the writing session.
- It is hard to see what some of the artifacts/items on the table are.
- A cell phone is used as a tool directly related to the writing at hand at least twice in the session.
- The colors that Sherri uses on the whiteboard are an important part of the initial lists and the subsequent division of one of the lists.
- There are several incidental bodily movements that do not seem relevant to my research question; I will need to decide whether to investigate these or not.

Once these observations were recorded, I reaffirmed my decision to sample from my data in order to conduct a micro-analysis. Though the data include roughly eighty minutes (one hour and twenty minutes) of work, the group only spends about fifty

minutes (49:16) composing a list of topics for the annual report. The rest of the time is spent agenda setting and assigning deadlines and future tasks. I decided to sample the segments of data wherein the group composes a list of topics and assigns those topics to sections because it is during this activity that the participants appear to use the most tools and artifacts. To sample these segments, I first needed to divide the video data into segments. I called these segments *episodes*, and describe creating them in the next section.

B. Identifying Episode Boundaries

In order to divide the data into episodes, I sought to identify *episode boundaries*—moments in the video where one thematic segment shifts into a differently-themed segment, or, where thematic activity and/or discussion shifts or changes course. Deciding on where these boundaries fall, of course, is an interpretive act. Natural human activity does not typically fall into such neatly divided segments; people often switch between tasks or among several tasks, returning to previous work that they had earlier left uncompleted. In my initial viewing and note-taking session, however, I could see that the group had proceeded through distinct enough segments of activity that episode coding would be possible.

To identify the episode boundaries, I watched the video twice—once with and once without the transcript, making notes about thematic shifts in activity and dialogue. I then compared those notes and reconciled differences between them. On my first pass through the data, I watched the video without the transcript because I wanted to be sure

that I focused just as much on the bodily cues as I did on the dialogue content. For each pass through the data, I noted when I thought an episode might be changing, writing down the rough time of the potential episode boundary and three to five things about that moment which might cue the beginning or end of an episode.

During the first pass through the data coding for episode boundaries, I began by taking many notes, thinking that the episodes might be very small, and that the thematic content of the data was shifting every couple of minutes. After several minutes of taking these notes, however, I realized that the whole beginning of the writing session is thematically related—the participants are setting the agenda for the rest of their meeting. Additionally, I realized that because the data comprised a brainstorming session, the dialogue *content* would shift each time a participant thought of a new item to include in the annual report. However, the overall *purpose* of the group's discussion shifted far fewer times throughout the session, and this general change in purpose was reflected in several bodily movements of the participants. As I continued coding, I began focusing on when the group shifts their attention from one major task to another, or what I eventually called a "suggestion for immediate action," and the accompanying bodily actions surrounding this suggestion. One such example is at the end of episode two/beginning of episode three, when Julie says, "Should we start in a specific area?" and sits down after having stood to look at a picture in an old annual report with Stephanie.

In my second viewing of the data, wherein I coded *with* the dialogue transcript, I noted even fewer moments in the transcript where I thought episodes were shifting. By this time, I had seen the data enough times to have a general mental shape of the writing

session and had begun to see patterns of dialogue and bodily cues that marked an episode shift, such as participants sitting or standing accompanied by suggestions for immediate action. Finally, I compared my two sets of notes and finalized the episode boundaries. A list of episodes, including the transcript lines, the length of the episode, the subject of the episode, and relevant boundary markers, is included in Table 2 below. As the table indicates, the boundary markers can be divided into two categories: dialogue suggesting a change in tasks or bodily actions supporting that change in tasks.

After identifying these boundaries, I crafted descriptions of each episode by watching each episode separately, taking notes on the events that happen during the episode, and then using my notes to write a brief narrative description.

Table 2: Episode boundaries and boundary markers

Epi-sode	Lines (v1)	Time	Subject	Episode boundary marker: Dialogue suggestion for immediate action	Episode boundary marker: Accompanying bodily action
1	1 – 15	1:17 – 1:50	Start of session, JM double checks consent of student participants	N/A	N/A
2	16 – 115	1:50 – 8:35	Purpose of report/agenda setting	"…we need to start thinking about putting together an annual report."	• Julie looks down (at notes?) & back up • Julie leans forward & then back • Jack looks up & directs attention to Julie
3	116 – 138	8:35 – 9:25	Marking time while fetching markers/social discussion of pictures in artifact	"Let's just do some, like whiteboarding."	• Stan sits back, looks around for markers • Sherri gets up to retrieve markers, leaves room
4	139 – 642	9:25 – 34:21	Initial content brainstorm	"Do we want to start in a specific area?"	• Julie sits back down • Sherri returns to her chair area & puts markers down, remains standing
5	643 – 1097	34:21 – 58:41	Dividing content into sections	"So this is the list we have so far. Should we think about what kind of natural categories we have at this point for headings?"	• Jack starts taking pictures of whiteboard • Sherri picks up more markers from the table
6	1098 – 1430 (end)	58:41 – 1:19:43 (end)	Discussion of timeline/assigning sections and deadlines	"Can we think about the timeline first, is that an okay place to start?"	• After a major pause • Sherri sits from whiteboard duty

Episode Descriptions

Episode boundary coding yielded six total episodes. Each episode description is included below.

Episode 1: Beginning of Session

As Episode 1 begins, the researcher is prepping the participants. She tells them, "No matter what you do, we'll find it interesting." This comment makes Jack chuckle, and there is some small banter between Jack and the researcher as rest of the group joins in the laughter. The researcher leaves the room, and the group continues to chuckle, with more small banter. Julie makes a joke about the "sock puppet portion" of the meeting to come, which gets a laugh as well.

As the laughter dies down, Julie becomes serious. She acknowledges to the students in the group that the researcher's presence was a surprise to them, and double checks their desire to participate. She tells them it is "totally fine" if they don't want to participate. She has waited until after the researchers left the room to do this. Stan gives both nonverbal and verbal confirmation that he is willing to participate, but because Sherri is behind Stan, I cannot see whether she gives nonverbal confirmation. I do not hear her, either. Regardless, Julie appears to make eye contact with both Sherri and Stan, and she seems to get the confirmation she desires, because she says, "Okay" twice and proceeds with the meeting.

Episode 2: Agenda Setting

Julie explains the purpose of the meeting, which the students may not have known coming in. The purpose, she says, is to collaboratively decide content and to assign writing responsibilities for their annual report. She tells the students that it is important to be thinking about it now because of how busy they will be the next month.

Julie then passes out a set of annual reports from the last year to Stan, Sherri, and Stephanie, and asks Jack if he has copies of the report from two years ago. Jack says yes, and leaves to retrieve them. As Stan, Sherri, and Stephanie are glancing through the legacy documents, Julie explains that their approach each year has changed, so while they have these previous years' annual reports as models, the approach this year can be different. She pauses speaking while the students look through the documents, and then Julie adds that her goal for the meeting is to focus on the advocacy portions of the report, and to divide those up for team members to complete.

After another pause, Julie asks for input on how they should proceed, and provides a couple of options. Stephanie suggests using the previous reports as models, and using the headings from those to generate their content for this year. As she is suggesting this, Jack comes back in and hands out the annual reports from two years previous. Stan then suggests they just brainstorm a list of things that had happened that year. Julie says she likes that idea, but then directly asks Sherri for input. Sherri says the brainstorm idea seems okay, but then says that Stephanie's idea might be easier. Julie, however, adds that since each year has been so different, taking Stan's suggestion of just brainstorming might be better.

Julie then asks Jack to describe the purpose of the reports, and he does. Jack describes two main purposes of the report with two audiences (though he does not describe them as such). He says that one purpose of the report is external, to "show stakeholders what [MCCA does]," but that the other purpose is for the organization itself to record their history. He mentions that these two purposes/audiences (again, my language, not his) affect how they represent events from the year—there will be some "spin," he says, but he wants to accurately reflect events. This may be difficult, he says, given some events from the year which he does not consider positive.

Jack then asks Julie if they are only talking about policy today because there are other staff members who would cover other sections of the report, but those members are not present. Julie confirms that her goal is to focus on advocacy, and to "parking lot and assign" sections that may come up for other staff members to write, and bring those staff members in to the writing process as needed.

Julie then adds to Jack's point about recording MCCA's history; she says that they do not necessarily want to record every single thing, but to record new things they did that year. She gives an example, and Jack agrees with and expands upon that example.

Episode 3: Marking Time/Social Discussion

This episode begins with Julie suggesting that the group begin "doing a little whiteboarding," meaning brainstorming and writing ideas down on the whiteboard. The

group realizes they do not have any whiteboard markers in the room, so Sherri leaves to go retrieve them.

As Sherri leaves, Stephanie picks up the older annual report and points out herself in one of the pictures. This begins a short reminiscence between Stephanie and Julie about what is happening and who is in the picture. Julie stands and looks over Stephanie's shoulder so she can see the picture better. As Sherri comes back into the room, she pauses behind Stephanie and points out herself in the picture as well. Sherri returns to her seat area to put down the markers she retrieved, and Julie sits back in her chair.

Episode 4: Content Brainstorm

This episode begins at about 9:25 with Jack looking at an old annual report and asking if they should start brainstorming in a specific area. Julie replies that Stan had suggested that just brainstorming without considering categories will hopefully keep them from missing anything, and then Stan suggests they start brainstorming policy-related stories. They all begin throwing out various ides, and Sherri records them on the whiteboard with an orange marker.

At about 10:40, in response to a particular suggestion, Julie asks about the purpose of the report—whether they are cataloguing stories that they "pushed for," or whether they should include other things that they did not necessarily bring about, but that were significant to the group's history in other ways. They agree that they should include both types of stories, and continue brainstorming.

At about 17:30, in response to someone's suggestion, Julie mentions that a particular story could be included if they include their federal agenda in the report. Sherri labels the list she's been working on "State," and begins a new list called "Fed[eral]." After first writing "Fed" in orange, she erases the label, re-writes it in red, and adds items to the "Fed" list in red as well. These lists continue to grow for several minutes.

At about 25:30, Stephanie suggests an item that Julie seems to think is not an advocacy item. She suggests they "parking lot" the story to assign to other members of the team not in attendance at that meeting. Sherri uses another new marker—green—for this third list and labels it "Parking Lot." Several items are added to this list.

At about 32:40, in response to a suggestion, Stephanie asks about the timing of publishing the report, and says that the suggested topic might be included or not included depending on when they wanted to mail the report to constituents. Jack suggests they wait to talk about the timing after they have decided on content. After that, there is a bit of a pause, and Julie asks the group if they had missed any big events from the year. Stephanie ties a few existing items on the list together, and then Julie suggests they start thinking about creating categories for the list, which begins the next episode.

Episode 5: Dividing Content into Sections

Julie suggests the group start thinking about categorizing the items on the board. Jack takes a picture of the board with his cell phone, and Julie asks him to email it to the group. A few people start throwing out suggestions for section headings/categories; Stan

in particular seems to start going down the "State" list item by item and suggesting categories for each item.

Meanwhile, Sherri writes a proposed category in the upper right hand area of the whiteboard. Then, she picks up an old annual report and adds two more items to this new list of categories, appearing to copy section titles from the old report onto this list.

Stephanie offers a brief diversion by mentioning an email she got from someone in higher education. Jack exits room and brings back black and white printed copies of the photos he took of the content list on the board. They then get back on track.

The group discusses how to frame certain items—previous categories have contained the word "accomplishment," and the group is uncertain whether certain events from the year should be framed as accomplishments or not. In response to this dilemma, Julie mentions that in a previous year they used the word "outcomes" instead of "accomplishments" for certain categories.

More ideas are offered up about how to categorize things, and Sherri adds a fourth item to her section titles list on the board. She leaves to get another marker, presumably of a different color, and begins sub-dividing the State list by circling content items in different colors. First, she circles a section title in a particular color, and then she circles applicable items under the "state" list in that same color.

At about 38:00, the group begins to disagree on a certain list item. First, Stan suggests that the item be put under "student involvement," but Julie thinks it belongs under "accomplishments." Jack, however, does not want to frame the item as an accomplishment because he thinks that framing the event as something positive will send

the wrong message to some of their constituents. He and Julie discuss the item for a while, and then Julie lightens the mood a bit by making a couple of jokes.

Jack then sees how Sherri has been color-coding the board, for which he applauds her, but then they turn back to how to categorize this particular troubling item. Stan (again) suggests putting it under "student involvement," and Julie agrees. She asks Jack if he thinks that would be okay, and Jack explains a bit more why he is hesitant to even include it. Stan responds to Jack's concerns, defending the item a bit by talking about his positive experience with it. Julie eventually suggests that maybe the item will be absent this year because the group is still waiting for a public announcement about the item. Jack then makes one last comment about why he was frustrated by the item—he thinks the item put student leaders at a disadvantage—and then says he is done commenting about it.

Sherri mentions that there will be a public comment period for the big announcement that is coming up, and Jack and Stan tease her a bit which appears to make Sherri slightly uncomfortable. Jack, however, quickly diverts attention back to the matter at hand and dissolves the tension by praising Sherri's work and asking the group where a different list item should go. There is a lot of discussion about this next item, too, mostly because Julie is unsure where it should go, but the tension is gone. Sherri circles the item in two different colors to indicate that it could go in two different sections.

There are a few more suggestions, and Sherri circles the last few items under the "State" list in their respective section colors. Julie asks if they think they have assigned

everything, and things seem to be winding down. Various group members make a few joke suggestions and digress a bit.

Jack brings everyone back to focus by suggesting they trim the "Fed" list a bit, and the group debates what to include and what not to include. During this discussion, Sherri sits down for a while, but then gets back up to edit the Fed list. She also adds a few details to items on the State list that the group wants to make sure are included in the report.

At about 57:40, Julie says that the next steps are to assign sections to group members for drafting and to discuss a timeline. She suggests that one person might take the whole list to write up, but that suggestion is met by silence, so she asks Jack to discuss the timeline, beginning episode 6.

Episode 6: Timeline and Section Assignments

At the beginning of the episode, Julie suggests they start thinking of the timeline, and asks Jack to explain his goals for publishing and sending the report. Jack describes how they've created the design in the past, and how he would like to change the design in order to reduce the expense of mailing the annual report and to make it more PDF-friendly for archival purposes. These concerns, he says, are related to the timeline because he wants to have the content ready to go before initiating the design process. Jack and Julie briefly debate printing internally vs. printing externally.

At about 1:04:00, the tapes stop, and Julie instructs the group to continue talking while she retrieves the researcher to replace and restart the tapes. They stop talking about

business, joking, “that’s not how we collaborate!” but Jack takes another picture of the whiteboard in the meantime.

Once Julie comes back, she asks how the design of the report affects their meeting today. Jack explains that his point is that they don’t have to worry about being concise in first drafts.

They then begin talking about the timeline, with Jack initiating the conversation by saying he’d like to not have to commit to a section because of his upcoming busy schedule, but he could if needed. He throws out July 1 as an ideal deadline, which is only about a month away from this meeting and seems to make the group nervous. Jack reassures the group by reminding them that they’ve all lived through the events—no outside research is necessary for writing the pieces. Stan asks whether July 1st would be the deadline for submitting drafts or printing the final version. Jack says his goal is the latter.

Julie suggests that since the deadline is so close, they divide up sections to draft, and then after first drafts come in, a single person makes revisions to all of the pieces to hopefully give the pieces a similar “voice.” She volunteers herself for the revision task.

The group continues to discuss concerns with the timeline—the next few weeks are busy ones. Julie suggests that they could wait until after an upcoming event to write the report sections, but says that writing would need to be a priority after that.

Stephanie again reiterates concerns about the timeline being so close. Jack offers to take on/delegate the whole “parking lot” section. There is continued discussion about

upcoming events. Sherri notes that the actual amount of writing required of each individual would be small—a couple of paragraphs apiece.

Sherri suggests a way to divide up the sections, essentially assigning herself, Stan, Stephanie, and Julie to one major section apiece. Julie writes these suggestions on the board. They decide on an alternate title for "legislative accomplishments" ("state legislative outcomes"), since they do not want to label some items in the list "accomplishments."

They briefly discuss the one big item that caused so much disagreement before, deciding which section it should be under, and Julie offers Sherri advice about how to frame it, since it falls under her assigned section.

Jack goes to get the second printout of the picture of the WB. Julie sits down from standing at the whiteboard; Stephanie is still typing notes. Julie gives a deadline for first drafts and thanks everyone for coming to the meeting. Jack asks Sherri to put things in the calendar, and gives everyone encouragement about getting their drafts in.

Stan asks for one more picture of the whiteboard, and Jack stands to take it, but also reminds Stan that Stephanie is typing up lists for everyone.

Julie clarifies the deadline one more time, and things wind down. Julie leaves the room to retrieve the researcher. The meeting is over.

C. Selecting the Episodes for Analysis

After dividing the video data into episodes, I selected two episodes to examine for further analysis. I chose episodes four and five, the two episodes wherein the participants

appeared to use the most tools and artifacts. This was the primary reason that I chose them. Because I am seeking to build a grounded theory of how writing is distributed across tools, artifacts, and bodies during planning, I wanted to be able to account for as many different uses of tools, artifacts, and bodies in the writing and organization of the brainstormed content list.

As mentioned in the episode descriptions above, in episodes four and five, participants make suggestions for events from the previous year to include in their annual report. In both of these episodes, participants interact with a number of different tools and artifacts, and use their bodies in a number of different ways. After determining that these two episodes were of the most interest for my purposes, I decided to continue pulling apart my data by developing a list of the ways participants used tools, artifacts, and bodies in these two episodes. Developing this list would give me discrete data points that I could use in constant comparison (Glaser & Strauss, 1967).

D. Developing the Tools-Artifacts-Bodies (TAB) List

After selecting episodes for further analysis, I created a list of individual units of data that I could then use in my constant comparative analysis. Each unit of data is a use of a tool, artifact, or body, and each entry on the list includes a description of how that tool, artifact, or body is used in the writing session. The purpose creating this list was twofold: first, itemizing and describing these uses gave me a quantifiable list of data units that I would later dimensionalize, code, and integrate into my theory; and second,

creating fine-grained descriptions of these items in my data gave me great familiarity and facility with the data.

I came to call this list the "TAB" (tools, artifacts, bodies) list, and its creation required exacting attention to detail and several hours' work over the course of many days to complete. To create this list, I followed five steps:

1. Watch the video, with the transcript.
2. Pause the video when something appears worth including on the list.
3. Re-watch the segment surrounding the potential list item as many times as needed to note the information required (see below).
4. Transfer my handwritten notes to a typed table in Microsoft Word.
5. Re-watch the video using advanced video editing software in order to note the timestamp for each of the items on the list.

For each item on the list, I followed the above procedure. I paused the video every time I saw something of interest to include on the list: e.g., Sherri using a whiteboard marker to add an item to the whiteboard; Jack pointing to an item on the whiteboard list, Stephanie scrolling through her laptop, Steve picking up an old annual report, or Julie gesturing with her hands. Once I paused the video, I watched the small segment including the data unit several times in order to note the following pieces of information:

- the transcript line number where the use occurred;
- the person using the item;
- an approximation of the dialogue accompanying the item's use (not necessarily from the person using the item);

- whether the item was a tool, artifact, or body (or in some cases, whether the use included more than one of these at once);
- what the tool, artifact, or body was (e.g., "whiteboard marker"); and
- a short description of the tool, artifact, or body use.

I used the dialogue transcript of the writing session to guide me in creating this list so that I could note the line numbers and segments of dialogue for each list item. An excerpt of the final version of this list is included at the end of the chapter in Table 2.

This work was, as is all grounded theory, interpretive. Over the course of constructing this list, I wrote many theoretical memos describing decisions I made regarding what to include and what to exclude from this list. These memos helped me develop rules of thumb for including and excluding items from my list. After I created the first draft of my tools, artifacts, and bodies (TAB) list, I had created the following criteria for inclusion and exclusion.

Criteria for inclusion:

- Tools: Any use of an object that a participant used to do one of the following: access a digital artifact (e.g., a laptop), inscribe writing onto a surface (pens, markers, cell phone), or have writing inscribed onto itself (whiteboard, paper, cell phone).
- Artifacts: Any use of a document (either hard copy or digital) with pre-existing text that a participant held or referenced in the session (including the whiteboard artifact-in-construction).

- Bodies: Any use of a human body to gesture with the hands, or to use or retrieve tools and/or artifacts for the writing session.

Criteria for exclusion:

- Tools: Any objects that might be in the room and could be used as a tool but that was not used by participants were not included in the list.
- Artifacts: Any documents on the table that might be considered artifacts but that were not used by the participants were not included in the list.
- Bodies: Uses of the human body that were not otherwise included in the list or in the transcript (uses of voices to create speech/dialogue, for example, hand gestures, or moving the body to retrieve tools and artifacts) were excluded from the list. This included yawning, nodding, shaking the head, or shrugging. Despite these gestures' utility in conveying social cues, they have less utility in conveying semantic content, which is more the province of hand gestures (see, e.g., Haas & Witte, 2001).
- I also excluded any tools, artifacts, or gestures that were incidental to the writing session and that did not appear to be a deliberate use of a tool, artifact, gesture, or body in order to contribute to the written document. For example, throughout much of episode four, both Stan and Jack held pens in their hands, but only incidentally; neither do any actual writing or gesturing with the pens. In episode five, Stan gestured with a pen in his hand a few times, and Jack used the pen to write on a piece of paper, but in episode four they did not.

Thus, in episode four, I did not include the pens on the list, but in episode five I did.

As I created this list and its rules of thumb, I came to understand (and wrote memos about) certain qualities of the data. I realized that there was a sort of hierarchy in the three items I was including on my list. Bodies were implicit in all three categories, not just its individual category. Tools and artifacts are manipulated by human bodies—every time someone handled a tool or an artifact in the session, they were using their bodies to do so.

Additionally, after creating a first draft of the list, I realized that the "bodies" category was represented on the list many more times than either artifacts or tools. Intuitively, this made sense to me because I understood that there can be many gestures over the span of a minute, while a single line of text on the whiteboard (and thus using the whiteboard and markers) might take a couple of minutes to write. However, I realized that any frequency counts of the list as I had generated it would tell a particular story about distributed writing that did not seem to best reflect the activities of the writing session. It might seem like participants spent all of their time gesturing and very little time using tools and artifacts, which was not the case. I wanted to be able to give my readers a better sense of the ratio of tool, artifact, and body uses than just individual uses of tools, artifacts, and bodies. I decided another piece of information about each item on the list would help give readers that sense: the amount of time each data unit took. Including temporal information about the tools, artifacts, and bodies used in the episodes could paint a fuller, more accurate picture of the activity in the writing session.

And so, after I had created a first draft of my TAB list, I added start and stop times for each item on the list. This required me to follow the same basic procedure in steps one through three detailed above—watching the video until I came to an item on the list, watching and re-watching a small segment until I had identified a start and an end time for each item, and noting it in my list, first by hand, and then adding the handwritten notes to my typewritten list.

In order to be as precise as possible in determining the times for each use of tools, artifacts, and bodies in episodes four and five, I watched the data with video editing software that displayed time to the millisecond. This software also enabled second and millisecond progression through the video; in other words, I could pause the video at the very precise moment an action began or ended, and I could control the rate through which I progressed through the action to a very fine degree.

Like creating the first draft of the list, adding times to the list was interpretive work mediated by a number of tools. Video cameras do not record *movement*, they record a series of individual frames at a very rapid rate, such that when they are played back at a normal frame rate of 24 to 30 frames per second, the human eye sees motion (i.e., the phenomenon known as persistence of vision). This meant that, no matter how small of a time increment I used to progress through the video, there was still some imprecision in the start times because an individual frame may not have captured the precise moment when an action began or ended. Additionally, the video camera captured three-dimensional motion in a two-dimensional plane. Some motions began where I couldn't see them—a participant is turned away from the camera, for example, and his own body

is in my line of vision, covering up the movement. In these cases, I did not try to estimate when the motion may have begun or ended—I simply used the earliest and latest times that I could actually see the movement in question.

As I did with the first draft of the list, over the course of adding the times I developed a list of rules of thumb for determining the start and stop times of each list item. These rules of thumb were necessary because participants began and ended motions in different but interesting ways, and guidelines helped contribute to the uniformity of recorded start and end times across tools, artifacts, and bodies.

I based these rules of thumb primarily on McNeill's (1992) work on gesture. McNeill identifies three parts of an individual gesture: the preparation phase, the stroke phase, and the retraction phase. The stroke phase is what is considered to be the gesture proper. If someone points at a whiteboard, for example, their fingers forming the point and pausing in a pointing form would be considered the stroke. Their hand rising and beginning to form the point would be considered the preparation phase, and their hand falling back to their lap would be considered the retraction phase.

I used a similar schema to determine the start and end times of *all* of the items on my TAB list, not just the gestures. For example, the preparation phase of a participant writing on a whiteboard might be when the writer steps toward the whiteboard and raises a whiteboard marker. The moment the participant makes that forward motion toward the board is considered to be the start time. When the participant steps away from the board and lowers her hand from a writing stance constitutes the retraction phase, and at the end of the retraction phase is where I noted the stop time.

Determining when artifacts were being used presented a few problems that rules of thumb helped to solve. With artifact use, I noted each time a participant touched or held onto an artifact. The preparation phase included a hand beginning to reach toward an artifact, and the retraction phase included a hand releasing the artifact and falling to a lap or other resting position. Occasionally, participants picked up an artifact, interacted with it, and then folded it up and stopped paying attention to it, but remained holding onto it. I counted this as a single artifact use and only considered the use over once the participant released the artifact and retracted their hands. This does not capture participants looking at artifacts without touching them, which does happen. I did not attempt to capture this, however, because I did not have the technological equipment (e.g., eye tracking glasses) to be confident in knowing exactly when participants were and were not looking at or reading artifacts. These rules of thumb may have led to some imprecision in handling the data, but I rationalized it as a concession to uniformity of approach across all tools, artifacts, and bodies.

With gestures, the preparation/stroke/retraction guidelines become complicated in a slightly different way: when individuals made several hand gestures in a row, one gesture's retraction phase might be considered another gesture's preparation phase—they blended together seamlessly. When gestures happened in sequence, then, I attempted to determine when in the sequence of gestures participants fully retracted their hands and returned to what might be called *home base*—a fully resting, non-gesturing position (see Haas & Clayson, in review). Home base is a hand position wherein hands are relaxed and/or are not preparing for a new gesture. They are at rest. This may differ from person

to person, or even for an individual person across time. Hands could be resting on the table, or in a lap, or on the arms of a chair. Whatever the "home base" position may be, this was the marker for when a gesture sequence would end, and when I recorded start and stop times for gesture, I used this position to identify the end time for a gesture sequence. The start time began any time a hand moved in preparation for gesture.

Once the TAB list was complete (see an excerpt of the TAB list in Table 2 below), I had discrete data units to use in my analysis. I could begin comparing data units to other data units in the constant comparative work of dimensionalizing. This work, along with descriptive findings from this constant comparison, will be described in my next chapter.

Table 3: Excerpt from Tools, Artifacts, & Bodies Data Unit List (TAB List)

Line #	Start	End	Part.	Dialogue	TAB	Which TAB	Starting Position
309B	00:16:58.418	…	ST	"Dream act, prosperity act"	B	Gesture	Raises RH w/pencil in it, large beats 2x @ head level w/pencil
310	…	00:17:02.789	ST	"dream-slash-prosperity"	B/T	Gesture, pencil	Bounces 3 – 4x from C to FR w/pencil
312	00:17:11.731	00:17:25.745	JU	"Loan Bill…"	A	Old annual report	Picks up both old ARs w/LH, one on top of the other

CHAPTER FIVE:

ANALYSIS AND DESCRIPTIVE FINDINGS

In this chapter I continue describing my analysis and present early findings. These findings include several categories that are mostly descriptive but that do not quite have the explanatory power that grounded theorists attempt to identify. However, they do provide insights about the data that have interesting and useful implications for writing theory and practices.

In the last chapter, I described my processes of open coding. In this chapter, I describe how I continue to analyze the data through two other types of coding described by Glaser & Strauss (1967): dimensionalizing and axial coding. In this chapter, I will first describe the processes of dimensionalizing and axial coding more generally. Then I will describe how I used these processes in my own analysis, and I will detail what they enabled me to find in my data.

I. GENERAL DESCRIPTIONS OF ANALYTIC PROCESSES

The first part of my major analytic work was taken up by dimensionalizing and axial coding. I underwent several rounds of these two processes, often alternating between them—developing categories through dimensions and then further developing those categories through axial coding. In this section, I'll provide brief, general descriptions of these processes and provide examples from other researchers. In the rest

of this chapter, I will describe, in detail, my processes of dimensionalizing and axial coding, and the findings which arose from those processes.

Dimensionalizing is a procedure in grounded theory wherein researchers make distinctions between units of data by attending to differences and similarities among those data units. It is, as are most tasks in the grounded theory approach, an exercise in constant comparison. In this comparative exercise, researchers seek to determine properties of data points and develop binaries, scales, or spectra along which to compare those data points. These properties and their dimensions comprise categories of data. For example, in a study of texts at an abortion clinic, Farkas and Haas (2012) identified the categories *form of display* of texts, which were either *posted, stacked,* or *filed* (this category's dimensions), and whether a document was *signed*—a yes/no binary dimension.

In axial coding, researchers focus intently on a single dimension at a time in order to further develop it. For example, in the example from Farkas and Haas (2012) above, in order to axially code for *form of display,* the researchers might have looked specifically at the posted, signed, and filed documents individually, studying those sub-categories for similarities and differences within these smaller groups in order to gain a greater understanding of the individual sub-category.

These are the general processes of dimensionalizing and axial coding. For both of these processes, the precise methods with which I looked at the data were often similar, and included viewing the data repeatedly and taking notes comparing different data points. Additionally, the processes of dimensionalizing and axial coding, for me, were

recurrent and recursive. This is in part because it took many repeated viewings of and total immersion in the data before I was able to develop core categories with explanatory power (which I will discuss in the next chapter), and in part because the process of dimensionalizing often led to the process of axial coding. Once I had identified particular categories through dimensionalizing, I wanted to develop them to the fullest possible extent through axial coding. In the rest of this chapter, I will describe more precisely how I put these practices to work in my own coding.

II. DIMENSIONALIZING: ROUND I

To compare data points and determine distinctions among properties of data units, I used the following procedure in my first round of dimensionalizing:

1. Watch episodes four and five of the video; take notes by hand. Pay special attention to unique or repeated uses of tools, artifacts, and bodies.
2. Type the handwritten notes and print them, and then compare across notes. Identify patterns, similarities, repeated entries, etc. Take more handwritten notes on these documents, and re-type and print them if necessary.
3. Compile notes into cohesive dimension list with descriptions and examples.

To begin, I watched episodes four and five of the MCCA collaborative writing session and took notes by hand. My notes focused on events in the video that seemed important and interesting—uses of tools, artifacts, and bodies that were unique in the writing session, or uses that seemed to repeat over and over again. For example, I noted that color seemed to be an important component of the list that the group was constructing, and in more than one way. This was an observation I had also made in my

early open coding sessions. In episode four, Sherri uses color in one way, to create three separate lists; in episode five, she uses different colors to circle items on the lists into a completely different grouping. I also noticed that sometimes participants used more than one tool or artifact at a time, or used tools and artifacts in tandem. I took many notes, trying to be as inclusive as possible in order to open up many different avenues for potential further development.

After writing these notes by hand, I typed them up and printed them out. Because these notes were taken over the course of watching about fifty minutes of video, the notes were written and grouped chronologically; they were not necessarily grouped according to patterns that I saw in the video. Printing out the notes and re-reading them allowed me to take notes *on* my notes, so that I could identify patterns across them.

Once I had compared across my notes and added even more observations about patterns to them, I compiled my notes into a single list of dimensions. I will list the dimensions here, but because my next step was to axially code these dimensions in order to more fully develop them, I will include the full descriptions of these dimensions in the next section, when I describe how I axially coded these dimensions. For now, here is the list of dimensions with brief explanations:

- **Group/shared vs. individually-used tools, artifacts, and bodies:** It seemed that some tools and artifacts were shared, while others were not. The growing brainstorm list, for example, was an artifact that everyone shared all the time—though it had only a single scribe to actually, physically *write* the list, everyone could see the list at all times and contribute to its creation. On the

other end of this spectrum, there were also items that were never shared—personal laptops, pens, or pencils, for example.

- **Use of color:** Sherri uses color in two distinct ways as she creates the list. First, she created three lists of three different colors, and then she circles items on those lists in *other* colors in order to create new groupings.
- **Digital vs. non-digital artifacts and tools:** Most tools and artifacts could be pretty straightforwardly categorized into "digital" or "non-digital" categories, but some artifacts went through various iterations of digital and non-digital instantiations.
- **Gestures (pointing, "hand flips," gestures in a series vs. single gestures):** Though I later determined that "gestures" were not really a dimension—they weren't, after all, properties, though they certainly *had* properties themselves—I included them in this early list as a reminder to look more closely at gestures in future rounds of coding. In particular, I wanted to ask the following questions as I coded: What gestures seem to be repeated? What gestures seem to be describing texts? There were many gestures throughout the session, but some seemed more integral to the session than others. Pointing seemed important in particular.
- **Number of uses of a given tool, artifact, or body:** Some tools and artifacts are used only once, while others are in constant use.
- **Tools/artifacts/bodies that are used in tandem:** Tools and artifacts are always paired with the human body because the body is used to operate them.

Gestures are occasionally paired with tools or artifact, but often stand alone. The whiteboard and whiteboard markers are most often used together.

- **Who uses a given tool/artifact/body:** Similar to the "shared" dimension, this dimension notes who is using which tools/artifacts. For example, Sherri is the only one who uses the whiteboard markers in these two episodes, but everyone uses the old annual reports at some point.
- **Purpose:** I noted several possible purposes for the uses of tools, artifacts, and bodies in the writing session: idea generation, organization, social interaction, clarification, and memory.

I decided not to further pursue the "number of uses," the "who uses," and the "purpose" dimensions at this time for a few reasons. First, the "number of uses" and "who uses" properties are already worked into the TAB list, and could easily be pulled out of the list later to see any patterns that might arise if need be. Second, I had already determined that attending too much to the number of uses of a given tool, artifact, or body might paint a skewed picture of the collaborative writing session; that was the reason I had decided to include times in the TAB list, after all.

I also decided not to include the "purpose" dimension in the next round of coding because at the time, I thought the idea was too abstract and not fully-enough formed to continue coding for it. Though I decided to discard these three dimensions, I had several more to further develop. My next step was to further develop each of these categories individually, one at a time, through axial coding.

III. AXIAL CODING: ROUND I

To axially code each of the dimensions I found in my first round of dimensionalizing, I followed a similar procedure to the dimensionalizing procedure, except with an explicit focus on particular dimensions, one at a time:

1. Watch episodes four and five. Take handwritten notes, looking closely at one category at a time.
2. Type and print the notes. Look for patterns, comparing individual instances of a given category against other individual instances of a category.
3. Write memos about emerging patterns.

For each category, I watched through episodes four and five and took handwritten notes. Most often, this meant that I noted events in the video that pertained to the dimension in question. For example, when I axially coded for the "color" dimension, I noted when Sherri switched the marker she was using for a new color. When I axially coded for "tools and artifacts used in tandem," I wrote down whenever I saw participants using more than one tool or artifact at a time, or whenever participants used tools and artifacts together.

After I handwrote notes for each dimension, I typed up those notes and printed them so that I could identify patterns across the notes I had taken. Then, I wrote theoretical memos about my notes, making more abstract and theoretical observations. Some of the dimensions I chose to axially code proved more fruitful for further developing my grounded theory than others. I will discuss the dimensions below in no particular order.

A. Shared Tools, Artifacts, and Bodies

In this dimension, I explored to what degree tools, artifacts, and bodies (in particular, gestures) were "shared" across more than one person. Some items are never shared, while one item in particular is *always* shared (the list on the whiteboard). I categorized this dimension into two major sub-dimensions: "group," to signify tools or artifacts that are constantly shared by the whole group, and "individual," to signify tools or artifacts that are used by one person at a time, but that may also be shared. The "individual" category I further divided into more categories: "multiple versions," meaning that there existed more than one version of the same basic item (such as a laptop or a pen), "multiple copies," meaning that there existed more than one copy of the same document (such as an annual report), and "single units," meaning that there existed a few items that there was only one "version" of, such as the whiteboard markers. All of these items had the *capacity* to be shared, but in different ways, and will be discussed in further detail below. Another way to describe this dimension is in terms of access—i.e., whether the whole group or an individual has access to an item at a given time.

GROUP

Whiteboard/brainstorm list: The whiteboard is not "shared" in episodes four and five in the sense that it is passed back and forth among members, but rather in that it is visible to all group members all the time. However, only Sherri actually interacts with it in these two episodes (though Julie "takes a turn up there," [ln 1309], to use her language, in episode six). The whiteboard is largely a focal point of the meeting; it is where the

group composes their document, the list of possible annual report topics. The whiteboard is a vital tool in this session *because* it is the locus of their composing, and because it allows the entire group to see the document *in the same space at the same time*.

INDIVIDUAL: MULTIPLE VERSIONS:

Gestures: Gestures may not intuitively fall into a category of "things" to be "shared," but they do vary across individuals and are visible to everyone. Each person has their own gestures, so there are multiple (distinct, disparate) versions of the gestures across individuals. They are "shared" in that they are visible to all other participants (though on occasion they might not be).

Laptops: There are two open laptops on the table, and a third laptop that is closed and not accessed at all during the meeting. Sherri and Stephanie both have open laptops that they do not share with others in the sense that more than one person uses the same laptop. Stephanie does read from two different artifacts on her laptop at two different points in the meeting, though. Stan also has a laptop, but it remains closed throughout the meeting

Phones: Julie, Jack, and Sherri all have cell phones on the table that they access at various points throughout the meeting, and which they do not share. For the most part, it is unclear whether the business they conduct on their phones is related to the brainstorm session, or if the members are checking the time or are getting distracted by Facebook, for example. However, in episode five, Jack uses his phone to produce more artifacts for the meeting: he takes a picture of the whiteboard, of which he then prints several copies

via the office printer (which is outside the room and outside view of the camera). In this sense, he creates a shareable artifact *with* his phone, but none of the phones are artifacts.

Writing utensils: Most group members appear to have individual writing utensils (pencils or pens) that they do not share.

Miscellaneous personal artifacts and writing surfaces: Many participants have personal notebooks, calendars, or folders that they do not share with other participants. Both Jack and Julie have paper artifacts of unclear purpose that they flip through occasionally; my best guess is that they are personal calendars, planners, or other similar notebooks. Sherri has a spiral-bound notebook which says "Rock the Vote" on the cover, and Stan has a smaller, also spiral-bound notepad. Each participant also has a personal copy of their signed informed consent document, though the participants do not access these during the meeting. Participants' copies of their informed consent documents are also present on the table, though they are not referenced at all during the meeting.

INDIVIDUAL: MULTIPLE COPIES:

Annual reports: Most members of the group have copies of two different annual reports, which they refer to as "Jarod's year" and "Terence's year," for the two past presidents of those respective years. Stephanie may not have her own copies of the reports, however, or might not have a copy of one of the reports, because she sometimes borrows reports from other participants in episodes four and five. So, the annual reports are shared in this respect, but they are also in some sense a "shared" document in another respect. Having multiple copies of the same document allows, for example, one team

member point to an item in their copy of the annual report and another member across the table to look at the same item in *their* personal copy of the annual report. This happens multiple times throughout the meeting.

Whiteboard printouts: As I mentioned previously, at the beginning of episode five, Jack uses his cell phone to take a picture of the whiteboard list and print it using the office wireless printer. He prints seven copies, distributing one to each team member, saving one for himself and saving two copies for the researcher. Though these printouts could function similarly to the annual reports, Jack is the only team member who makes use of his; there is not the same kind of sharing that takes place with the annual reports, perhaps because the group is more focused on the content on the actual whiteboard.

Individual: Single units

Whiteboard markers: Though there are enough whiteboard markers that they could be used by more than one team member at a time, Sherri is the only one who uses them in episodes four and five (though again, Julie uses them in episode six, while Sherri does not).

Stephanie's email: At one point, the group becomes distracted from their main purpose as Stephanie reads aloud from an email she received that has some relevance to the group as a whole. Because it is on her laptop, the group does not have access to it like she does, but Stephanie shares it with the group by reading parts of it aloud and further discussing it.

Stephanie's report: At one point in the meeting, the group begins discussing an extensive report pertaining to a recently passed bill about higher education. Julie asks, "What are the tenets of that…?" and it appears that Stephanie opens the report on her laptop, though because her laptop is facing away from the camera, the video does not capture it. However, Stephanie becomes intensely engaged with the computer screen and begins sharing snippets of the report and making commentary on the report, such as, "There's a task force," at which Julie laughs and replies, "There's always a task force." She does not read from it as she does from the email, but she is in some sense sharing parts of the report with the other group members.

The team members thus have several strategies for sharing tools, artifacts, and gestures across members when necessary. The next category I will discuss is the use of color on the whiteboard.

B. Use of Color

Sherri uses color in two distinct ways as she creates the list. First, she creates three lists of three different colors, and then she circles items on those lists in *other* colors in order to create new list groupings. As the group is brainstorming, Sherri writes the suggestions of the group members on the board in orange, red, and green. Sherri chooses these colors on her own, without input from the group. The act of color coding itself seems to be Sherri's own decision; she does not ask the group whether she should use different colors to write each list, and no one suggests it to her, either. In episode four, she uses an orange marker to write items on a list titled "State" (short for "State

Advocacy"), a red marker to write items on the "Federal" list (short for "Federal Advocacy"), and a green marker to write items on the "Parking Lot" list (a metaphor designating that those items will not be written about by the current group members but by other staff not present at the meeting). In episode four, as these three lists are being constructed, the team members often make several suggestions in a row that belong to the same color list. They begin with the orange State list, then switch to the red Federal list for a while before going back to the orange State list. After spending more time on the State list, someone brings up a suggestion that sparks the creation of the Parking Lot list, and they brainstorm several items for that list. They occasionally jump from list to list, but most often they brainstorm several items for a particular list at a time. This does not necessarily mean that using these different colors causes the participants to brainstorm for the lists in these ways, but it is a notable use of color in this group's writing practices. The final list is included in Figure 3 below.

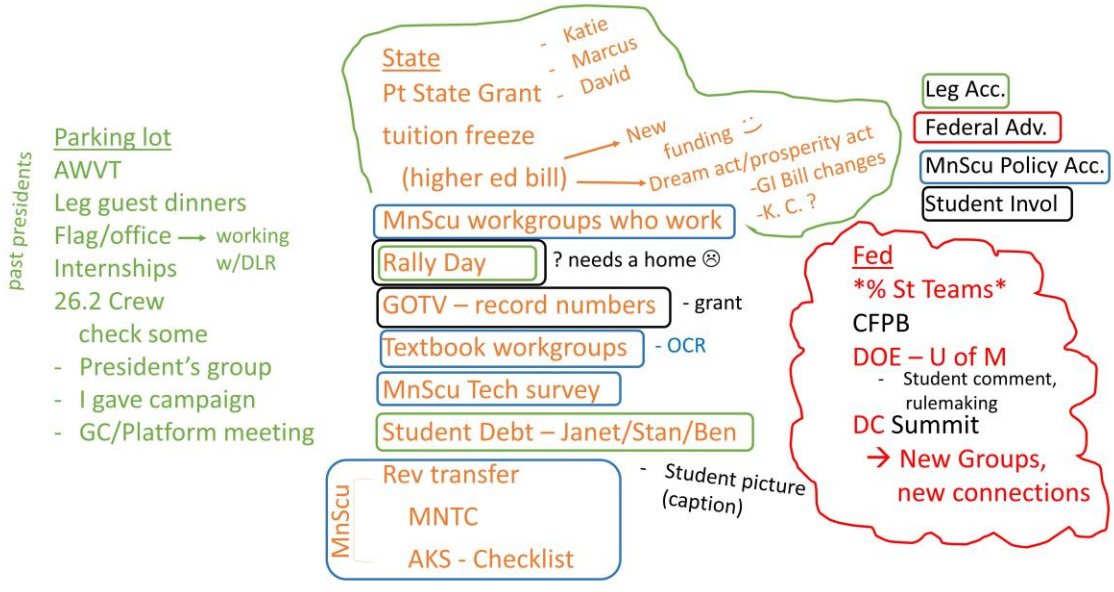

Figure 3: The complete MCCA brainstorm list

After the group pauses their brainstorming, they have three fairly sizeable lists that they then attempt to categorize into sections. Sherri notes these section headings off to the side of the whiteboard in black, and at first begins writing some of the list items under the section headings to designate which items belong to which section. Shortly after she begins this strategy, however, she begins a new one: she retrieves even more colored markers and begins creating a new color scheme. She circles a section heading in a color, and then circles the items that belong under that section heading with that same color (see Figure 3). She actually does much of this work while two other team members, Jack and Julie, are debating the inclusion and categorization of one of the list items. Once they are done debating, Jack looks up at the board and says, "Wow." Other members compliment her on this strategy as well. After most of the items are assigned to sections, the group begins to makes notes about some of the items. Sherri makes these notes using a black whiteboard marker, which conflicts with her existing color scheme; it may be that because everything is already categorized, she does not feel the need to continue using the scheme.

C. Digital and Non-digital Artifacts and Tools

Most tools and artifacts could be straightforwardly categorized into "digital" or "non-digital" categories, but some artifacts went through various iterations of digital and non-digital instantiations. I made a short list of the tools and artifacts, categorized into four groups, and I made one note of interest, which I will discuss briefly after the list below:

DIGITAL TOOLS:

- Laptops
- Phones
- Printer (out of room, connected wirelessly)

DIGITAL ARTIFACTS:

- The report Stephanie references
- Stephanie's email
- The image Jack takes of the whiteboard, before sending it to print

NON-DIGITAL TOOLS:

- Whiteboard
- Whiteboard markers
- Pens/pencils
- Sherri's notebook, when she writes on it

NON-DIGITAL ARTIFACTS:

- Annual reports
- Calendars/notebooks/folders
- Printouts of board

After coding this dimension, I noted that the whiteboard artifact goes through multiple non-digital and digital iterations: First, the list is in non-digital form on the whiteboard, and becomes a digital file on Jack's phone. Then it becomes a digital file on

the wireless printer, where it becomes non-digital again in the form of ink on standard office copy paper. The non-digital whiteboard, Jack's digital phone, and the digital office printer interact to create the non-digital printout.

D. Using Tools/Artifacts/Bodies in Tandem

To axially code this category, I watched the video and noted when participants were using tools, artifacts, and bodies in tandem. Like the "digital vs. non-digital" dimension, it did not yield as many useful insights as other categories did, at least, not as many as I had expected. There are a few exceptions, which I will discuss below. After noting every instance of tools/artifacts/bodies used in tandem, I made another list: patterns or multiple occurrences of tandem uses in episodes four and five.

Multiple occurrences of tandem uses:

- Bodies are present in every use of a tool or artifact; bodies are needed in order to manipulate tools and artifacts.
- Participants often gesture with something in their hands, like a pen or an artifact.
- Participants often gesture to the board.
- Participants often gesture to artifacts, especially the annual report.
- Participants must use writing utensils and writing surfaces together in order to write.
- Participants sometimes access digital artifacts via a digital tool (like Stephanie's email).

- Jack sometimes looks at both annual reports at once.

The two most notable observations from this list had to do with human bodies. First, the human body was ubiquitous in all handling of tools and artifacts, and it was of course present in the act of gesturing. Second, participants gestured both *to* and *with* numerous tools and artifacts throughout the session. This observation led me to think that further examination of the gestures present in the writing session would be useful.

E. Gestures

Gesture is, strictly speaking, not a dimension, but participants used gesture in such interesting ways that I thought it was worth a closer initial look. There were two main things I was interested in when axially coding gestures: pointing gestures and gestures that represented texts. I was interested in gestures that represented texts because I am interested in embodied notions of writing, and I was interested in pointing gestures because I am interested in the ways that bodies and materials interact and because participants pointed frequently throughout the meeting. As I took notes, therefore, I paid special attention to pointing gestures, noting two different kinds of pointing gestures, and gestures that represented texts.

POINTS TO SOMETHING

The participants often pointed to various artifacts, tools, or other bodies; the list on the whiteboard and various annual reports are both artifacts to which participants frequently pointed. Participants also sometimes point to other participants. However,

there were also instances where participants point to something that is not in the room in order to make that thing materially present. For example, at one point Julie is describing a picture they could use in their annual report. She points three times in the air (gesture 446) to describe three people sitting together, one of whom is a student in the association who is sitting between two high-powered figures in legislative session as he testifies about student debt.

Points WITH Something

Participants often point with tools or artifacts in their hands. Sherri frequently points with the whiteboard markers, and Stan and Jack both point with pens in their hands. Julie and Jack both point with annual reports in their hands as well.

Gestures that Represent Texts

There are several instances where participants seem to represent texts or portions of texts with their gestures. These gestures often take place when there is no material thing to point to; either the text they are gesturing about does not yet exist or is not currently present in the room. Jack in particular does this a few times, especially when referring to what particular sections of the future annual report will look like: he makes interesting gestures when referring to a "little writeup" (gesture 563B) or "one little section" (gesture 610A) of text. He also makes an interesting gesture referring to the "style" (gesture 1080B)of the annual report, which he wants Julie to discuss further.

I noted that these gestures, both the pointing gestures and the representations of text, were interesting and pertinent to my research question. These gestures seemed to be indicative of embodied senses of materiality of texts, whether that text is present in the current material space or not, or, in some cases, nonexistent. I think they underscore that distributed writing is both material and embodied, and these gestures foreground that simultaneous materiality and embodiment.

Despite the insights into my data these categories cave me, none seemed to have the explanatory power of a core category (Glaser & Strauss, 1967). Thus, after this round of coding, I decided to return to a category that I had previously discarded and use a slightly different technique to further develop it: "purpose."

IV. AXIAL CODING: ROUND II

In my early rounds of dimensionalizing, I had noted and then discarded a category called "purpose." I had discarded it initially because at the time, it had seemed too abstract and undeveloped. However, I realized at this point that my current categories might lack explanatory power precisely *because* they were less abstract and were instead more material descriptors of data units. I returned, therefore, to the category "purpose," and decided to further develop it using slightly different techniques than before.

This technique included five major steps:

1. Use generative questions to reflect on data units' purpose in the writing session.

2. Use reflections to generate a rough coding scheme.
3. Use the coding scheme to assign codes to each data unit on the TAB list by watching the video and taking notes on a printed TAB list.
    a. If a data unit does not seem to fit any of the codes, write a note about what code might fit the data unit.
4. Adjust coding scheme, incorporating newly generated codes.
5. Use revised coding scheme to assign codes to each data unit on the TAB list, again using the video and printed TAB list.

A. Rough Coding Scheme

This technique was somewhat backwards from my previous axial coding sessions, where I began by immediately watching the video and taking notes, and where I did not have the assistance of the TAB list. Instead, I began with generative questions designed to help me reflect on the data units' purpose as I had observed them in my numerous previous viewings of the data:

- What was the purpose/goal of each episode?
- How did these goals relate to the document being constructed—the list of possible annual report topics on the whiteboard?
- How did the tools, artifacts, or gestures being used help participants achieve these goals?

Using these generative questions, I reflected on my previous viewings of the data and generated a rough coding scheme, which I purposefully left underdeveloped. The

categories were provisional, and this round of coding would help me affirm, discard, or rearrange the categories as necessary. The "purpose" coding scheme contained the following categories:

- Develop the list
  - Grow/add items to the list
  - Debate items on the list
  - Shrink/cull items from the list
- Organize the list
- Envision future versions of the list

Again, I intentionally left the coding scheme underdeveloped. I knew that after using these loose guidelines to make an initial pass at assigning these codes to the data units, I would be able to do two things: first, I would have better definitions for each of these categories because viewing the data would help me affirm them as categories and develop properties of these categories, and second, I would be able to refine the list, because this pass at coding would demonstrate areas that needed more development in the scheme.

To assign these codes to the TAB list, I printed a new version of the list with a blank column on the far right side. I watched the video with this list and assigned a code to each item in pencil. I paused the video and re-watched it when I needed to fully consider how to code an item. Because my coding scheme was provisional, I gave myself license to do the following things: use question marks to denote where I was unsure which code to assign to an item, invent provisional codes that might be used in future

versions of the coding scheme, and list more than one code when necessary. After I coded the TAB list by hand, I typed the notes into a digital version of the coding list.

F. Refined Coding Scheme

After I typed the first round of coding into my TAB list, I printed it out and used it, along with my recent experiences in coding the list, to refine the coding scheme. To refine the scheme, I identified items that had been difficult to code and considered why I had trouble coding that item. Then, I tried to use those moments as jumping-off places for developing new codes and re-organizing the hierarchy.

For example, there were several items (232B, 232C, 233A, and 233B, for example) that I had marked "debate/grow." Later in the list, I had been using the word "add" to signify the "add/grow" category instead of "grow"—the two items were interchangeable, but I knew I needed to choose one to eliminate confusion. I decided on "Add" because it seemed more descriptive and not rooted in an arbitrary metaphor. Additionally, in the first coding scheme, "debate" and "grow/add" had been two separate items in the same hierarchical level of the scheme. However, the presence of items like 232B, 232C, 233A, and 233B indicated that individuals debated *when* attempting to add an item to the list, but the presence of items like 660 and 662B, which I had coded as "debate/org" indicated that participants *also* debated when organizing the list. I decided "debate" needed to be a sub-category of several different items on the list.

Additionally, there were items on the list that did not seem as directly related to my three main categories of "develop," "organize," and "envision." For example, when

Jack accidentally interrupts Stan and then uses gesture as a part of ceding the floor to Stan, he is not directly developing, organizing, or envisioning the list. Additionally, toward the end of episode five, when participants get distracted and start joking around, Julie gestures through an elaborate "suggestion" that turns out to be a joke and not a serious suggestion at all. To account for these items, I developed a new category: "miscellaneous," which housed the sub-categories "jokes," "politeness," and "other." The refined coding scheme, complete with definitions, is below.

- DEVELOP THE LIST: These TABs are used by participants when adding to or culling the list.
    - Add: These TABs are used by participants when adding a list item.
        - *Debate:* These items are used by participants when debating whether to add a list item or not.
    - Cull: These TABS are used by participants when culling the list, either by deleting an item from the list, or by combining items on the list.
        - *Debate:* These TABs are used by participants when debating whether or not, or how, to cull items on the list.
- ORGANIZE THE LIST: These TABs are used by participants when organizing the list.
    - Categorizing Work: These TABs are used by participants when organizing the work of the MCCA into "State," "Federal," and other ("Parking lot") work.

    - *Debate:* These TABs are used by participants when debating how to organize the work of the MCCA into "state," Federal," and other work.
  - Creating Headings/Sections: These TABs are used by participants when creating headings/section titles for the upcoming annual report.
    - *Debate:* These TABs are used by participants when debating headings/section titles for the upcoming annual report.
  - Categorizing Items under Headings/Sections: These TABs are used by participants when categorizing items under headings/sections.
    - *Debate:* These TABs are used by participants when debating where/how to categorize items under sections/headings.
- PROJECTING/ENVISIONING THE FUTURE OF THE LIST
  - Envisioning Final Product: These TABS are used by participants when envisioning the final product.
  - Envisioning Next Steps with List: These TABs are used by participants when they are envisioning the next steps of the project.
- MISC: Miscellaneous uses of TABs that do not seem to be associated with the primary tasks of developing, organizing, or envisioning the list.
  - Jokes: TABs used when participants are joking with or teasing other participants, or are reacting to teasing by other participants.
  - Politeness: TABs used when participants are being polite to each other, ceding the floor for others to speak, for example.
  - Other: TABs used for some other purpose than is defined here

- ?: Unsure how to categorize item

To use this coding scheme, I followed the same procedure as I did in my first coding pass: I watched the video with a printed TAB list in hand and noted appropriate codes in the empty "code" column. I gave myself some license to tweak codes as needed, but not as much as before because my coding scheme accounted for nearly all of the items on the list. Specifically, there were several items at the beginning of the list when the participants had not yet begun writing, so they have not actually begun "adding" to the list yet. They are preparing to write, but are not yet actually writing; I developed the code "preparing" and assigned it to these items.

Despite the abstract nature of this list, and the insights into the rhetorical canons of invention and arrangement it might provide, the categories yet again did not seem to provide much explanatory power, especially as they related to distributed writing. The list again seemed to merely reflect what was happening in the session—it was still too *descriptive* rather than *explanatory*. I decided to go in yet another new direction, though I also decided to reserve this coding scheme for potential future analysis of the data.

V. DIMENSIONALIZING: ROUND II

After deciding to momentarily bracket the "purpose" category and its sub-categories, I needed to determine where to go from there. One major problem with my previous coding schemes, I realized, was that previous categories most often did not include a satisfactory account of gestures, and those that did include them (such as the "sharing" category) still seemed to lack sufficient integration of gestures. I had looked at

gestures, yes, but I did not have a category that included tools, artifacts, *and* gestures in a satisfactory way (and provided sufficient explanatory power). I considered what similarities existed between tools, artifacts, and gestures, and realized that all three things were manipulated by and/or created by human hands. Even though this was yet another *descriptive* category, I decided it was a good place to begin trying to put the tools and artifacts in the session into conversation with the gestures in the session via more dimensionalizing.

In this dimensionalizing session, I returned to the strategy I had used before to dimensionalize my earlier categories:

1. Watch the video, take notes; consider things *directly* and *indirectly* manipulated by hands (perhaps via pointing or technology).
2. Type and print notes. Look for patterns/compare data points across notes.
3. Write a theoretical memo.

Before I began, I noted that some things might be manipulated *directly* by hand, as in a hand using a whiteboard marker to write a word, while other things might be manipulated *indirectly*, like someone pointing to the whiteboard. I used the same dimensionalizing procedure as before, again watching the video, taking notes, printing those notes, and then comparing across notes for patterns in the data. From those notes, I developed a new coding scheme around the category "Things Manipulated by Hands" that I thought might have some explanatory power. These sub categories are listed and described below.

A. Artifacts (non-digital): Annual Reports, Printouts, Notebooks, etc.

In the video, hands manipulate several different artifacts, but the artifacts that the hands manipulate most frequently are the old annual reports. Hands do many things with these reports. They open them, flip them over, close them, and set them aside. Often when the annual reports are in participants' hands, they are being read by participants. Once, however, Stan uses his hands to prop the annual report upright on the table—so that he will not have to use his hands to hold the report in order to read it! Participants also point to items in the annual reports. Sometimes participants make other gestures with the report in hand—most often Jack, who appears to do so absentmindedly. Julie occasionally gestures more purposefully with the annual report, such as when she pantomimes an audience member's potential reaction to the report they are writing.

B. Tools (digital & non-digital): laptops, whiteboard markers

Most hands operate tools much less frequently than artifacts, primarily because Sherri is the only one actually inscribing text onto a surface most of the time. However, Stephanie and Sherri occasionally access laptops and Julie and Jack access phones. And, of course, Sherri does use the whiteboard and whiteboard markers quite frequently for most of episodes four and five.

C. Artifacts (digital via digital tools): Report on Stephanie's Computer, Digital Picture

Occasionally, participants access digital artifacts via tools. Stephanie reads from an email and a report via her laptop, presumably with a web browser or email software of some kind, and an operating system. Justin take a picture of the whiteboard with his phone, which is a digital file that he accesses with his phone and sends to the printer via his phone.

D. Artifacts and Tools Simultaneously

At one point in episode five, Sherri uses the whiteboard, a whiteboard marker, and an old annual report simultaneously. She holds the annual report in her left hand, reading from it while she writes possible heading titles on the board with the marker in her right hand. This is the only instance of simultaneous tool and artifact use in the two episodes that I coded, with the exception of tools that become artifacts, which I discuss briefly in the next section.

E. Tools that become artifacts

In some cases (such as the whiteboard and Jack's board printout), tools—writing surfaces, specifically—turn into artifacts as writers inscribe writing onto them. The tool is then simultaneously a tool and an artifact.

F. Via gesture

Participants occasionally use gesture to manipulate things: artifacts, ideas, and occasionally, physical objects that are not present in the room. Participants sometimes used gesture to represent these physically absent items. These things participants *indirectly* manipulated through gesture.

ARTIFACTS:

Hands point to artifacts rather frequently in the two episodes I examined. There are two artifacts in particular that hands manipulate via pointing: the whiteboard, which most participants point at from a distance (except for Sherri, who is closer to the whiteboard when she points), and various annual reports. Pointing is a way to manipulate a report without directly handling it.

IDEAS:

There are a few places in the data where participants seemed to be manipulating or pointing to ideas with their hands. Twice, Julie points to people metonymically to "stand in for" particular ideas. Specifically, she points once to Stephanie and once to Sherri to indicate drawing attention to particular ideas.

THINGS THAT ARE NOT THERE:

There are several instances in the writing session where participants seem to be pointing to "things" that are not there. These types of gestures are described below.

Things that exist elsewhere: In some cases, participants point to objects that are not currently in the room but that exist in some capacity elsewhere. One instance involves Julie pointing to the picture of Marcus (another MCCA member student) sitting between two high-powered individuals as he is testifying in the legislature about student debt. The picture is not in the room, but still Julie points "to" the picture—though in actuality she is just pointing to empty air.

Things that don't exist yet: Participants (especially Jack) sometimes point or make other gestures to indicate a section or portion of text that has not been written yet, often in the shape of a bracket. Jack does this several times in the meeting.

Things that are intangible: Occasionally, participants appear to "manipulate" things that are intangible via gesture—specifically when Jack makes a downward-pincering motion to reference "style" and when Stan makes a similar motion to indicate "big, bold ideas."

Yet again, though this category and its sub-categories seemed profitable in that it allowed me to connect tools, artifacts, and gestures in a single scheme, I was unsatisfied by its lack of explanatory power. I decided to return to previously developed categories and attempt to better determine relationships among them.

VI. DIMENSIONALIZING: ROUND III

As I began this next round of dimensionalizing, I attempted to determine whether all or some of my previously developed categories could be interwoven into a single coding system which might tell me something powerful about the data. To look for relationships across categories and attempt to bring them under a single umbrella category, I gathered printed versions of my lists, a large pad of paper, and colored markers. I searched the notes for relationships across categories and used the large pad of paper and markers to sketch out ideas. I discarded lists that did not seem to work and began again, or revised the lists as necessary. I went through a few different drafts, trying out a couple of different hierarchies and considering each one before re-arranging the hierarchies in the next draft. Each of these lists is pictured below in a series of images. The final version of this coding scheme follows the images.

I started out by writing out all my categories/dimensions and their sub-dimensions on the same large piece of paper (see Figure 4).

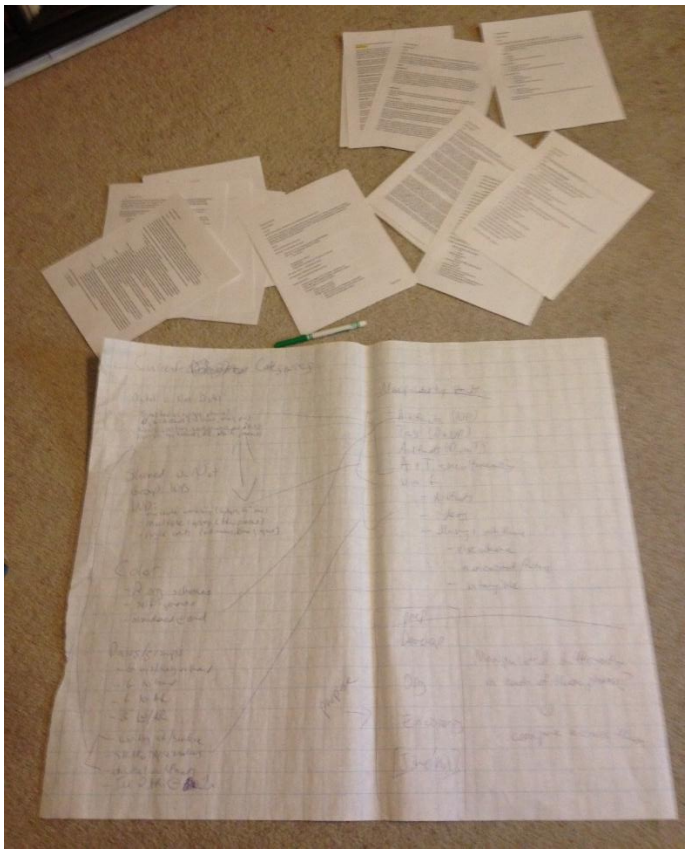

Figure 4: Printed notes, large list of all categories.

Then I began trying to combine the categories, seeing what overlapped with what. Figure 5 is my first attempt at combining them. I did not get very far in creating this list. I decided “artifacts” and “tools” were not quite the right immediate sub-headings, and so I abandoned this version early.

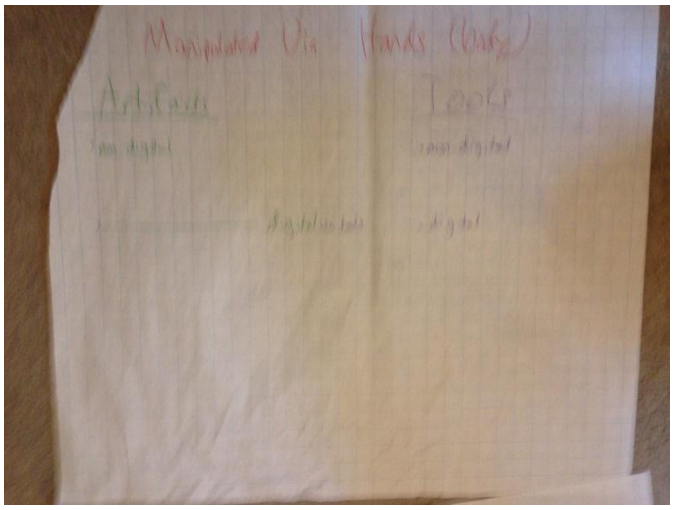

Figure 5: First attempt combined categories

The next version (Figure 6) attempted to incorporate the "group/shared visibility" scheme prominently, but that left gestures with no place in the scheme. I then decided to substitute the "group" and "individual" categories" for categories that fit more with the "manipulated by hands" category: directly manipulated and indirectly manipulated (see Figure 7).

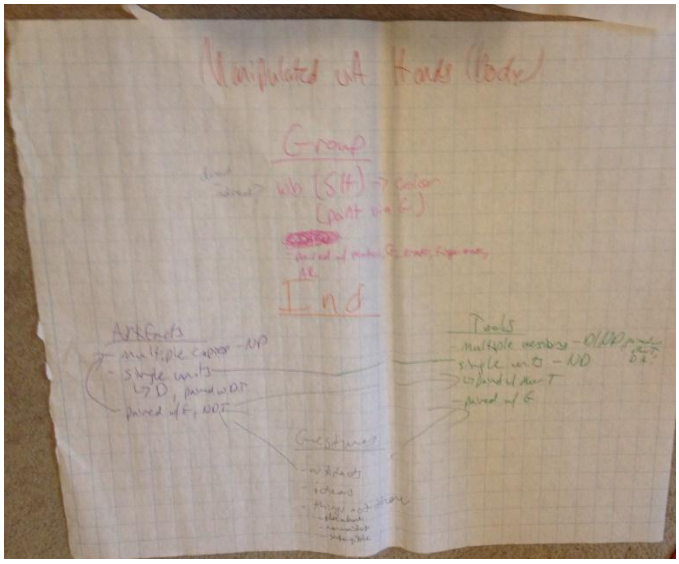

Figure 6: Second attempt at combined categories, focus on "shared" category

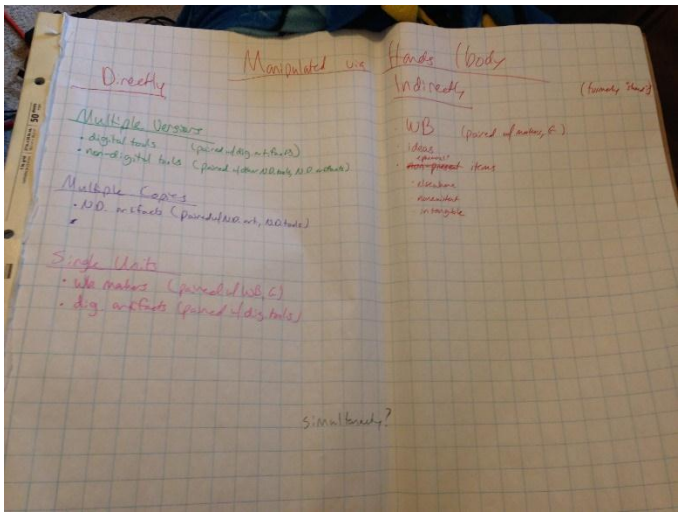

Figure 7: Substitute "directly" and "indirectly" for "group" and "individual"

Figure 7 shows the scheme with which I was most satisfied after combining categories. In this version, as I mentioned above, the "shared/group/individual" category is being replaced by a "directly/indirectly manipulated" dichotomy. It seemed to get at mostly the same thing, because only Sherri directly accesses the whiteboard—everyone else indirectly accesses it (or can, at any rate) via gesture. Additionally, the descriptor "indirectly" also encompasses categories related to gesture from the original "things manipulated" list. Here is the final combined scheme:

THINGS MANIPULATED VIA HANDS

Directly

- Multiple versions:
    - Digital tools (used with digital artifacts).
        - Laptop
        - Phone

    - Non-digital tools (used with other non-digital tools and non-digital artifacts, used with gesture)
        - Writing Utensils
        - Calendars/notebooks/folders
- Multiple copies:
    - Non-digital artifacts (used with other non-digital artifacts, non-digital tools, Gesture)
        - Annual Reports
        - Board Printouts
- Single units
    - Non-digital tools (paired with other tools; paired with gesture)
        - Whiteboard
        - Whiteboard markers
    - Digital artifacts (paired with digital tools)
        - Stephanie's email
        - Stephanie's report

Indirectly

- Whiteboard (paired w/markers, gesture).
- Gestures
    - People metonymically standing in for ideas
    - Items that exist elsewhere
    - Items that do not yet exist (or, future versions of the list)

- Intangible ideas

Though this scheme helped me identify a major commonality among all of the categories I had developed thus far—they were all things manipulated (directly or indirectly) by hands—it yet again did not satisfy me as a category with sufficient explanatory power with which to build theory. I decided to try to return to another earlier coding scheme to see whether it would prove useful at this point in my coding.

VII. AXIAL CODING: ROUND III

In my next round of coding, I decided to attempt to combine my "Things Manipulated by Hands" scheme with my "Purpose" scheme in an attempt to see whether looking at these categories side-by-side would yield any useful insights. Using both of these schemes together, I reasoned, could help me identify what major differences or patterns in the uses of tools, artifacts, and gestures might be present across the three major purposes of the session. I again turned to axial coding using the TAB data unit list.

Because I had already coded the TAB list according to the "purpose" category scheme, to combine these schemes I only needed to add the "Things Manipulated by Hands" scheme to the TAB list that had previously been coded with the "purpose" scheme. To add this second coding scheme to the TAB list, I used the following procedure:

1. Add another coding column to the TAB list (do not erase previously coded "purpose" column).
2. Watch video, assigning new codes to blank column of list.

3. Create three separate lists: “develop,” “organize,” and “envision.”
4. Tabulate the number and rough percentages of occurrences of the “things manipulated by hands” coding scheme in each of the three “purpose” categories.

After I watched the video and assigned each data unit a second code, I separated out the three “purpose” categories. I printed each list out separately, and counted up each of the secondary codes in the lists. Then I calculated a rough percentage for each of the codes. The counts and the percentages are included in the table below.

Table 4: Number and Percentages of "Manipulated by Hands" categories, as grouped by "purpose" category

Category		Develop		Organize		Envision	
Directly manipulated							
	Digital tools	1	0.4%	1	0.4%	1	1%
	Non-digital tools	60	24%	37	16%	1	1%
	Non-digital artifacts	14	5%	16	7%	9	13%
	Whiteboard	48	19%	32	14%	0	
	Digital artifacts	1		1	0.4%	1	1%
Indirectly manipulated							
	Whiteboard	19	7%	7	3%	7	10%
	Pointing to people	9	3%	2	0.8%	1	1%
	Items elsewhere	10	4%	0		0	
	Not yet exist	4	1%	3	1%	4	6%
	Intangible	5	2%	5	2%	3	4%
Other gest.		77	31%	96	42%	32	46%
Other/misc		0		3	7%	0	
Total		248		230		59	

When I combined these two coding schemes, I decided to delete the ad-hoc “preparing” category that I had added when coding for the “purpose” categories (see

Section IV: Axial Coding, Round II, above). I discarded them because there were comparatively few of these list items, and my primary interest was in seeing how participants used tools, artifacts, and gestures to compose the list on the whiteboard, which the develop, organize, and envision categories covered.

From this analysis, a few things became clear. First, participants made a lot of gestures, but not all gestures attempted to "indirectly manipulate" something in the way that some gestures appeared to do. The gestures that *did* appear to indirectly manipulate something, however, were the most interesting to me because of their apparent importance to semantic content. These gestures seemed to be an important part of the meeting. Gestures also provided team members a way to passively manipulate the list—to do something to it besides just look at it. They also allowed members indirect access to ideas and objects that either were either not physically present or did not yet exist.

Second, I realized that yet again, this list did not have the explanatory power I was looking for. However, my third and final observation made my next step clearer. Conducting this round of axial coding directed my attention toward the "indirect" gestures, the annual reports, and the whiteboard—these three things were central to the writing session in a way that warranted further examination. I then I decided that the next step in my analysis should be to axially code these items. Because axially coding these items led directly to the development of my core category, I will describe this process and the findings that arose from it in the next chapter.

VIII. SUMMARY

In this chapter, I have described several rounds of dimensionalizing and axially coding my data. As this chapter demonstrates, my processes were iterative and recursive. Though I was ultimately dissatisfied with these categories and coding schemes, several of the early observations I have described in this chapter became relevant in my final coding scheme, which I will discuss in the next chapter. Additionally, in the next chapter, I will describe what I found in my final rounds of coding.

CHAPTER SIX:

ANALYSIS AND CORE CATEGORY FINDINGS

In this chapter, I continue my discussion of my analysis and findings. In the previous chapter, I described several rounds of dimensionalizing and axial coding and my findings from each of these rounds of coding. These rounds of coding were recursive; new avenues of coding were based upon previous findings; occasionally, findings were set aside while other directions were explored, and then older ideas were often revisited. At the end of the last chapter, I discussed deciding to axially code the gestures, the annual reports, and the whiteboard. These were the primary uses of tools, artifacts, and bodies in the session, and looking more closely at them would help me develop more abstract categories with explanatory power.

In the sections below, I describe my final rounds of coding, which begin with this decision to code the gestures, the annual reports, and the whiteboard. The final rounds of coding also include the development of my core category: representations of varying durability. First, I will discuss how I axially coded the gestures and the annual reports, and the insight which arose from this round of coding and led to the development of my core category. Then, I will discuss how I selectively coded for this core category and its sub-categories, and describe my findings.

I. AXIAL CODING: ROUND IV: "INDIRECT" GESTURES, ANNUAL REPORTS, AND THE WHITEBOARD

My goal in this round of coding was to look more closely at the whiteboard, the annual reports, and the gestures used in episodes four and five. I began by axially coding the "indirect" gestures in particular because my recent work with them had indicated that they were unique among the other gestures in the writing session. The "indirect" gestures, again, were gestures that seemed to indirectly manipulate something—an idea, the whiteboard, an absent picture. These gestures seemed to have a unique relationship with artifacts, in particular the annual reports and the list on the whiteboard, which warranted closer investigation.

My procedure for this round of axial coding was similar to earlier procedures of axial coding, in that I watched the data with the TAB list in order to code, but the process differed in important ways. The procedure contained two steps:

1. Watch the data units in question, one at a time, using the times on the TAB list to skip to the individual units.
2. Take notes on each data unit. Describe the context for what is happening, and if possible, write about why it seems to be happening. Describe any indicators that seem to hint at the "why." This was the primary difference between this and other rounds of coding—the focus on abstracting a "why" from each data unit.

As I coded, I noted what, precisely, about the gestures sparked my interest. As I coded the indirect gestures, a particular pattern emerged: certain types of gestures seemed

to attempt to either indicate or otherwise made materially present items that were not currently present in the material space. For example, in data unit 446, Julie points in mid-air, but not to anything materially present in the room (see Figures 3 – 5, later in this chapter). In this gesture, Julie is referring to a picture, and as she mentions the individuals in the picture, she points in the air to where each of those people would be in the photograph. The gesture is a clear reference to a document (a photograph) that exists somewhere else. Julie has a material enough understanding of this photograph to "replicate" it for her team members through her gesture. Other gestures indicated similar occurrences of other participants either pointing to things that were not materially present, but of which they seemed to have some kind of a material understanding.

When I began coding the annual reports, I also noticed instances of *artifacts* making absent items materially present. Occasionally, the previous years' annual reports "stood in" for the future annual report that the group was planning in their writing session. This happened a few times throughout the session, often when the participants were envisioning how certain audience members would receive particular items or phrasings in the future report. In one such instance, gesture 662B, Julie explains, "I think if we even try to bury language about a tuition freeze under a heading that says '*legislative* accomplishments,' Parker's going to, like, show up at our door and be like, 'Oh, what is this?!'" (lines 657 – 662). As she mimics Parker's words, she picks up one of the old annual reports and waves it around in the air. In this gesture, the old annual report is a proxy for the new one; it is a gesture with a prop. Julie does not have to make a particular hand motion to indicate the future annual report, as she does with the gesture

"to" the absent photograph, because she has something at hand that is close enough to it in material form that can stand in for the future annual report.

When I noted this observation, I paused my coding and wrote a theoretical memo. I noted that I was specifically looking at gestures that seemed to give material form to currently absent or immaterial things and/or concepts. The gestures marked out space—even if only ephemerally—to signify something in the material world. They marked out space *via* the human body. As I wrote the memo, I realized that the same thing happens with writing, just through the use of tools: tools mark out space more or less ephemerally in order to signify something in the material world.

At this point in my memoing, I noted that *many* tools, artifacts, and body movements in my data were ephemeral in one sense or another. In this planning session, tools, artifacts, and bodily movements were used by the participants to temporarily mark out in the material world ideas that might be developed into their final document. The brainstormed list is only temporary; the whiteboard list is not a permanent document. In fact, the participants have to *make* it a bit more permanent in order to take it to the next round of writing/drafting. To do so, Jack takes pictures of the list and prints them out, and Julie asks Stephanie to type the final version of the list up at the end of the meeting.

The concept of ephemerality seemed like an important insight, one which could apply to several of my data units in various ways—in short, it seemed like a good candidate for a core category. However, I was not satisfied with "ephemerality" as a category title, so I identified literature from which to borrow useful terms: Kaufer & Carley (1993) and Flower & Hayes (1984). In this scholarship, I found two terms that

became the final descriptors from my core category: "durable" (Kaufer & Carley, 1993) and "representations" (Flower & Hayes, 1984). I will discuss these terms in greater detail below.

Kaufer & Carley (1993) use the word "durability" to describe the development of new printing technologies that changed the way readers used texts. In particular, with the development of the automated press came the advent of the newspaper. Newspapers were far less durable than traditional books, but books were far less timely. Newspapers were designed to be thrown away and replaced the next day with that day's news; books were something to be held onto for longer periods of time. This concept of durability seemed to apply to my findings on ephemerality, just in the inverse. If the gestures and the whiteboard list had varying levels of ephemerality, with gestures being more ephemeral and the whiteboard being less ephemeral, then they also had varying levels of durability—the whiteboard was more durable than the gestures, though the gestures were durable at least in the moments they were being produced.

In addition to borrowing the term "durability," I also decided to use the term "representations" to tie tools, artifacts, and bodies together, drawing from Flower & Hayes's (1984) discussion of different types of representation. Tools, artifacts, and bodies are either used to create representations or are already representative themselves—sometimes both, as I will explain when I discuss the annual reports in more detail.

My core category, then, became "durable representations," or "representations of varying durability." The three items I was focusing on seemed to fall neatly into three primary sub-categories of representation: provisional representations, persistent

representations, and permanent representations. I used these three sub-categories as a final selective coding scheme, which focuses primarily on the gestures, whiteboard, and old annual reports. I describe each of these sub-categories briefly below before describing my process of selective coding in the next section.

- *Provisional representations* have no material form; they are constructed and disappear within the moment, enacted through gesture. Gestures are a prime example of a provisional representation. They may appear frequently and repeat similar forms, but they do not have a permanent, or even persistent, form.
- *Persistent representations* do not disappear after they are executed—they have a persistent, but not *permanent* material form. An important quality in this category, especially as it is enacted in my data on the whiteboard list, is that items are easily added, deleted, and moved around. The whiteboard is my primary example of a persistent representation. Each line of text in a list represents a potential future idea, sentence, paragraph, or section of the future annual report. The persistent-not-permanent quality of these representations is important to this planning session because it allowed the writers to commit to ideas without having to over-commit to them. In the planning session, all proposed ideas are provisional, but in order to make them less provisional and more persistent, they must be given material form, in this case, by being written on the whiteboard. The persistent-not-permanent nature of the

whiteboard tools enables Sherri to move items around on the whiteboard, and add and delete them as needed.

- *Permanent representations* are artifacts that retain an unchanging permanent form. They are the most durable of these three types of representations. The writers are planning a permanent representation in their session—the future annual report. They want to produce an annual report that will positively represent their organization and the events of the previous year to their constituent audience. However, the group also relies on other permanent representations in their session—the older annual reports that they consult as they plan. They use these reports to do a number of things, but the most interesting use is a sort of double representation. The old annual reports represent the organization's work in previous years, but they also sometimes represent the future annual reports, at least as the group uses them in this writing session. As I mentioned in chapter five, the writers sometimes use the old annual reports as a stand-in for the report they are planning. In the beginning of episode four, Sherri asks, "In this [points to old annual report] can we talk about our secret workgroups?" By "this," she does not mean the old annual report—she means the one they are planning. Additionally, the gesture used by Julie that I mentioned in chapter five, wherein she holds up an old annual report while parroting a potential audience's reaction to a potential item in the report, falls under this category. These permanent representations

enable the writers to project the planned report onto the old one, giving it a temporary material form.

Once I had developed these categories, I went through two more rounds of coding and then began integrating the categories via even more constant comparison, viewing the video and reviewing the TAB list as necessary. First, I used these three sub-categories to selectively code the TAB list, and then I developed the Provisional Representations category further through an additional round of axial coding. In the remaining sections of this chapter, I describe my methods for selective coding and this final round of axial coding, and then I discuss my findings regarding these categories. I also discuss the fluidity among these three categories, detailing how participants used tools to move representations among these three category types.

II. SELECTIVE CODING FOR CORE CATEGORY

To selectively code for my core category, representations of varying durability, I began in much the same way as I began with other rounds of coding. The process contained three steps:

1. Watch the video with the TAB list in hand.
2. Assign a code to the empty column in the TAB list.
3. When assigning a "provisional representation" code, add notes about what might be represented in the gesture.
4. Pause and re-watch the video as needed.

In this round of coding, I printed the TAB list and watched the video with it in hand. I wrote in the empty "coding" column both an appropriate code and applicable notes. I used notes frequently when coding for provisional representations because I had already noticed patterns in the gestures used during the writing session, and I wanted to divide this category into sub-categories through axial coding. Occasionally I assigned two codes for a single item, if the item in question seemed to warrant it. Many times when participants are pointing to things, for example, I coded the item "provisional representation/permanent representation," to indicate that the participant is making a gesture (which is a provisional representation) but that the annual report (which is a permanent representation) is included in the gesture. After I hand-wrote these codes and notes into the TAB list, I typed them into the digital copy and printed it out for future use.

After I completed this selective coding, I axially coded for provisional representations, as I will describe below.

III. AXIAL CODING FOR PROVISIONAL REPRESENTATIONS

As I mentioned previously, I decided to further code the provisional representations into sub-categories because I had already noticed several different patterns of gestures in the writing session, and I wanted to see what these patterns could tell me about how writing is distributed across the tools, artifacts, and bodies in my data. I began axially coding for provisional representations by printing the TAB list that contained the codes from the "durable representations" coding scheme. I then read through that list, considering the different notes I had made while coding the provisional

representations. Many of the notes established patterns in the gestures, which I then used to develop into a provisional-representations-specific coding scheme, which I have included in Table 5 below.

Table 5: Provisional Representations Coding Scheme

Deictics	
	True Points
	Representational points
Iconics	
	Representations of texts and textual features
	Other
Metaphorics	
	Container/offering/shrug
	Difference
	Circles
	Time
	References to text?
	Other
Beats	
Interactional	
Butterworths	

Using this sub-category scheme, I axially coded the provisional representations using the following steps:

1. Print the TAB list, with previously coded representations included.
2. Print a coding scheme table with room to record line numbers of respective gestures.
3. Watch video with list and coding scheme table. Proceed according to list. When I come to a provisional representation, find that segment in the video and watch it.

4. After watching the video, adjust provisional representation code on TAB list to comply with new coding scheme.
5. After coding the provisional representation, write the line number of the TAB in the appropriate row in the coding scheme table.
6. Repeat watching the video as many times as necessary in order to properly code the provisional representation.

I included noting the gestures in a coding table in this round because I wanted to be able to quickly isolate a particular set of provisional representations in future if I needed to. After I hand-wrote these codes in the TAB list and coding table, I typed the codes into the digital list as well. I will discuss each of these sub-categories below, but first I should note that I decided that it was not imperative that I categorize every single gesture precisely. I determined that it was okay to have fairly large "unsure" and "other" categories because my purpose is not to understand all of gesture, just to understand better how gesture contributes to writing. Therefore, I paid most attention to gestures that have the most to do with text, and I did not dawdle over gestures that I could not precisely classify if they did not have to do with text.

After completing this coding, I began memoing about my findings. I wrote about them category by category, often watching gestures on the video yet again, using the table I had developed in this round of coding, in still more constant comparison within categories.

IV. FINDINGS

In this section, I describe my findings in terms of my core category: representations of varying durability. Though I briefly described this category previously, I will describe them in much more detail in this section. I will spend most of this section describing my three major sub-categories, which are three points along a *spectrum* of durability. I am calling it a spectrum because there were tools, artifacts, and bodily movements in my data set which did not fit neatly into one of these three categories, as I will describe later in this section. After describing my three major sub-categories, I will briefly describe some of the tools, artifacts, and bodily movements that did not fall neatly into those categories, and talk about the relationships among the major categories and the outliers.

A. Provisional Representations

Provisional representations do not retain any kind of material form. They are only enacted in the moment via gesture. I identified several different types of gestures in my data, and these different types of gestures do different things, some of which are more or less directly related to writing.

Before describing these types of gestures in detail, I should note that I draw most of the primary types of gestures from McNeill (1992): deictics, iconics, metaphorics, and butterworths are all gesture types originating in McNeill's work. I also borrowed terminology from Thompson (2009); she describes *interactional* gestures which writers and writing consultants use in building and maintaining relationships. However, instead

of relying solely on these previously established categories, I paid special attention to deictic, iconic, and metaphoric gestures, and attempted to group these gestures into further sub-categories. I paid special attention to gestures which had to do with writing or texts. However, I noticed patterns across some gestures which did not seem to have to do primarily with writing, but seemed to be worth noting anyway, so I recorded these as well.

DEICTICS

Deictics are more commonly known as pointing gestures. They are related to the linguistic term *deictics*, which are used to specify identity or location through words like *this* or *that*. However, not all deictics in my data make a typical pointing shape, with an index or middle finger extended in a particular direction. Several deictics in my data are accompanied by other types of hand shapes. Rather than classify deictics according to gesture or hand shape, I classified these deictics according to apparent function—drawing interlocutors' gaze to a particular object, person, or concept.

Deictics in my study are divided into two major types: true deictics, in which the person speaking is motioning directly to the thing about which they are speaking, and representational deictics, wherein the gesture is either not actually pointing to anything but makes a pointing shape (e.g., a person's index finger is extended, but does not direct the gaze anywhere in particular) or the gesture is directed at something but refers to something else—the deictic is representing something. I will first discuss true deictics and then discuss representational deictics.

True deictics

In my data, I found that true typically points either referred to people or texts. In points to people (of which there are ten in my sample), participants are often clarifying something a person has said, such as in gesture 420 where Stephanie is attempting to clarify something with Jack by referencing something Stan said and pointing to Stan. In other instances, true points are used to emphasize participants' opinions as their own. For instance, a few times (in lines 767A and 769A, for example), Jack points to himself when referring to himself: "If *I* was going to write that up…." He is trying to explain why he is hesitant to include an item on the brainstorm list, and posits himself as a writer in order to explain that hesitancy.

The rest of the true points are direct references to text—either the whiteboard list or the old annual reports. References to the whiteboard list vary. Often, participants point to a particular item on the list and accompany that point with speech directing attention to that particular item. Jack does this often, such as in gestures 256A, 277A, and 277C, when he wants to talk about the Dream Act item, or in gestures 358A and 358B, when he points to the "Federal" list and suggests an item for that category. Occasionally, participants point to the list in general, often with a more open hand than a traditional "index-finger-extended" pointing motion. In these cases, participants might be referring to the list in general, or sections on the list, or they might be referring to the list in the abstract: as the "brainstorm" or the newsletter's "content," such as Julie's open-palm-up gesture (348A) toward the board when she suggests that "this is just a laundry list" (line 348).

The participants also point to items in the old annual reports; usually these points draw attention to specific items that participants are discussing. Interestingly, participants do not begin pointing to the old annual reports until episode five. In that episode, they debate where to put items in the new report, under what heading, and refer to the old reports to help them decide, often pointing to particular items in the old reports. In one such example, Jack points to a section in the old annual report, saying, "…we titled this, 'policy accomplishments,'" and asks the group if they really want to characterize a particular item as an accomplishment (lines 678 – 681). Interestingly, participants often point to their own annual report, even if it is not in clear view of the person to whom they are speaking. That person then has the option to look at their own annual report, or simply take the speaker at her word. Additionally, participants occasionally point to the report to indicate something that is already in the old reports and presumably should not be discussed in the new one. One example of this is when Stan points to an annual report to indicate that the "Rally Day" item had been previously categorized as "student involvement" (line 857).

Representational Points

Representational points are pointing motions that accompany speech that does not directly refer to the thing (or person) to which a person is pointing. The most common type of representational point is when participants point "to" the old annual reports, but they are speaking about the new annual report for which they are brainstorming. For example, in line 176, Sherri asks, "In this could we talk about our secret workgroups?"

and points to the old annual report. She is not talking about the old annual report, of course; she is asking whether they could include this topic in the new annual report, but she points to the old annual report as a "stand-in" for the new one. Similar gestures occur in two other instances in my data (249A, 505A), but I will discuss these gestures more in the "permanent representations" section.

In other cases, participants make pointing motions while referring to texts that either do not exist or that are not present in the room. For example, when discussing what to include in a section on Rally Day, Sherri says, "just put in a shot of [the governor] and I," and makes a pointing motion mid-air with her marker "to" the nonexistent photo. Later on, Julie makes a similar gesture (gesture 446; see Figures 8 – 10, below), pointing to a photo that's not present in the room. She says, "There's a good photo that Marcus used in his campaign of him testifying sitting next to [Huffington] and the Chancellor" (line 446). As she mentions each person in the photo, she points "to" where each of these people would be in the photo—but since the photo is not there, she is just pointing to air. She is pointing, but the gesture is a representation of the photo rather than a true point.

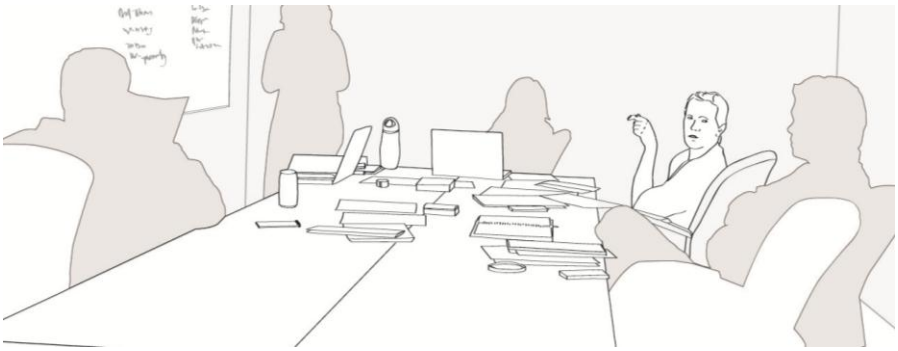

Figure 8: Julie points to the person in the middle of the picture, Marcus

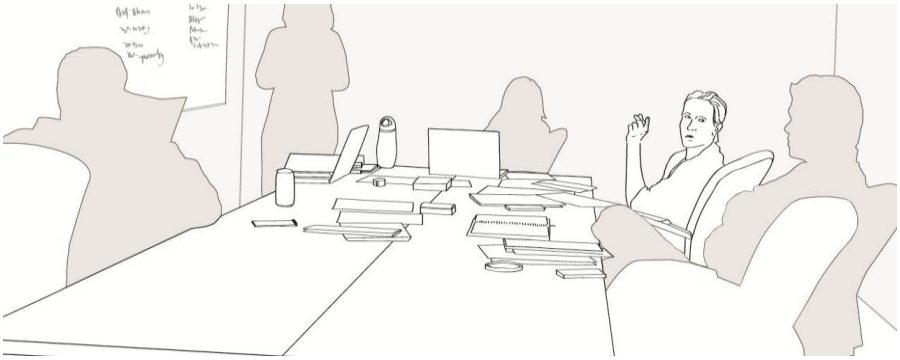

Figure 9: Julie points to the person to the left in the picture, Huffington

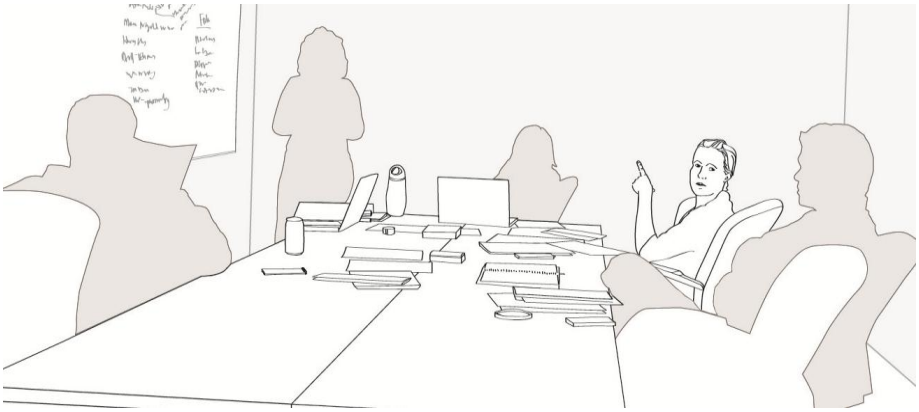

Figure 10: Julie points to the person to the right in the picture, the Chancellor

Similarly, in another segment of the video, participants are debating the name of a piece of legislation that had passed that year which their group had supported. Both Sherri and Stan make pointing motions in mid-air when referring to the name of the

legislative act. Sherri asks, "is it Dream or is it Prosperity," pointing once for "dream" and once for "prosperity." When Stan replies, he says, "I've seen it as Dream, as Prosperity, and as dream-slash-prosperity." He points once each for the words "dream" and "prosperity," and three times for "dream-slash-prosperity." I categorized these gestures as representational points because Stan is making pointing motions with his pen, as if he is pointing to the actual name of the bill. Prior to making the gesture, he references texts in which he has seen these different titles: "in articles, in handouts, I've seen it…" (line 309). When he makes the "dream-slash-prosperity" gesture he moves his point in a line from left-to-right, possibly reflecting the direction of the textual name he has seen on these documents.

Later in the session, Julie performs a similar series of points in an elaborate, text-related joke. As she is making the joke, in several places she "points" to a text that does not yet exist (and, because this is a joke, will not ever exist). She suggests they include a picture of the "student health insurance task force," but instead of spelling it out in the caption, just including the initials: "S. H. I. T." (line 980). As she names the acronym, she uses her left hand to bounce along in mid-air as if she is gesturing toward the letters in the imaginary caption. Like Stan's "dream-slash-prosperity" gesture, the left-to-right movement is reflective of the direction of English language text. These gestures may be indicative of writers' deeply embedded embodied sense of texts; if the directionality of the gestures were arbitrary, and *not* based upon embodied knowledge of texts, it is far more likely that one of the gestures would have been performed in a different direction,

especially given that the gestures were performed by different people, and with different hands (Stan used his right, while Julie used her left).

Similarly, in some cases, participants point "to" text, but they're referring to something besides the text. For example, Sherri says, "Or even a picture of the new…" (line 566) and points to an item on the board when she says, "New." But the point doesn't refer to the item on the board—it refers to the new executive leadership team.

In all of these cases, deictics are used for more than just drawing an interlocutor's eye in a particular direction. They are also used to represent ideas and events and to draw attention to those representations. In the next section, I discuss the iconic gestures found in my data.

ICONICS

"Iconic" is also a gesture type discussed by McNeill (1992). The name "iconic" designates a gesture that represents a concrete thing in such a way as to mimic its real-world nature. For example, bringing one's hand to one's mouth in such a way that mimes taking a drink is an iconic gesture. I have divided the types of iconic gestures in my data into two main groups: iconic representations of text, and iconic representations of other things. I discuss representations of text separately because they are of particular importance to the embodied act of writing, and that is where I will begin my discussion of iconics.

References to Text

Iconics which reference text appear several times throughout the data. Most often, iconic representations of text are used to indicate one of two things: texts or concepts linked to texts which are not present in the room (as in the deictic gestures discussed previously) or sections of the future document for which the group is brainstorming. Less occasionally, iconics reference the act of writing or features of texts, like quotation marks.

Texts Not Present in Session

Like the representational points that indicate texts not in the room, participants occasionally used other hand shapes to represent texts that were not physically present in the room. Jack does this several times. When he is asking Stan about the title of a bill that had been passed that year, he uses two different hand shapes to refer to the legislation, giving it momentary material form. He says, "If someone was going to search the legislative…laws that have passed, years from now, what would they…?" His hands indicate two different shapes for *legislative* and *laws* (295B & 295C)—first, a palm-open-and-down grasping motion, and then a bracketing-with-two-hands motion. Both off these gestures are attempting to give substance to *legislative* and *laws* as textual things that can be searched through. These things would, in fact, be textual in nature—either as material files or records, as electronic files in a database, or both. Later in the session, when discussing whether to include an item in the report that year, Jack makes a similar bracketing-with-two-hands motion to indicate forthcoming recommendations (864A) that the group could reference when writing about the item in next year's report. In these

cases, Jack is not necessarily consciously referencing a text; his intention is to refer to the content of the texts (laws, recommendations), but perhaps because this content is delivered via material text, Jack's gestures reflect this materiality.

An especially interesting example of gestures referencing texts which are not yet in the room is when Julie uses an old annual report to pantomime a particular constituent audience member's reaction to a potential list item. She says, "I think if we even try to bury language about a tuition freeze under a heading that says, 'legislative accomplishments,' Parker's gonna, like, show up at our front door and be like, 'Oh, what is this?!'" (lines 657 – 662). As she says, "Oh, what is this," she picks up the old annual report and waves it around accusingly in a pantomime of Parker's potential reaction (gesture 662). The interesting thing about this gesture is that it incorporates the old annual report as a representation of the new, forthcoming annual report. I will discuss this in more depth in the section on permanent representations because it incorporates a permanent representation (an old annual report).

Sections of Text

Another way that texts are represented iconically is through gestures which indicate sections or portions of text. Jack uses these gestures several times throughout the session, perhaps because he often speaks about how to approach writing particular sections. He most often uses pinching or bracketing (one handed and two handed) gestures in order to represent portions of texts—sentences or paragraphs. He does this five times throughout the session (280, 563AA, 563B, 563BB, & 609D), with three main

types of hand motions: pinching, bracketing with the thumb and forefinger of one hand, and bracketing with two hands (see Figure 11 and Table 6 below).

Figure 11: Jack makes a gesture representing a section of text

Table 6: Gestures representing sections of text

Gesture #	Speaker	Dialogue	Gesture
Pinching motions			
280	Jack	"put at least a sentence in there,"	fingers almost pinching/bracketing a couple of times—iconic reference to section of text, indicating a small section
609D	Jack	"Portion that we"	pinching air
One-handed bracketing motions			
563AA, 563B, 563BB	Jack	"little write up"	One-handed bracketing motion with fingers
Two-handed bracketing motions			
610A	Jack	"just dedicating one little section to that"	hands indicate small section—palms facing in—not as reflective of text as other motions

Features of Text & Writing Process

Participants also make gestures that refer to features of text and writing practices. At one point in the writing session, Stan uses an iconic "air quotes" gesture as he is discussing terminology he seems to find a bit objectionable: "college-age" (208). (Because the association works with state and community colleges, Stan is acknowledging that MCCA works with a diverse group of students of all ages.) Later, Sherri uses the whiteboard marker to make a gesture that iconically symbolizes writing: she twirls the tips of the marker around in an imitation of writing. She is discussing her approach to dividing up the list, and says, "I was just gonna erase it all, and make like [gestures with marker]…" (811B). Interestingly, she does not use speech to accompany this gesture—the writing motion stands on its own.

Other Iconic Gestures

There are relatively few iconics in the data, probably because the participants are discussing abstract concepts and events. If they were discussing, say, instructional procedures, there might be more iconics. However, most of the gestures I coded as iconics were accompanied by language that Lakoff and Johnson (2004) refer to as "everyday" metaphors—metaphors that are so pervasive in the English language that most speakers do not even recognize them as metaphors. These everyday metaphors are often based upon embodied senses of the surrounding world.

I found two major patterns of these types of "metaphoric-iconics," gestures that had an iconic material form but reflected embodied metaphors; these gestures reflected a

directionality that is often implicit in the language but that becomes clearer in the accompanying gesture. These included gestures moving away from the body in a pushing motion, which represented words like "pushed" and "toward," and gestures moving upwards vertically, which represented things like height, bigness, and "up-ness" (see Table 7 below).

Table 7: Iconic gestures based on direction

Gesture Number(s)	Speaker	Dialogue	Motion
Pushing			
742B & 742D	Julie	"Students **pushed** for this or students **partnered** on this effort…"	Julie's left hand moves away from her body in a pushing motion on the words "pushed" and "partnered."
1038B & 1038C	Jack	"Maybe I'm just trying to **push** this thing through and figure out the **right** way to talk about it…."	Jack's left hand makes several "pushing" motions on "push" and "right."
1090B	Jack	"go **towards** something…"	Both of Jack's hands make a pushing motion several times.
Vertical gestures			
780B:	Jack	"to **hold that up** as something…	Jack's hand moves upward and his hand is in a "gripping" shape.
829A	Jack	"is it special because of the **height** of this…"	Jack's hands come up from his lap and grip an invisible beach ball.
836B	Stan	"to address some of the **high** risk management…"	Stan's right hand moves up above his head and moves back and forth.
853B	Stan	"form some sort of **big**, bold idea…"	Stan's right hand moves up above his head and moves outward slightly.
1044	Jack	"maybe it's not to that **level** yet"	Jack's left hand moves upward.

There were also two gestures that seemed to pantomime particular actions without directionality. Once, Julie says to Jack that he could take the "parking lot" list to other staff members to write about (line 965), and when she says "take," her hand pincers in a motion similar to grasping a piece of paper. Additionally, when Julie thinks Stan is divulging secret information to the group, she leans in over her folded hands in a pantomime of a co-conspirator and says, "*really*?" (line 931).

These were the iconic gestures used in episodes four and five of the writing session. In the next section, I discuss several types of metaphoric gestures I found in the data.

METAPHORICS:

Metaphorics, another gesture type identified by McNeill, are gestures which attempt to give abstract concepts a more concrete representation. I identified several gestures as metaphoric, and I noticed several patterns which indicated different subcategories of metaphoric gestures within my data: 1.) references to text/textual features, 2.) references to time, 3.) circling gestures, 4.) gestures that represent difference, and finally, 5.) a gesture type I dubbed the offering/container/shrug gesture. Though some of these metaphorics are often related only tangentially to producing text—they are after all, made in service of contributions to the written document, but not all of them are about texts—I include them here because they demonstrate a portion of the wide range of concepts indicated by gestures. It is my hope that by enumerating these gestures, the importance of gestures in collaborative planning will become clear.

References to Text/Textual features

In addition to iconic references to and representations of text and textual features, there were a few metaphoric representations of texts. The difference between the metaphoric representations and the iconic representations are that iconic representations appear to replicate or make material elements of text that are also material in the text themselves. In metaphoric representations of text, the idea being represented is an abstract concept about text or writing which the gesture attempts to make more concrete. For example, about half way through the writing session, participants note that their list is getting rather long. Julie agrees, and says she likes starting from "a broad place" (line 476), and makes a funnel-type gesture, beginning with her hands spread wide above her head, moving downwards in an upside-down-triangle motion, and ending at chest level with her hands close together (476A). "A broad place" seems to represent the list, though it is not a direct reference to the list itself, and the gesture represents the broadness of the list, which is a metaphorical idea. This broadness is also materially represented by the physical width of the list on the whiteboard. Additionally, toward the end of the session, Jack suggests that they need to talk about "style," and as he says style, his hand makes a palm-down grasping motion, as if "style" itself has a material substance that can be manipulated via hands (see Figure 12 below). Both of these gestures represent more abstract concepts about texts and textual features, but they both seem to make those abstract features more material—especially the "style" gesture.

Figure 12: Jack's metaphoric "style" gesture

References to Time

There are only a few gestures which metaphorically represent time in this session, but they are present. These gestures appear to be consistent with representations of time which place the past on the left-hand side and the future on the right-hand side, like textual representations of timelines. For example, when Jack says, "if someone was going to search… laws that passed in the legislative session years from now," as he says, "years from now," his hand make a flipping motion toward the right (296), indicating a left-to-right timeline. When Sherri mentions that she was thinking of an event from a previous year, she makes a motion that ends to her left hand side (588), indicating time that has already passed, just as a timeline would represent the past to the left. Additionally, Jack makes a motion that seems to be representative of a "timeline" itself: he says, "…we need to talk about timelines," (631) and his left hand briefly brushes left and right a few times. These findings are consistent with representations of time used by Theo in Haas & Clayson (in review).

Circling Gestures

Circling gestures were used frequently by the participants in order to indicate a number of things. However, because of the diversity of meanings that various circling motions were used to represent, it was not clear from my data what consistent underlying meaning might be indicated via the use of circles. Further investigation of circling gestures might be useful to researchers in gesture and linguistics, but because these gestures do not appear in this data set to tell us anything about texts, I decided not to further pursue inquiry on circling gestures.

Difference

Another type of metaphoric gesture movement I saw frequently in the data were movements that seemed to indicate difference. There are several of these types of gestures in the data set. The movement often involves both hands, and typically involves the hands moving back and forth in opposite directions as a concrete representation that two (or more) things are different from each other, as in 141A, when Julie is talking about the difference between previous years' approaches to brainstorming content for the reports. Other times, it involves only one hand moving back and forth, as in 233A, when Stephanie is talking about how to approach two different brainstorm items. Occasionally, the hands will simply move from one direction to a new direction to indicate difference. Each of these gesture movements are meant to indicate that the speaker is highlighting the difference between two options or concepts about which she is speaking. Sometimes participants used words indicating difference in their speech to accompany these gestures,

but occasionally they did not. This perhaps points to the importance of gestures in group communication—these gestures may be conveying additional meaning that the words alone did not carry.

Offering/Container/Shrug Gestures

This type of gesture was by far the most used in the session. It has several different but similar physical forms. The most common form of this gesture is an open palm facing upwards, often using a hand-flip motion. In a previous study, Haas and Clayson (in review) called this an "offering" gesture, because it seemed like participants were offering ideas to one another. In other research (McNeill, 1992) it has been called a *container* gesture because it is reflective of words as containers for ideas—participants offer each other ideas, and the idea is an invisible object in the participants' hand. Additionally, the motion, especially the palm-up shape of the gesture, looks a lot like a shrugging gesture.

When coding these types of gestures, I grouped these three representations—offering, container, and shrugging—into a single type of gesture. I included "shrug" in this category because in this data set, there were a few gestures which were difficult to discern whether the person was shrugging or using an offering gesture. I eventually realized that the participant could be doing *both at the same time*—especially if they are offering up an idea about which they are unsure, or if they want to highlight their willingness to discard the idea should the rest of the group disagree. Because of this, I included gestures that might be shrugs in this category, though most of the gestures in

this category are more clearly offering/container gestures. Shrugs that only included a shoulder lift and no hand motion I did not code at all because I did not include them in the TAB list, as I discussed in chapter four.

In this section, I have discussed the types of metaphoric gestures that I was able to identify in my data. There were other gestures that I coded as "unknown" which might have been metaphoric representations of other concepts, but I did not notice enough patterns across those gestures to identify more metaphoric types. In the next section, I will discuss interactional gestures.

INTERACTIONAL

Interactional gestures are described by Thompson (2009) as being used to build or maintain social relationships. While it might be argued that all, or at least most, gestures perform this kind of function, I am using this term to describe gestures for which building or maintaining relationships seemed to be the *sole* purpose. In my data, these gestures occurred when participants were attempting to gain or cede the floor or in moments of dissent and tension.

Participants occasionally made gestures when they were attempting to gain the floor for discussion. Often, these gestures resembled a school-like "raised hand" gesture, or a very restrained version of the raised hand. In gesture 831A, Stan makes this kind of a motion as he begins answering a question Jack has posed to the group. He is making it known that he has something to share both in his verbal interjection and in his gesture. In another few examples, Jack makes a pointing shape with the index finger of his right

hand and lifts it slightly toward whomever he would like to respond to or gain the floor from. In gesture 860 he is pointing to Julie, and starts to speak, but she keeps speaking, so he does not gain the floor. In gesture 1012, he makes a similar motion, this time moving his entire hand toward Julie; however, she does not notice because she is not looking in his direction. Instead of trying to interject, however, he turns his attention to an old annual report, looking for something instead of asking whether the item had been discussed in previous annual reports.

In other cases, participants make gestures as they are ceding the floor to other participants. Jack does this twice. Once, when he and Stan begin speaking at once, he motions to Stan to go ahead (253B). Stan seems hesitant to proceed, but Jack makes the motion again (256B) to indicate that he is ceding the floor to Stan. The hand shapes that Jack makes might look like a deictic (253B) or an offering/container/shrug metaphoric gesture (256B), but because they are linked to the act of ceding the floor, the gestures are more about the relationship between Jack and Stan than about pointing or conveying metaphoric meaning, and so I coded them as interactional gestures.

In addition to gestures which attempt to help participants gain or cede the floor, there is a series of interactional gestures during a particular moment of tension in the group. The series of gestures 887, 888A, 888B, 888C, and 889A are all interactional gestures surrounding a bit of teasing that involves Sherri, Jack, and Stan. Sherri seems to tentatively defend an item that has caused some debate and tension within the group, and Stan and Jack tease her once they remember that she has an internship with a group associated with that item. Sherri appears to get defensive, making a kind of shrugging

gesture in the shape of a "W" with her arms. Jack, noticing that she seems distressed, reassures her that he's just teasing and that he thinks she is doing great work in her internship; as he does so, he makes a kind of placating gesture, with his left hand palm open and down, almost patting the air. Sherri also makes light of the situation by tossing her marker into the air and pretending to be mad. After this interaction, Jack tells Sherri that he thinks she is doing excellent work in her internship, and quickly shifts the conversation back to the task at hand. The gestures made during the teasing and Sherri's reaction are about maintaining social relationships among group members despite disagreement and tension. They help Jack attempt to reassure Sherri that her place in the group is not in jeopardy and that she is a valued member both of the writing team and of the greater MCCA team, and Sherri's gestures reassure the group that she is not upset by their teasing.

Interactional gestures, then, have two primary functions in my data: helping participants gain or cede the floor and easing tension in social relationships. In the next section, I will discuss beat gestures.

Beats

Beats are also a gesture type defined by McNeill. Beats are rhythmic, (usually) repetitive motions that McNeill argues are used for emphasis. However, in my data, beats did not always appear to function solely for emphasis. While the beat gestures in my data aligned with patterns of linguistic emphasis—they fell on the most-stressed syllables in words and sentences—they did not always seem to be drawing major attention to

emphasis. When coding for beats, I only coded a gesture as "beat/beats" if it consisted of rhythmic or repetitive motions and could not be categorized in any other way. For example, several "offer/container/shrug" gestures could also be categorized as beats, but I did not categorize them as such because the metaphoric function of the offering/container/shrug shape seemed to take precedence over the generic "beat" function. In the next section, I discuss "butterworth" gestures.

Butterworths

Like metaphorics, iconics, and deictics, a *butterworth* is a gesture type described by McNeill. Butterworths often occur with what McNeill, referencing Freedman and Hoffman (1967), calls "speech failures" (pg. 77). I have observed in my data that they can occur when a participant is searching for a word or when they have used a word with which they are not satisfied.

I found two butterworth gestures in my data, both of which occur when participants are searching for words. In line 847, Stan is searching for the word "consultation," and his left hand lifts as he pauses before eventually finding the word. Similarly, in line 1018B, Jack begins making a circling gesture, and he says, "I'm trying to think of the right word," before he settles on a satisfactory word. This gesture is similar to the other "circling" gestures in the data, in that his hands are moving in circular motions, but it is unique in that it is accompanied by an explicit search for a word.

In this section, I have discussed the many types of gestures that I have identified in my data. These gestures I have classified as *provisional representations* because they represent ideas and social relationships, but they do not retain a material form. They are provisional; once they are enacted through gesture, they disappear. In the next section, I discuss persistent representations, which do retain material form, but one which is not yet permanent.

V. PERSISTENT REPRESENTATIONS

The most often used persistent representation in the writing session is the continually-growing list of content ideas on the conference room whiteboard (see Figure 13 below and Figures 14 – 16 in this section). This list contains individual representations of events that happened over the past year, via individual lines of text, but the entire list also is representative of the future, final document the group is planning.

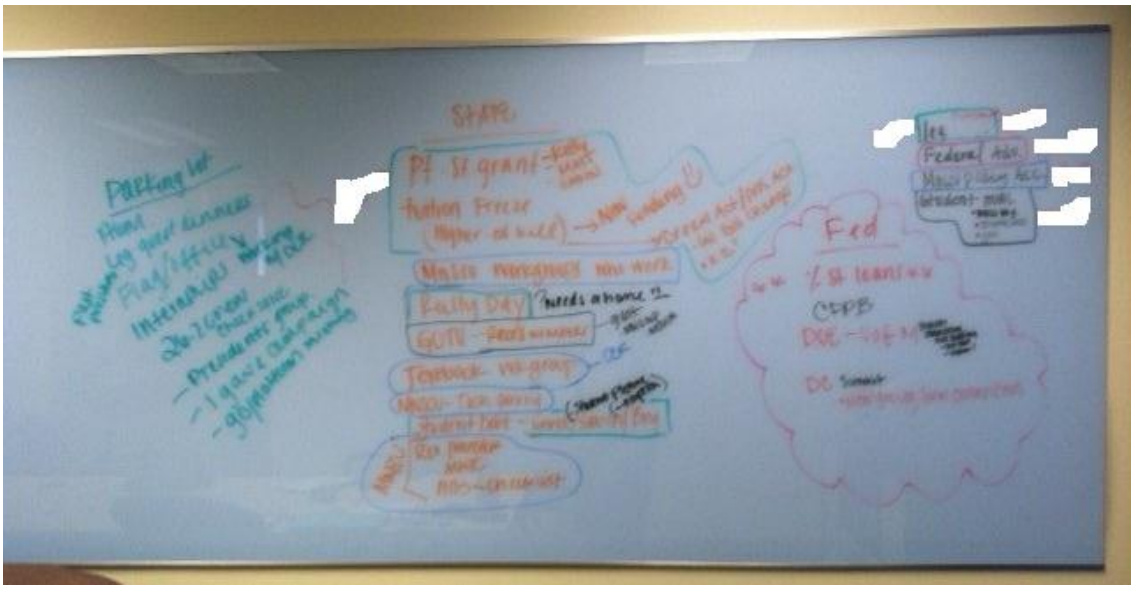

Figure 13: Image of the final whiteboard list

What makes this list a *persistent* representation is the material form of the tools used to create it. The whiteboard allows the writers to not only add items to the list, but to easily delete and rearrange items on the list as well. This is one feature that strongly differentiates it from permanent representations, like the old annual reports that the group references throughout the session. Those texts have a permanent material form—they are neither added to nor deleted from, though the writers could have written on them if they had desired.

In order to demonstrate how the whiteboard tools (the whiteboard and whiteboard markers) create persistent representations of events, I will narrate the progression of the writing of the whiteboard list, occasionally noting the time at which events occur or begin. This narration will emphasize the affordances that the material tools used to create the list give the writer—the ability to simultaneously invent and arrange, the ability to use space and color as a clear demarcation of arrangement, and the ability to move items around on the list as arrangement is contested and debated among the group.

Sherri is the primary whiteboard scribe in the writing session, and the only whiteboard scribe in episodes four and five. At about 9:36, near the beginning of episode four, Sherri begins writing a list in the middle of the whiteboard. At first, she begins writing with an orange whiteboard marker. She makes several entries to this list, most of which are in a simple vertical list. A few items she writes out to the right side of other items, linking them with an arrow (see Figure 13 below). Even before she incorporates other colors into an organizational scheme, Sherri is *arranging* at the same time the group

is *inventing*. As she adds items to the list, she must decide whether to assign an item its own line on the list, or to write it out to the side of another item.

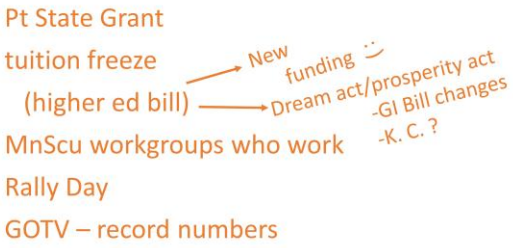

Figure 14: The beginnings of the content list

Interestingly, no one directly tells her to use space this way. Occasionally items are discussed together, especially when one item reminds a participant of another item to add, or when someone says, "Oh, can you add A to B," but no one tells her to "write X out to the side of Y." Sherri's use of space is self-directed.

After several entries on this orange list, at 17:24, Julie responds to a suggestion with, "Well, if we are going to talk about our federal agenda, we could add that" (line 319). This statement reveals that the group has been implicitly discussing their State agenda, and Sherri consequently begins distinguishing this list from the "Federal" list that she will write. She begins by adding the word "State" to the top of her established list, and then moving to the right and slightly down on the whiteboard and writing "Fed" (to

represent “federal”) in orange marker. However, she immediately erases the orange “Fed” and rewrites it in red marker. She then adds an item to this list in red (see figure 15).

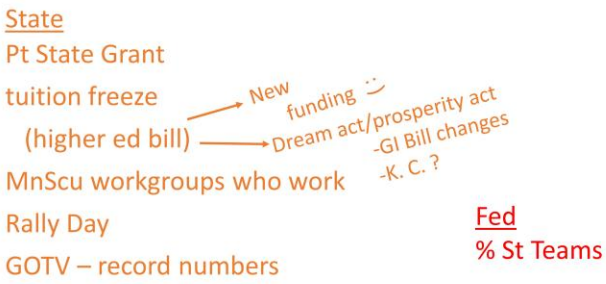

Figure 15: Sherri labels the first list "State" and begins a new list, "Federal"

At this point, the participants have listed several possible items in rapid succession that Sherri must add to her lists. She pauses briefly, uncaps the orange marker, and steps over to the “State” list, but then pauses again. Julie asks her, “Are you caught up, Sherri?” (line 336). Sherri replies, “I’m just trying to figure out where to put ‘SELF loan’” (line 338). She quickly puts away the orange marker, uncaps the red and adds it to the Federal list. She then switches back to orange to add an item to the “State” list, and then adds several more items to the red “Federal” list (see Figure 16 below).

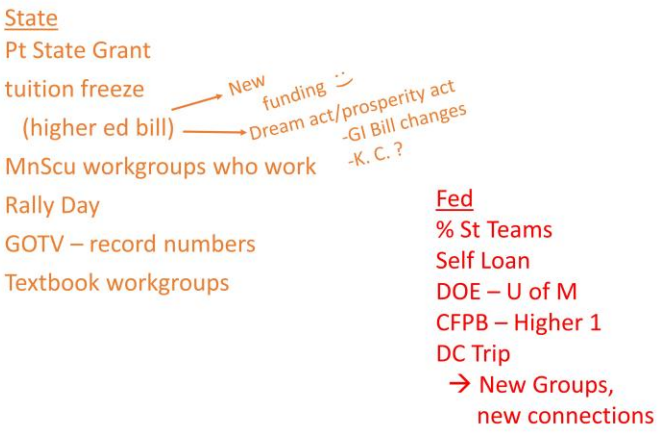

Figure 16: Several more items added to the "Federal" list

These additions seem to saturate the "Federal" list for a while, and so Sherri returns to the orange list for several more items. She continues adding items to the state list until, yet again, Julie suggests that some items be included in a different list: "…if we were going to parking lot some stuff…." (line 481). Sherri has already added these items to the state list, though she has had to add it out to the side of the already-very-long list; she writes in orange, though, so as to indicate that they are, in fact, on the State list (see Figure 17 below).

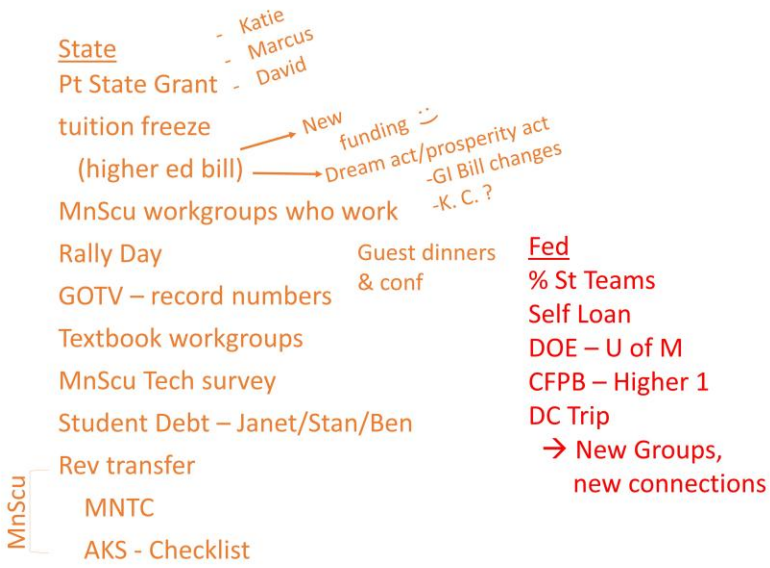

Figure 17: Sherri adds items to the "State" list before creating a "Parking Lot" list

After Julie expresses her hesitancy to include the items under the "State" list, however, Sherri begins to erase them with her hand, but stops. She leaves the items on the board momentarily while she selects another color—green—and adds the items in a new, green list to the left side of the orange state list, which she labels "Parking Lot." She then erases the items under "State," and continues adding to the "Parking Lot" list (see Figure 18 below).

Figure 18: The group adds a "Parking lot" list

Near the end of the episode, Sherri switches back to the red marker and adds stars to an item under the "federal" list (see Figure 19 below, the final list before it is divided into categories). Then Julie suggests they begin coming up with categories for these list items, and this begins episode five. Jack stands up to take a picture of the whiteboard with his cell phone, and leaves the room to retrieve black and white copies of this picture he printed wirelessly from his phone.

Figure 19: List at beginning of Episode 5, when Jack takes a picture the first time

After Jack takes a picture of the list, Sherri picks up a black marker and an old annual report and begins adding category headings to the far right of the whiteboard (see Figure 20 below). She adds a list item from "State" under one of these headings, but then erases it because the group begins debating where to put this item. This begins a long discussion of whether to even include this item in the annual report.

During this discussion, Sherri does quite a bit of independent work on the whiteboard list. Sherri retrieves even more whiteboard markers from another room and begins dividing up the state list using different colored circles (see Figure 19 below). She begins by circling the category heading "Policy Acc[omplishments]" in blue, and then circling items associated with policy accomplishments on the "State" list in blue as well. She circles the entire "Federal" list in red, leaving both it and the green "parking lot" list intact—they are not subdivided into categories. She assigns green circles to the "Leg Acc" category heading and its associated list items, and black circles to the "St[udent]

Invol[vement]" category heading and its associated list items. She moves back and forth between circling items in black, green, and blue for a while before pausing her work (see Figure 20).

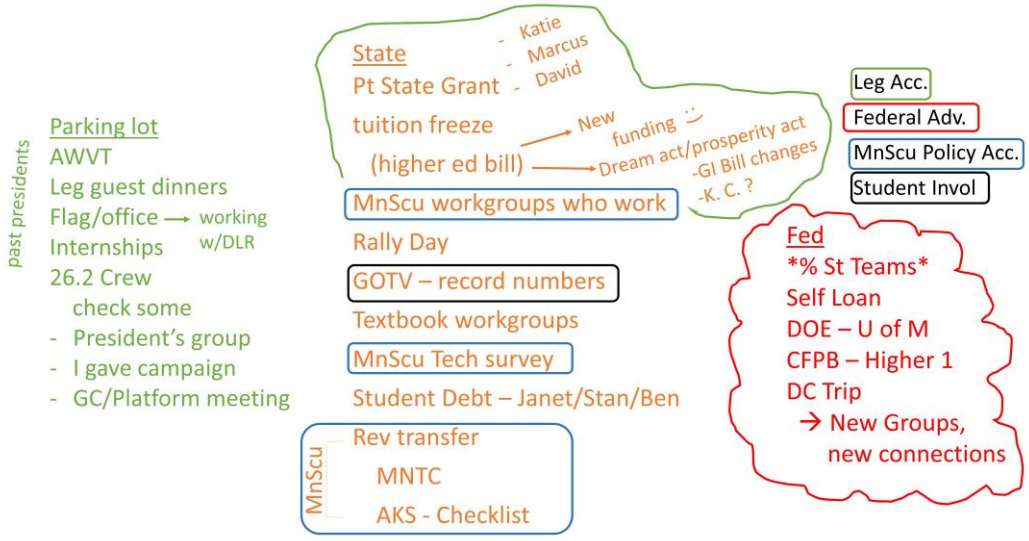

Figure 20: Sherri color codes some of the list items on her own

After Jack, Julie, and Stan finish debating whether or not to include a particular list item in the report, Jack asks, "What are we color coding with the circles?" Stan and Sherri briefly explain, and Jack and Julie indicate that they are impressed with Sherri's color scheme. Interestingly, Sherri mentions that she had thought about "just erasing it all, and [makes a writing gesture with her marker to indicate re-writing the list]," but she does not say why she ended up using the circles instead. One possibility has to do with memory. Sherri does not want to erase the lists she has written because the list is quite long—it is inefficient to try to memorize the list just to erase it and rewrite it in a different organizational scheme, especially when she has tools at her disposal that will eliminate the need to erase and rewrite anything at all—more colors of whiteboard

marker. Sherri *could* have used the picture of the whiteboard list that Jack provides via his phone to erase and rewrite the list, but she does not even pick up her copy of that printout. Again, I think this is because it is quicker and easier to circle the list items using different colored markers than it is to erase items and re-write them in a new order.

At this point in the writing session, there are a few items that Sherri has not circled, and the group offers suggestions on these items. Sherri ends up circling one item twice—once in black and once in green—because the group decides to hold off on placing it in a section before "seeing where it naturally will fit," as Julie says (line 917) (see Figure 21).

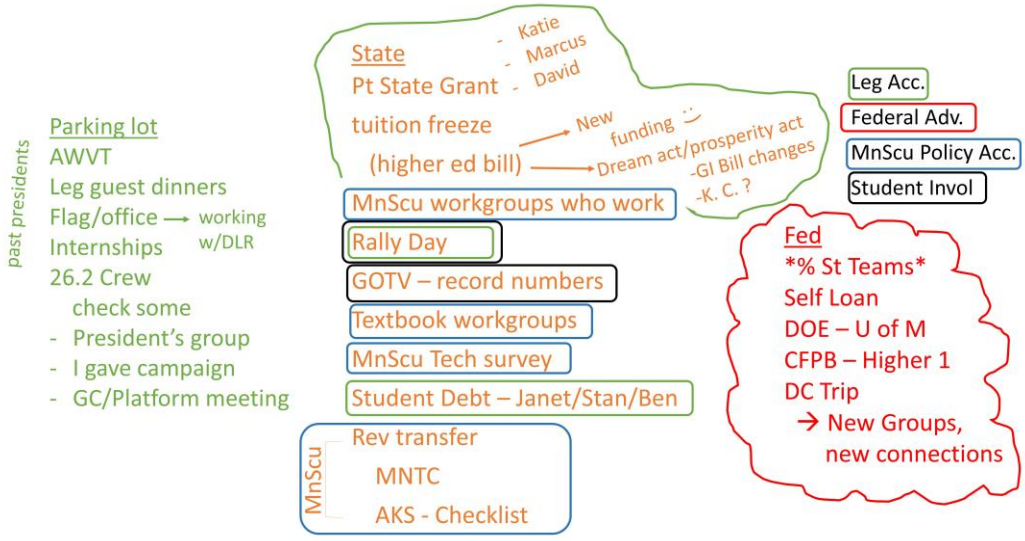

Figure 21: The rest of the items in the "State" list are categorized

After circling these items, the group begins making suggestions for deleting some items and adding other items. Sherri deletes items accordingly, and most additions are made in conjunction with or to qualify items already on the board. For example, Sherri adds the phrase "student picture – caption" to the list item "Student Debt" as a way to indicate that the item will not necessarily be discussed in paragraph text, but will be

represented by a photo and a caption instead (see Figure 22). She adds these last few items in black marker, presumably because the need to separate items out via color has passed. The only act of organization she must make now is to write additions next to the items with which they correspond, so the color of these additions does not matter.

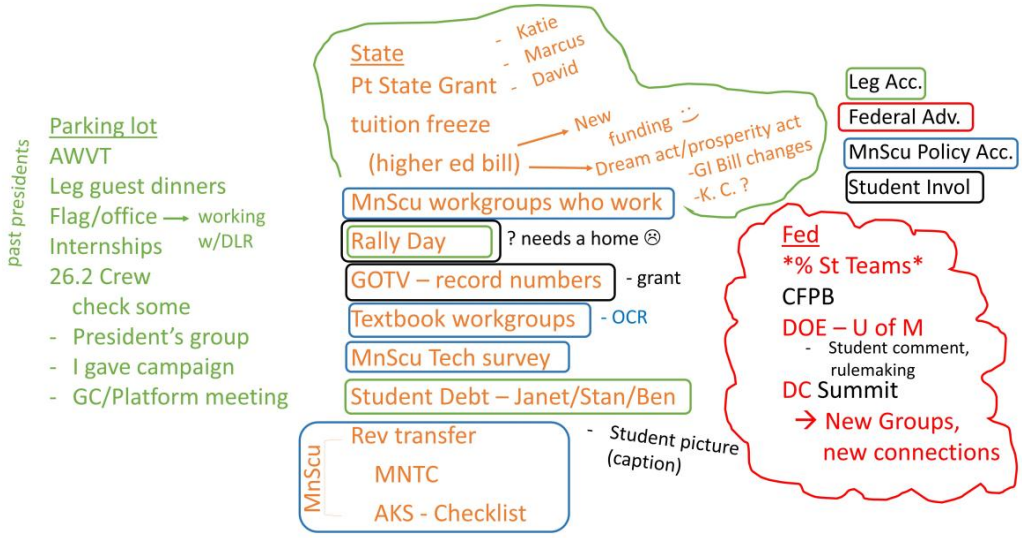

Figure 22: Whiteboard list at the end of Episode 5

This narration indicates the many ways in which the material tools Sherri used enabled her and the group to simultaneously invent and arrange as they planned their future document. The group not only planned *what* to talk about, they planned *where* to talk about it (in the document), almost from the very beginning of the brainstorming session. They were able to keep track of ideas because of their *persistent*, not *provisional* nature. Additionally, they were able to move ideas around as necessary because of the *persistent*, not permanent nature of the representations. In the next section, I will discuss permanent representations and what they allowed participants to do.

VI. PERMANENT REPRESENTATIONS

Permanent representations are representations which retain a permanent material form—they are not altered by the participants. Though there are other artifacts in the writing session that could be considered permanent representations, such as the report that Stephanie references in episode four and the email she references at the beginning of episode five, in my analysis I focused on the old annual reports as the primary permanent representations used in the writing session. The old annual reports are referenced frequently in the writing session, and they are accessed by every participant, whereas Stephanie's report and email are only referenced once apiece and only by Stephanie.

I found that the participants used the old annual reports in five major ways throughout the writing session. They used the old annual reports to read or peruse, to reference specific content, to reference the process of putting together the old annual reports, or as a stand-in for the new annual report. They also occasionally randomly touched or moved the annual reports around the table. I discuss each of these uses in this section.

A. Referencing specific content:

Participants often used the annual reports to see how specific content was discussed in previous years. I determined that participants were referencing specific content when they either pointed to or picked up and appeared to read the old annual

report before or after asking or commenting about specific content. Sometimes the reference did not come until a while after the participant read the annual report, so I had to watch longer segments of the video to deduce whether or not they were looking for something specific. For example, late in episode five, the group is trying to decide how to categorize Rally Day, and Steve picks up first one annual report, then another without saying anything. Only after the group has had some discussion does he let them know that he looked for previous categorizations of Rally Day and Advocacy Day, and he lets them know where they were categorized in the old reports.

Many of the interactions with the annual report included referencing specific content—sometimes participants are actively looking for content that they are unsure whether they should cover this year (for example, the President's Retreat [line 579] and the CFPB [line 1017]), while other times, they simply point out items they read through in previous readings. Sherri also uses an old annual report to get ideas for headings, bringing it with her to the board in order to write out category heading ideas.

B. Reading:

Participants often engaged with the report for either small or extended periods of time without giving an indication that they were looking for something in particular, especially toward the beginning of the writing session and during extend pauses in conversation. Because my participants did not use eye trackers, I cannot say with absolute certainty that every time I coded something as "reading" that my participants are actually reading the reports, but I can say it with reasonable confidence. The participants

often appear to be actively engaged in reading the reports, and later in the session their dialogue indicates familiarity with the content. Much of the reading happens early on in the writing session (in episode four), while most of the explicit references to content, which I discussed above, occur in episode five.

C. Reference to old report's process:

There is only one instance of a participant using the old annual report to comment on the process of putting the annual report together. In episode four, Julie briefly touches the old annual report while asking, "Didn't we get this out pretty late last year?" (line 626). The gesture is quick and slight, but it seemed to ground her question in the materiality of the annual report.

D. Standing in for the new report:

I have briefly written about how the old annual reports become a representation of the new reports in the Provisional Representations section. However, I will cover these encounters in more depth here. This happens three times throughout the part of the writing session that I coded. In each case, participants ask something about "this" or make a statement about "this," referencing the old annual report. However, unlike Julie's gesture to the annual report discussed above, what the participants are asking in these cases about is the *new* annual report—they are looking forward to the drafts they will write rather than backwards to what was already published. I will describe the three instances in which this happens in more detail below.

In the first instance, Sherri uses her pen to point to point vaguely toward her copy of the old annual report and ask, "In this, can we talk about our secret workgroups?" (line 176). She is pointing at the old annual report, but she is not asking about the old reports—they cannot talk about the workgroups in the old annual reports because the old reports are already written and published. She is asking whether they can include the workgroups in the new annual report.

In the second instance, Julie is explaining why she is hesitant to include too many details about recent updates to their office building in the new report. She says that she does not want readers to pick up the report and think, "…these are your accomplishments for the year, and one of the major things is continuing to put money into your building" (lines 505 – 506). When she says, "these are your accomplishments," she puts her hand on the old annual report—though the old annual report is not where the accomplishments will be reported. They will, of course, be reported in the *new* annual report, but Julie here uses the old annual report to stand in for the new one, which has not been created yet.

In the final instance, which I have also mentioned previously, Julie again uses the old annual report to project how an imagined audience might receive information in the report. She is discussing where they should put the item "tuition freeze" in the new report, and says, "I think if we even try to, like, bury language about a tuition freeze under a heading that says 'legislative accomplishments,' Parker's gonna, like, show up at our front door, and go, 'Oh, what is this?!'" (lines 657 – 662). As she says, "Oh, what is this," she dramatically picks up the report and waves it around in a pantomime of accusation from Parker (see Figure 23 below). Again, she isn't imagining that Parker will

be indignant at the *old* annual report; she is imagining his objection to the *future* annual report if they include “tuition freeze” under “legislative accomplishments.”

Figure 23: Julie uses the old annual report to "stand in" for the new one as she pantomime's Parker's reaction to the future report

These instances of using the old annual report to “stand in” for the new one indicate that Julie uses the annual report to predict potential audience reception of content, or at least she uses it to help her explain her predictions.

E. Random touching:

On occasion (three occasions, to be precise), participants mindlessly touch or move the old annual reports. I coded items this way when the interaction was brief and when participants’ attention seemed to be diverted from the reports.

These were the ways in which participants used permanent representations throughout the writing session. In the next section, I talk about the fluidity of these categories and how representations move along a spectrum.

VII. CHANGING THE DURABILITY OF REPRESENTATIONS

Though I crafted three distinct sub-categories and have discussed them separately in this chapter, I want to close by reiterating that these sub-categories lie on a *spectrum* of varying durability, and that representations may be more or less provisional, more or less persistent, and more or less permanent. Representations may also move from one level of durability to the next, or rather, the writers I observed occasionally used tools to turn a representation at a more provisional or persistent level of durability into a more permanent representation. I will use an example to illustrate what I mean.

Twice in the writing session, once at the beginning of episode five and once in episode six, Jack takes a picture of the whiteboard list using his smartphone, emails it to the printer, and prints copies for the writing group. Julie also asks him to email the picture when he takes the first one in the beginning of episode five. The printed version of the whiteboard list is markedly different from the whiteboard version of the list in several ways: it is much smaller, it is portable, and it is in black and white rather than in color. More importantly, it is a more permanent representation of the list—writers can no longer delete items from the list or move them around in the same way that they could with the whiteboard. Writers can, of course cross items off the list and use arrows to indicate the need to re-categorize an item, but the ink-on-paper material format of the list prevents true erasure of items. Writers can, however, *add* things to the picture printouts; Jack spends portions of episode five writing on his copy of the printout while the other group members discuss category headings. Because I do not have his copy of the list, I

cannot say what he wrote, but the principle still holds: writers can add, but not delete, items from this more permanent version of the list.

However, though the picture printout is *more* permanent than the whiteboard list, it is not intended to be as permanent as the old annual reports, or the new one they are writing. The old annual reports are the *most* permanent representations; they are the final, professionally printed, versions that were mailed out to constituent audiences. The picture printout, while more permanent than the whiteboard (see Figure 24), is nowhere near the level of permanence of the old, professionally printed annual reports. They are just permanent enough for the writers to carry them into the next round of composing, if they so desire, and then easily discard. In fact, when I asked Jack and Julie in the follow-up interview what happened to the picture printouts, neither of them could remember. This indicates to me that most participants probably threw the picture in the trash once they were done with it—which is exactly what the persistent (not permanent) nature of the document allows. The writers needed something that they could carry into the next round of composing, but they did not need to keep the brainstormed content list after the content was actually drafted.

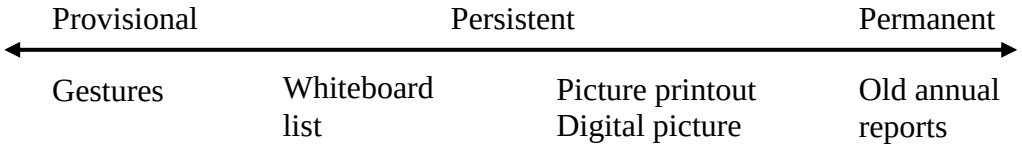

Figure 24: Diagram of spectrum of durability

In addition to the picture printouts that participants can take into the next round of composing, Jack asks Stephanie to type up items from the board to distribute as well (line 1317). I am not sure whether she typed up the entire list, or if she simply typed up the final section assignments. Regardless of which strategy she used, this was another effort at making the list, or at least parts of it, more permanent so that participants could carry it into the next round of writing.

These examples demonstrate one way in which representations can essentially move along the continuum, though of course, it is not exactly a moving along. In order for representations to move along the continuum, a new representation must be created. The whiteboard list does not, of course, *turn into* the picture printout—the picture printout is created by the camera and printer and the original whiteboard list disappears because someone erases the whiteboard. The new, slightly more permanent representations are what writers take into the drafting stage of the writing process. There are other examples of types of representations moving from more provisional to more persistent or more permanent representations in other scholarship in writing studies as well. Haas & Witte (2001) discuss the influence that one engineer's gesture had on the spec drawing of a channel easement—essentially, the provisional representation made by the engineer's gesture was made more permanent in future rounds of the spec drawing. I will further discuss the implications of representations moving along this spectrum of durability in the next chapter.

VIII. SUMMARY

In this chapter, I have discussed my findings related to my core category of *representations of durable variability*. I found three primary types of representations created by the tools, artifacts, and gestures in the writing session, and I also found that representations moved along the spectrum through the application of various tools. In the next chapter, I discuss several implications of these findings.

CHAPTER SEVEN:

DISCUSSION & IMPLICATIONS

For this dissertation, I conducted an empirical study to investigate the question, "How is writing distributed across tools, artifacts, and bodies for writers collaboratively planning a written document?" I found that writers in my study distributed writing across many tools, artifacts and bodies to create representations which were situated on and moved across a spectrum of durability. The findings from my study are integrated into a provisional grounded theory of distributed writing, which I will discuss in this chapter. This provisional theory includes three primary points thus far. I will discuss these points and their related implications in this chapter, and will describe future research that will continue building this grounded theory. Finally, I will discuss my perspective on the relationship(s) between distributed cognition and distributed writing.

I. A SUBSTANTIVE GROUNDED THEORY OF DISTRIBUTED WRITING

Developing grounded theory is a long, rigorous process requiring much data and extensive analysis (Glaser & Strauss, 1967). Glaser & Strauss (1967) discuss the difference between developing what they call *substantive* grounded theories and *formal* grounded theories. Formal theories they nickname "grand" theories for their all-encompassing coverage of a conceptual social phenomenon. Formal theories can indeed be developed through the grounded theory method, but first arise substantive theories—grounded theories which begin to account for a *particular*, empirically observed phenomenon, but are not all-encompassing in the ways that formal theories are. My

grounded theory is substantive because I have just begun to examine the phenomenon of distributed writing through one particular context: a face-to-face group of writers collaboratively planning a written document. At the end of this section, I will discuss future plans for expanding this provisional theory—essentially, a plan for expanding it into a formal theory of distributed writing. First, however, I will discuss the primary components of the theory as it currently stands.

The primary claim of my theory is the one I stated above, based upon the findings of my study: writing is distributed across tools, artifacts, and bodies in order to create representations that move along a spectrum of varying durability. Often, and as was the case for the writers in my study, writers' end goals are to create permanent representations of some kind. For the MCCA writers, their end goal was to publish an annual report which would represent the years' activities to various audiences; this representation would be permanent, with material and digital forms that are not easily alterable. The goal of the collaborative planning session, however, was to create a *persistent* representation—one that has material and digital forms but that is designed to be moved further along the spectrum in future rounds of composing until the permanent representation is finalized.

Three primary (and related) tenets of my provisional grounded theory of distributed writing are this:

Writers' representations often move through various stages of durability, from provisional to permanent, with the end goal (often) being a finalized permanent representation.

These representations move through these various stages through the applications of bodies, tools, and artifacts, especially applications of and integrations of digital and non-digital tools.

When creating representations, even from the very beginning of planning stages, writers must often contend with invention and arrangement simultaneously.

I will discuss the first two tenets (and their implications) together, and then discuss the third tenet (and its implications).

A. Moving along the Spectrum of Representations

In this section, I will describe some of the ways in which writers in my study moved representations across the spectrum of durability. I have already described part of this phenomenon in some detail in chapter six, but I will reiterate it here in order to describe how representations move across the spectrum at two different levels—the macro level and the micro level. I will describe how the whiteboard list as a whole moved across the spectrum, on the macro level, and then how items *on* the whiteboard list moved across the spectrum, on the micro level. By describing these macro and micro transformations, I will also highlight the functions of two things in this process: tools and embodied senses of texts.

Macro Movement of Representations: Application and Integration of Digital and Non-Digital Tools

The whiteboard list moved through the spectrum of durability via the application of tools. Though my participants mainly used non-digital tools to compose their list of content topics, primarily the whiteboard and whiteboard markers, to compose their list, they seamlessly incorporated digital tools to move the list through the spectrum of durability: a smartphone, a wireless internet connection (including, presumably, an internet modem and a wireless router), and a printer. They do so in order to capitalize on each tool's affordances (Gibson 1979; Norman, 1988) to create representations that they can use in slightly different ways. To further examine how the MCCA writers integrated digital and non-digital tools to this effect, I will briefly narrate a few moments from the writing session.

Twice in the planning session, Jack uses his smartphone to take a picture of the whiteboard. Then, he sends the digital picture to the wireless printer and prints black and white copies of the picture, rendering a version of the list that the participants can take into drafting sessions. Julie also asks him to email the digital file of the photo to everyone, and she later asks Stephanie to type a version of the list as well. Though the group is impressed with Jack's use of the printing technology (in lines 696 & 698, Stephanie remarks, "Right from your phone? The best."), indicating that this may be the first time he has done this, he integrates these tools quickly, easily, and seamlessly (see Figure 25, below).

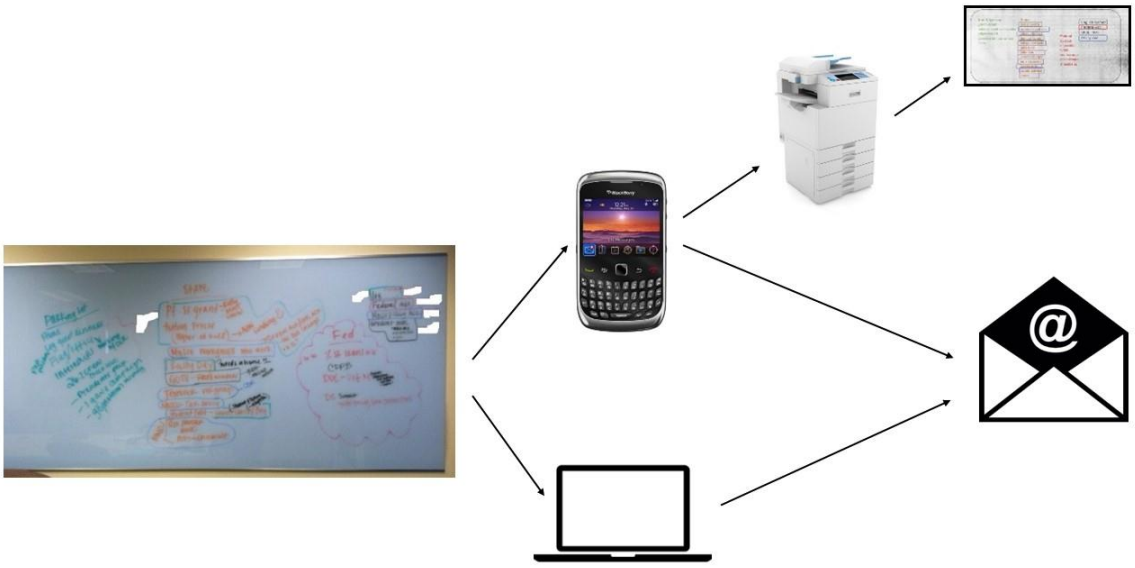

Figure 25: Jack takes a picture of the whiteboard and emails and prints the picture

This integration of digital and non-digital tools enables the writers to capitalize on each of the tools' unique affordances. The whiteboard is large, easily visible to the entire group, and it enables them to work with space both vertically and laterally (as discussed in the previous section). The digital picture, the black and white photocopies, and Stephanie's typed version of the list are much more portable than the whiteboard version of the list—writers are able to take these new versions into the next round of composing for reference as they draft their sections of the report.

This printed list is easy to distribute and easy to take into the next round of composing, but it is also, for lack of a better way to put it, easy to lose. Paper files are easy to misplace in stacks of other documents. This may be why Julie asks Jack to email a copy of the list to the group—the digital file will be easy to access from multiple

devices (phones, work computers, home laptops, etc.), and will, perhaps, be easier to keep track of. Even if the email gets buried in individual inboxes, some email applications are searchable, making the emailed list easy to find among other emails.

A typed version of this list offers other affordances that the digital picture and the black and white photocopy do not have. The typed list would be searchable; it would be editable; it would also, presumably, include the re-organized, sub-divided "State" list, rather than the original version, complete with colorful circles. Attempting to recreate the State list with the colored circles would be possible in a word processor, but it would be much more cumbersome than simply typing out a reorganized version of the list.

Another affordance of all of these versions of the list—the whiteboard list, the digital picture, the black and white photocopy, and the typed list—is their persistent nature. None of these versions of the list are *permanent* representations; some versions are slightly more persistent than others, but none of them are intended to stick around for very long. All of these versions are easy to discard once the writers have drafted their respective sections. In fact, when I asked Jack and Julie in a follow-up interview about what happened to the black and white photocopies of the list after the initial planning session, neither of them could remember, likely because they discarded the list once they were finished drafting, or at least once the final version of the annual report was printed and mailed to constituents.

The integration of digital and non-digital tools has important implications for both workplace writers and students. Workplace writers can learn from this example and examine their own practices to look for this kind of seamless integration and to adopt it

wherever they see that opportunity. Technical & professional writing teachers can prepare students for this kind of writing both by asking students to examine their current practices and to practice integrating digital and non-digital tools via innovative course assignments.

This integration also has implications for developers of writing technologies. The group incorporated digital and non-digital tools seamlessly to take advantage of their respective affordances. Developers of writing technologies could work to develop new tools that combine some of these affordances. One possibility would be a smartphone app which could take images of handwritten text, and then make it editable, searchable, shareable, and easily storable and accessible via the cloud. Regardless of the particular possibilities regarding future technologies, a major implication of this study is that writing researchers can assist software developers by lending their expertise in writing practices and providing suggestions regarding what would prove most useful and helpful to writers. Alternately, scholars can reach out to colleagues across their institutions to form interdisciplinary software development teams.

Micro Movement of Representations: Tracing Embodied Senses of Text across the Durability Spectrum

Not only did the document that the writers created (the content topic list) move across the durability spectrum at a macro level, individual items *on* that list moved across the durability spectrum at a *micro* level. To demonstrate this, I will discuss two examples from these writers, and trace particular ideas as they move across representations and are

reflected in gestures about texts. As I discuss these examples, I will demonstrate how these representations begin with embodied senses of text that eventually are reflected in the final version of the text; these embodied senses of text both shape and are shaped by the project at hand.

In the first example, Sherri has written on the whiteboard the words “Dream Act” to represent a piece of legislation that the group pushed for that year that was passed and that they wanted to write about. Jack suggests that, because the title “dream act” could be a bit unclear to different constituents, that whoever writes that up “put at least a sentence in there” about what it entails. As he proposes this, he uses several gestures to indicate small sections of text—pinching gestures representing sentences and bracket gestures representing sections of text (see Figure 26, for example). He actually uses these

Figure 26: Jack's "section of text" bracket gesture

gestures throughout the session whenever he wants to emphasize that a particular discussion should be limited to a small section of text. There is a bit more debate, and Sherri adds the phrase “prosperity act” to “dream act” to indicate confusion in the bill title. In the final product, there is indeed a single sentence detailing the legislation within the section on “legislative advocacy,” but neither “dream act” nor “prosperity act” appear in the section at all.

This is not the only time Jack makes these types of gestures. In other instances when he wants to emphasize limiting the scope of a topic, he makes these bracket or pinching types of gestures to demonstrate that smaller scope.

So these gestures signifying small sections of text shape the project, as evidenced by the single sentence description of this legislation. But the gestures are also shaped by the project. Jack makes the gesture because he is concerned about how the content will be manifested in this project, and this gesture reflects what he envisions that content will look like.

In another example, Julie uses both gesture *and* the old annual report to represent the text they are composing. Specifically, she uses the old annual report to "stand in" for the new one, and it helps her demonstrate how she imagines a constituent audience member receiving a particular content item presented in a particular way.

Figure 27: Julie's pantomime gesture

The group is discussing which section to put the item "tuition freeze" under. Stan is reading the previous year's annual report to see how other items were categorized in the past, and Sherri is using the same annual report to write out potential section heading titles on the board. In this previous report, Stan mentions that the heading about legislation is, "Legislative accomplishments," and says, "I don't know if we want to chalk the tuition freeze up to an accomplishment." Julie agrees, saying, "Yeah. I think if we even try to bury language about a tuition freeze under a heading that says, 'legislative accomplishments,' Parker's gonna, like, show up at our front door and say, 'Oh, what is this?!'" (lines 590 – 595). She pantomimes Parker's objection, waving around the previous annual report in accusation (see Figure 27 above). She is not, of course, suggesting that Parker would object to the previous year's annual report. She is saying he would object to the characterization of a tuition freeze as a legislative accomplishment in the *future* annual report. She uses the old annual report to kind of give the future report a temporary material form. This representation, then, is both material and embodied. It uses

both the provisional representation of the gesture and the permanent representation of the annual report in a single representative moment.

In the final version of the annual report, the tuition freeze is reported under a section titled, "State Legislative Advocacy"—not "accomplishments." This gesture with the annual report seems to have helped the group model their audience in such a way as to affect the framing of their content.

This finding about how these writers used gesture to represent texts and segments of texts indicates that embodied representations of texts may be important across the entire writing process. The idea of embodied representation and embodied senses of texts is not new in writing studies. Haas (1996) found that writers who were *revising* documents had trouble getting what she called a "sense of the text" via computer screens, so they printed out their texts in order to get a better sense of the document and to revise their texts.

My findings indicate that a "sense of the text" may be present even in the very beginnings of planning. Whether and how these representations may change across different phases of writing practices—drafting, revision, etc—will be the subject of future research, as I will further discuss below.

Additionally, these embodied representations may be one of the things that may change when writers are working across distance. As excellent as tools like Google Hangouts are, they do not yet afford the sharing of material artifacts and spaces, and webcam lenses are not always wide enough to capture gestural spaces, so writers may

miss out on each other's embodied representations of texts. This is also something that I hope to examine in future research.

II. THE SIMULTANEOUS NATURE OF INVENTION AND ARRANGEMENT

Another important tenet of my grounded theory of distributed writing is that when writers are using tools to inscribe written text, they must always contend with both invention and arrangement. My study was designed from the outset to focus on planning, or, in rhetorical parlance, invention, but my findings indicate that planning involves more than just invention—it also involves arrangement, primarily because of the material nature of writing tools.

Rhetorical scholars, as well as scholars of writing processes (see, e.g., Horner, 2000; Rohan, 2004; & Flower & Hayes, 1981), have long argued that the boundaries between the canons of rhetoric or between the stages of the writing process are permeable, and that they do not always proceed in strict sequential order in a given writing project. Rather, writing practices and rhetorical canons are iterative, recursive, and downright messy. However, my findings point to just how tightly bound together are the first two rhetorical canons, invention and arrangement.

From the very moment (~9:36) Sherri writes the first line of text on the whiteboard, the group is both simultaneously inventing and arranging. Sherri is, from the very beginning, creating implicit arrangements and categories via the use of space. After some time, the implicit arrangements eventually become explicit. To demonstrate how

Sherri must contend with both invention and arrangement from the very first line she writes, I will narrate how she constructs the initial content brainstorm on the whiteboard.

In episode four, the group brainstorms content topics which Sherri eventually divides into three categories: State [Advocacy], Federal [Advocacy], and "Parking Lot," or non-advocacy items (see Figure 28, below). However, she does not begin with these categories in mind. In fact, the group decides to begin brainstorming without referencing categories used in previous years' annual reports. Instead, they decide to begin by listing things that had happened that year, with no categories to guide them. And so, when Julie begins the brainstorm by suggesting a topic, "the victory in the state grant" (line 149), Sherri writes it on the board without a heading or assigned category.

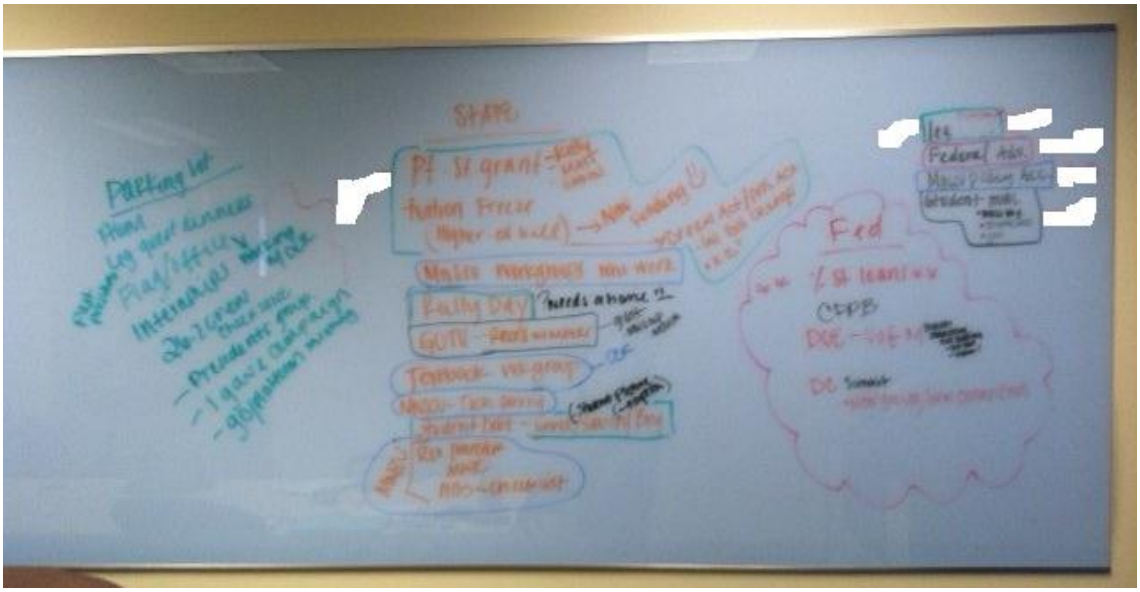

Figure 28: The whiteboard list

As the group's scribe, Sherri must decide where on the board to write the first suggestion. She chooses a spot in the middle of the board, high enough to leave room for

plenty of list items below the first, but not so high that she must stand on tiptoe to write. Whether intentionally or not, Sherri has chosen a spot on the whiteboard that leaves open various possibilities of arranging ideas on the whiteboard. When she adds a second list item, "tuition freeze," directly underneath the first item, she creates an implicit grouping of these items, the nature of which becomes explicit only after the list has several more items in it. After there are a few items on this list, Stan suggests an item: "What about the Stafford interest loan bill signing?" (line 286). Stephanie says, "That's in here already," (line 287), to which Julie replies, "But it was part of our federal agenda… if we wanted to talk about our federal agenda, we could include it" (lines 290 - 292). In response to this suggestion, Sherri labels the list she has been working on with the title "State," the implicit category with which the group had been working, and moves to the right to begin a list titled "Federal" (lines 319, data unit 328B).

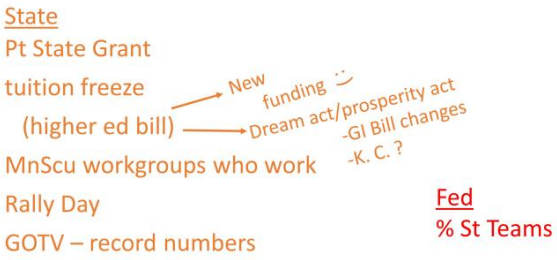

Figure 29: Sherri begins the second list

Even though it's not until 17:30 that Sherri labels the first list and begins creating a second list, she has been working under that implicit category from the moment she wrote the first item on the whiteboard. The group works with these two lists for a while, until Julie identifies a third possible category, and Sherri moves to another new space on the whiteboard to begin writing this third list, "Parking Lot," or non-advocacy items, again in a new color. These subtle topic divisions all occur before the group even begins considering category headings for the final report—ostensibly where arrangement would begin (see Figure 30, below).

Figure 30: The three lists: "Parking lot," "State," and "Fed"

One important factor in how Sherri writes these three lists is her use of vertical and horizontal space. Each time she begins a list, she begins by writing an item relatively high up on the whiteboard and proceeding to add items (mostly) underneath the initial item. Occasionally, as the group adds content topics that are related to items already on the board, Sherri makes notes out to the left or right of those items. But for the most part,

each list is written in a top-down fashion, primarily using vertical space. When Sherri needs to begin a new list, rather than starting the list *under* already established lists and encroaching on that list's vertical space, she moves laterally, either to the left or the right, to begin writing.

This use of both vertical and horizontal space enables the group to move quickly and easily from one list to the next as needed, and it is an affordance (Gibson, 1979; Norman, 1988) of the whiteboard technology. It is this use of space which is key to understanding the simultaneous nature of invention and arrangement that is evident in this study. As Olson (1994) noted, writing "puts the world on paper"—or, in this case, on a whiteboard—and Olive & Passerault (2012) assert that writing leaves a *visuospatial trace* across a surface. Every time the writers in my study suggested a content topic, Sherri had to decide where to leave that visuospatial trace. In rhetorical terms, every time the group invented, they also had to arrange.

Use of space, and thus, the simultaneous nature of invention and arrangement, is made especially salient in this writing session because of the nature of this particular space. The whiteboard is large, it is shared and visible by all participants, and the group uses almost all of it in their brainstorming. Because the space on which they write is so big, and because Sherri must move her entire body (not to mention an office chair at one point) to use the whole space, this group's use of space becomes noticeable. However, space is something all writers must contend with, whether they are composing on a whiteboard, on a tablet screen, with a desktop word processor, or with pen and paper.

How writers in other contexts contend with space, and thus with invention and arrangement, is something I look forward to investigating in future research.

The simultaneous nature of invention and arrangement has implications for both workplace and student writers. Many writers, both in the workplace and in the classroom, know the pain of sitting down to a blank computer screen, only to have it remain frustratingly blank or relatively bare. These writers may be restricted by the affordances and limitations of word processing software. The writers in my study used both vertical and lateral space simultaneously in their planning—something word processing does not afford. Writers finding themselves blocked in early planning phases may find it beneficial to use other tools that better enable both vertical and lateral inscription, such as a whiteboard or other large writing surface. In the workplace, this may mean that writers and/or their workplaces should invest in individual or communal whiteboards or large pads of paper and easels to have on hand for early planning endeavors. Student writers should also be encouraged to experiment with writing tools that afford vertical and lateral movement. Students, however, may not have access to such tools in their personal writing spaces, but community learning centers and common areas may be able to provide some of these tools. As one example, the University of Minnesota has at least two library spaces where students can use small whiteboards.

Tools to help writers focus on simultaneous invention and arrangement can also be digital. Using digital tools will, of course, change the composing experience and should be further studied, but digital tools that afford both horizontal and vertical arrangement may aid writers in planning like the whiteboard did in my study. Free online

tools like Prezi and Padlet may be especially helpful for student writers who may not have access to learning commons-style spaces (see Figures 31 & 32 below).

Figure 31: A middle-school class uses Padlet to brainstorm; see Thompson (2013)

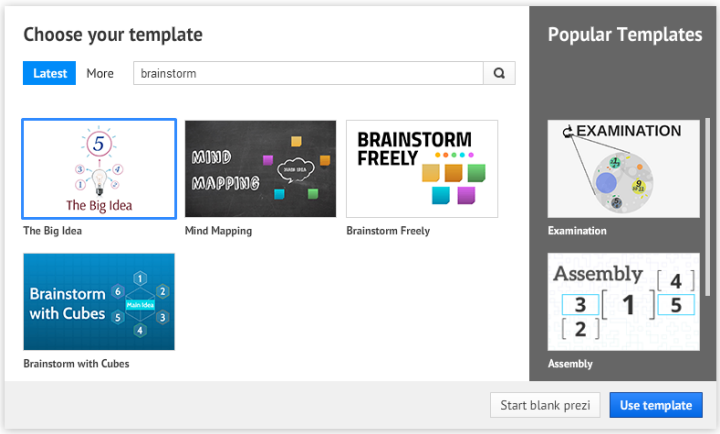

Figure 32: Prezi offers brainstorming templates for users, but a blank Prezi template can also be used as a digital brainstorming space

Before moving to the next major implication of my study, I would like to say a few words about concept mapping. Concept mapping has been identified by writing process scholars as a tool to help writers brainstorm (e.g., Ojima, 2006). Concept mapping uses both vertical and lateral space and illustrates relationships among content visually. However, the writers in my session did not create a concept map; instead, they created lists that *also* used space to visually indicate relationships among content. Space is important in both of these planning strategies, but they are different.

III. FUTURE RESEARCH

As I stated earlier, the grounded theory I have been discussing is what Glaser & Strauss (1967) call a *substantive* grounded theory. What makes it substantive is that this theory is so far grounded in a particular situated, empirical context of distributed writing: face-to-face collaborative planning. To begin working toward a more formal grounded theory, I will need to collect and analyze data from other contexts of distributed writing. I will do this through what Glaser and Strauss call *theoretical sampling*. In theoretical sampling, a researcher decides what data to collect next based upon findings from previous rounds of analysis. Glaser and Strauss suggest that researchers consider both *scope* and *conceptual level* of a grounded theory when considering next steps in theoretical sampling. They propose that as the researcher seeks to expand the scope of the population(s) which she examines, she is also able to expand the conceptual level of the theory and develop it into a formal grounded theory.

In my case, there are several possible avenues for future exploration. I tend to think of these avenues in terms of breadth and depth. I can potentially expand my theory more deeply by sampling from another face-to-face collaborative planning group and compare it with the data I have already collected. However, I would prefer to expand the breadth of my theory by sampling from two different writing contexts: writers in varying collaborative or non-collaborative contexts and writers at varying stages of writing processes. Initially, my plan is to sample from writers in varying collaborative and non-collaborative contexts who are planning written documents. In this way, my grounded theory will gain comparisons across different writing contexts, but will remain focused on planning. Another avenue for expansion, however, is to look at writers working across several stages of writing processes (e.g., planning, drafting, and revising) and compare across those groups. I plan to explore both of these avenues in future research.

IV. DISTRIBUTED COGNITION VS. DISTRIBUTED WRITING & COGNITIVE IMPLICATIONS OF MY STUDY

To close, I want to say a few words about the relationships between distributed cognition and distributed writing. In chapter one, I asserted that, rather than studying distributed cognition directly, my study borrowed terminology from theories of distributed cognition and compared distributed cognition to distributed writing. This approach enabled me to reveal hidden assumptions about distributed writing which conflated it with distanced writing. It enabled me to make claims about distributed writing itself, and thus to focus this dissertation strictly on *writing*.

However, I also think my empirical study has some things to say about distributed cognition. I think my study demonstrates the importance of the *task environment* and *transcribing technologies* as Hayes (2012) calls them, in relation to the cognitive resources and processes used in writing. Before I discuss this importance in depth, though, I want to assert a final claim about the relationship between distributed cognition and distributed writing. Not only is distributed writing *similar* to distributed cognition, in that, like I argued in chapter one, both are distributed across tools, artifacts, and bodies, but I would also argue that writing itself is also a distributed cognitive process, in part because it is distributed across tools artifacts and bodies, and in part because it does require cognition. They are not one and the same, of course; other types of processes, like naval navigation (Hutchins, 1995), also are also distributed cognitive processes, but I assert that distributed writing is also a distributed cognitive process.

A recent cognitive model of writing processes is found in Hayes (2012). In this paper, Hayes updates the model he co-created with Flower (Hayes & Flower, 1980) to include more detail about the environment, about cognitive control, and about cognitive resources. This updated model includes more details about the *task environment*, including the addition of transcribing technology, task materials and written plans, and collaborators and critics—essentially this new model includes tools, artifacts, and bodies, respectively. However, though this model indicates relationships within levels of the writing model (the control level and the process level in particular), it does not illustrate relationships *across* levels. It does not include, for example, what effect transcribing

technologies (tools), task materials (artifacts), or collaborators (bodies) have on the cognitive resources of attention or working memory.

Because my study is not a controlled experiment of cognitive processes, I cannot say for certain what effects tools, artifacts, and bodies have on cognitive resources. However, I can propose hypotheses that may be worthy avenues for future research based upon the findings of my study and related literature in cognitive science.

First, both tools and artifacts may have a significant impact on working and long-term memory. Though I wrote previously about how the material space of the whiteboard meant that the writers had to constantly contend with both invention and arrangement, in another sense, the whiteboard list is also, crucially, an aid to memory. A primary goal of their annual report is to represent events from the previous year to various audiences; in order to represent these events, they must first remember them. Essentially, their task is to remember significant events from the year before and mark them down so that whoever drafts each section of the report can access these memories easily. It is a process of externalizing memory through writing, a concept recently discussed by Angeli (2015) in relation to emergency medical services (EMS) personnel's written reports. For the MCCA writers, the whiteboard and whiteboard markers enable the group to externalize each event as it is brought up in a manner so that the entire group can see it. Each line of text serves as an external representation of an event that occurred over the group's past scholastic year, potentially offloading the number of things the group, and later, the individual writer, must juggle in working memory.

In addition to memory aids, some of the representations in my study may serve as what have been called *projections* (Kirsh, 2009). Projection is a cognitive phenomenon wherein people use objects in their environment to help themselves imagine something that is not in their environment. Kirsch gives an example of a chess player looking at a chessboard to plan out her next move. The player could close her eyes to imagine her next move, but she uses the chess board—a part of her environment—to imagine the move instead. She *projects* the future move onto the chessboard.

This phenomenon may be present in my study as well. In the last chapter and in this one, I wrote about the several instances in which group members use the old annual reports to "stand in" for the new one. Julie in particular uses the annual reports as a representation when she is discussing the potential audience reception of this years' annual report, such as when she is imagining Parker's response to the "tuition freeze" being characterized as a "legislative accomplishment" (lines 590 - 595; see Figure 3 above). In this instance (and in others) Julie gestures with the *existing* annual report but is referencing the *new* annual report in her speech. The existing annual report may be helping her to *project* the new annual report—to imagine it in its final version and thus to imagine its reception by a potential audience.

A similar phenomenon may also be occurring when participants gesture "to" objects and documents that either do not yet exist or are not present in the room, such as when Julie gestures "to" the absent photo or when Stan gestures "to" the title of Dream/Prosperity Act, as discussed I in chapter six in the section on representative

deictics. Gesture, in these cases, may be helping these writers project these documents into the room, giving them an embodied, if not material, presence.

These observations about memory and projection are as yet only hypotheses that could be explored more thoroughly in future studies about writing and cognition. Studies of memory and writing could perhaps help scholars better understand the interactions among memory, invention, and arrangement. A more thorough study of projection in relationship to writing, or gesture and writing specifically, could perhaps help writing researchers better understand some of the ways gestures and artifacts impact writers' cognitive processes.

V. CONCLUSION/SUMMARY

In this chapter, I have presented my integrated, substantive grounded theory of distributed writing, and I have discussed several implications of this theory and my empirical findings. In short, my substantive theory of distributed writing as it currently stands rests primarily on the main finding of this study—that the writers in my study distributed writing practices across tools, artifacts, and bodies in order to move representations of their ideas across a spectrum of durability. I suspect that this claim, though generated from a particular data set, applies to writers in general—in other contexts and at other phases of the writing process as well. As I continue this research, this claim will be a primary focus in developing a more formal grounded theory of distributed writing.

As it currently stands, my substantive theory of grounded writing has far-reaching implications. As I have argued in this chapter, the study has implications for theories of writing generally, and in particular for theories in a few sub-domains of and domains related to writing studies: rhetorical theories of invention, theories of professional writing, theories of writing and technology, theories of writing and cognition, and theories of writing pedagogy, both as it applies to composition pedagogies and professional and technical writing pedagogies. The study has implications for praxis as well—praxis in the workplace and in the writing classroom. I hope that, as the theory develops, I can continue to contribute to these areas of research and praxis.

This study has led to many insights about distributed writing and has begun what I project will be a long trajectory of research on distributed writing. Though the next step(s) that I take in this project will of course be constrained in certain ways by my next institution, I anticipate being able to continue field research in order to further develop my grounded theory of distributed writing. As I mentioned in this chapter, it is my goal to broaden the theory by seeking to study writers in new contexts and other stages of the writing process. Given unlimited time and resources, I would like to recruit several sets of writers: a group that works primarily face-to-face, a group that works primarily across distance, a group that often uses both face-to-face and distanced writing, and a few writers who work primarily on their own. I would like to collect data from each of these groups for multiple projects from the very beginning of each project, taking a somewhat ethnographic approach. Though this may generate an overabundance of data, it would give me the ability to compare data points in a number of ways. I could compare both

across and within groups for each project; I could compare across groups, looking at each stage of the writing process, or I could compare within a particular group across these stages. I would need, of course, to proceed as systematically as possible, making sure each next step arises from the previous data's analyses. This much data could be collected and analyzed over a number of years and developed into a cohesive, formal theory with strong implications for all of the previously mentioned areas of research and praxis. My long-term goal is to detail this theory extensively in a book published by an academic press.

To conclude, this dissertation presents just the beginning of a much longer project on distributed writing. I see this work as continuing to grow and contribute to the fields of rhetoric, composition, and technical and professional writing. I look forward to sharing this research with scholars, practitioners, and students in the years to come.

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[i] I say that writing implements are *often* operated by hand to account for the many technologies designed to accommodate writers with disabilities, such as voice-to-text programs.

[ii] Except, of course, in circumstances wherein writers with certain disabilities use technologies to compose.