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**UNIVERSITY OF CALIFORNIA,
IRVINE**

Narrative Assembly: Technological Framing, Storytelling, and the Situating of
“Data Analytics” in Organizational Life

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Information & Computer Sciences

by

Christine Therese Wolf

Dissertation Committee:

Professor J. Paul Dourish, Chair

Professor Gillian R. Hayes

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2017

DEDICATION

to –

my first audience,
my favorite co-conspirator,
my sister.
i treasure our entwined plots.

scientists in their laboratories are not mere technicians:
they are also children, confronting natural phenomena
that impress upon them like fairytales.
-dr. marie curie

TABLE OF CONTENTS

ACKNOWLEDGMENTS.....	v
CURRICULUM VITAE	vi
ABSTRACT OF THE DISSERTATION	vii
Chapter One – Introduction	1
1.1 AI and Its Hype: An Opening Point of Departure	1
1.2 Encountering Technologies at Work – The Technological Frames Lens	6
1.2.1 <i>The Gap – Structural Dimensions of Technological Framing</i>	7
1.2.2 <i>Narrative Making – Three Vantage Points and Three Sub-Research Questions</i>	10
1.3 Narrative Arrangement - In what ways can people attempt to influence technological narrative making?	11
1.4 Narrative Content - In what ways can norms and values shape technological narrative making?	13
1.5 Narrative Audience - In what ways can technological narratives be “taken up” and assessed?	15
1.6 Recapitulation and Plan for the Dissertation	18
Chapter Two – Case, Site, Methods, and Data Analysis	20
2.1 Empirical Focus – The Case of Data Analytics	20
2.2 Field Site and Approach	22
2.3 Data Collection	22
2.3.1 <i>Generating Ethnographic Data</i>	23
2.3.2 <i>Contextualizing Key Products and Initiatives – A Brief Glossary</i>	27
2.4 Inductive Data Analysis – The Emergence of “Contrasting”	28
2.5 Summary	31
Chapter Three – Problems That Resonate: Technological Narratives Across Organizational Scales.....	32
3.1 Chapter Overview.....	32
3.2 The “Use Case” – An Opening Point of Departure	32
3.3 An Abstract and Ordinary Resonance – Arranging Believable “Broken” States.....	35
3.4 Crafting a Multi-Scalar Resonance – Aligning Micro with Meso Narratives	38
3.5 A ‘Cutting Edge’ Point of View – Having a Hand in Shaping Meso Narratives.....	41
3.5.1 <i>Try, Try Again – The “Garbage Can” Quality of Technological Framing</i>	42
3.6 Concluding Remarks – Technological Framing as Strategic, Yet Improvised.....	44
Chapter Four – Plotting Strategic Associations: Putting Together Narratives of Do-ability and Success	47
4.1 Chapter Overview.....	47
4.2 Introduction – Narrative Plotting as a “Mode of Association”	48
4.3 Cause/Effect – Plotting to Problem-Solve	49
4.4 Similarity – Plotting to Bring Together	54
4.4.1 <i>Plotting to Anticipate – Using Consumer Designs as Sources of Inspiration</i>	54
4.4.2 <i>Plotting to Share – The Case of “Dogfooding”</i>	56
4.5 Distinction and Complexity – Plotting Difference.....	58
4.5.1 <i>Plotting to Valorize – Establishing “Our Brand” of Agile</i>	58
4.5.2 <i>Plotting to Complicate – Highlighting the Demands of Enterprise Design</i>	60
4.6 Concluding Remarks – Technological Framing as Dynamic and Diverse.....	62

Chapter Five – Goals That Unify: Narrative Vision And The Power of Imagined Endings	64
5.1 Chapter Overview	64
5.2 Our Imagined Organizational Life – Opening Points of Departure	66
5.3 Building a Unified Goal – The Goal of “Increased Productivity”	68
5.4 One Goal Among Many – Moral Consistency and the Organizing Logic of Service	78
5.5 What Are We Working Towards, Here? – Recognizing Multiplicity in Imagined Goals	83
5.6 Concluding Remarks – Technological Framing as Morally Charged and Multiple	85
Chapter Six – Inhabiting the Plot: Appreciating and Adjusting the Narrative ..	87
6.1 Chapter Overview	87
6.2 Introduction – An Opening Point of Departure	88
6.3 Signaling Expectations in Narratives of Organizational Change	90
6.3.1 <i>Expectations and Technology Use – Interface as Strategic Encounter</i>	90
6.3.2 <i>Expectations and Comportment – Agile and Cultivating an Attitude of Change</i>	92
6.4 Signaling Recognition of One’s Role – Taking Up Narratives of Change	94
6.5 “Somewhere in Between” – Flexibility, Friction, and the Adjusting of the Narrative	97
6.5.1 <i>“Somewhere in Between” as a Source of Flexibility</i>	98
6.5.2 <i>“Somewhere in Between” as a Source of Friction</i>	99
6.6 Concluding Remarks – Technological Framing as “Somewhere in Between”	102
Chapter 7 – Discussion and Conclusions: Towards Technological Framing as “Narrative Assembly”	104
7.1 Shorthand Heroics – Elliptical Stories and Assembling a Rally of Success	104
7.2 Recapitulation of the Dissertation’s Findings	107
7.3 Articulating A Novel Lens for Technological Framing – Narrative Assembly	112
7.4 “Strategic, Yet Improvised” – An Expanded View of “Influence” in Technological Framing ..	113
7.5 What Are We Assembling? – Technological Framing and Broader Cultural Life	116
7.6 Beyond Congruency and Consistency – Perceived Coherence in Technological Framing ..	118
7.7 Conclusion	121
Bibliography	122

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Wolf, C.T. (2016). DIY Videos on YouTube: Identity and Possibility in the Age of Algorithms. *First Monday* 21(6).

Ringland, K.E., **Wolf, C.T.**, Faucett, H., Dombrowski, L. & Hayes, G.R. (2016). 'Will I always not be social?': Re-Conceptualizing Sociality in the Context of a Minecraft Community for Autism. In *Proceedings of CHI '16*. San Jose, CA.

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Ringland, K.E., **Wolf, C.T.**, Dombrowski, L. & Hayes, G.R. (2015). Making "Safe": Community-Centered Practices in a Virtual World Dedicated to Children with Autism. In *Proceedings of CSCW '15*. Vancouver, BC.

Wolf, C.T. & Veinot, T.C. (2015). Struggling for Space and Finding My Place: An Interactionist Perspective on Everyday Use of Biomedical Information. *Journal of the American Society for Information Science & Technology* 66: 282-96.

ABSTRACT OF THE DISSERTATION

Narrative Assembly: Technological Framing, Storytelling, and the Situating of “Data Analytics”
in Organizational Life

By

Christine Therese Wolf

Doctor of Philosophy in Information & Computer Sciences

University of California, Irvine, 2017

Professor J. Paul Dourish, Chair

I introduce *narrative assembly* as a novel conceptual lens to understand the nature of technological meaning making in organizations. This lens extends prior knowledge on *technological framing* in three ways. First, it offers insight into how narrative making both draws on and seeks to intervene in existing organizational and cultural meaning systems, conceptualizing influence in technological framing as strategic, yet improvised. Second, it demonstrates the dialogue between broader cultural and industrial discourses and everyday practices within an organization, challenging previous views of technological framing as bounded organizationally or by specific platforms. Third, it provides conceptual language to understand the repercussions of technological framing practices on workplace subjectivity, going beyond previous literature that focuses on formal roles and occupations and instead articulating “narrator,” “narrated,” and “audience” as dynamic positions emergent in unfolding technological encounters.

I draw on an ethnographic study of a high-tech firm in the process of an organizational change campaign to include data analytics capabilities in their products. In conceptualizing technological framing as narrative making, I examine a number of ways that the emergent technical capabilities known as “data analytics” came to be understood and situated within the firm’s organizational life. In doing so, my empirical analysis articulates narrative assembly as a lens that captures how

technological framing is strategic, yet improvised, relates to broader socio-cultural life, and reveals the contingency of social relations. I discuss how this lens extends prior knowledge and its implications for future studies of technological framing.

KEYWORDS: technological frames; narrative; workplace ethnography; data analytics; smart work

Chapter One – Introduction

1.1 AI and Its Hype: An Opening Point of Departure

“Whenever I hear ‘data analytics’ or the phrase ‘cognitive computing’ all I think is: It’s a load of bullshit!” It was early in 2016 and I had just gotten back to Southern California after a time away from campus. I was on my way to a grad student lunch with a professor, well known in the human-computer interaction (HCI) field, who was visiting UC Irvine’s Informatics department. This was his retort to my elevator pitch – a true elevator pitch in that we, a small group of grad students, were stuffed into the elevator of Donald Bren Hall with this professor, as I was trying to quickly explain my research. “All I think about is that it’s some company trying to sell me something. But what’s the value? It’s just a gimmick,” he followed up, and then turned to engage another student, robbing me of a chance to reply.

For veteran technologists, artificial intelligence (AI) is rather old. As an umbrella term, it can implicate a variety of computer science approaches to machine intelligence, a knotted network of technical art that underlies today’s vast data analytics apparatus. AI has been characterized as a “computerization movement” (Kling & Iacono, 1988), one that invokes a particular cultural lineage in the United States. From Cold War-era cybernetics research, to the science fiction films such development inspired, to the automation scare arising from workplace digitization in the 1980s (and its ongoing progeny, often called “the future of work”) – AI serves as a powerful cultural referent. It is a symbol of both a societal devotion to scientific progress and an apprehension over the uncertain ramifications it might provoke. Data analytics, though an emergent technical area propelled by “Big Data,” is entwined with AI’s long lineage and framed in relation to it. When conceptualizing these cutting-edge technical phenomena as social movements, as Kling and Iacono (1988) ask us to, they offer us sites at which to examine how technologies are both complex technical and cultural activities – with their technical features (the bits and bytes, lines of code, data streams, design patterns, interfaces, and user models) inseparable from the broader notions of social order and moral good such artifacts symbolize and enact.

Many months later, it was Thanksgiving and I was in Texas, visiting my family for the holiday. During a relaxed evening with college friends, the topic of my research came up as they wanted to know the “inside scoop” I might offer from my experiences in Silicon Valley. “Artificial intelligence, where are we with that? Like, what’s the status?” my friend Marisol asked tentatively, she jokingly wondered when she needed to start worrying about a HAL-style robot takeover. Working in the medical field, her professional life was barraged with rhetoric about the impending “Big Data” boom, such a vision she didn’t know how to take. How serious are AI’s threats, when she spends hours of her long hospital shifts wrestling slow, bulky DOS-based EMR systems, their neon green typeface a reminder of another era? I explained the complexities of the label “intelligence” for computers, its use in common parlance far removed from its use as a term of art. As I explained the very basic fundamentals of how machine learning works – the role of parsing, pattern recognition, models, and inferential statistics – she asked in a lowered tone, heavy with both relief and a little disappointment: “wait, so it’s really just math?”

Both of these scenes demonstrate not only that technologies can be hot topics, generating spirited discussion in everyday life – but also that the sensemaking around them involves what can be conceptualized, I argue, as a search for narrative coherence. Where is this technology going? Who gets to write its story? Who are the heroes and who are the villains? And perhaps most importantly – what role do I play here?

When conceptualized as narrative making, these vignettes offer us new insights into the framing process. In the professor’s forceful insistence that “it’s bullshit!” we are able to see how he distances himself from what he deems a marketing narrative. Casting himself as a cynic, he looks with skepticism and contempt upon those who believe the “hype” narratives. Signaling an attempt to write his own narrative, it is as if his reaction says: *the story marketers are telling doesn’t fool me! Now this is what’s really going on...* And, similarly, in my friend’s reaction, we can see an effort to find her placement in the narrative, as if to query: *do I need to worry about what will happen to me and my profession as the story unfolds?*

I begin with these two scenes from my everyday experience because they offer examples of the central concern that animates my dissertation – how a narrative approach can expand our conceptualization of *technological framing*. Technological framing is a well-established lens that has gained significant traction in the information systems (IS) literature. It helps to explain the meaning making that takes place around the introduction of technologies into organizations.

Introduced in Orlikowski and Gash (1994), technological frames are defined as “the assumptions, expectations, and knowledge [people] use to understand technology in organizations” (p. 178).

Different groups across an organization might hold different technological frames and the degree to which these align is known as *congruence* (Orlikowski and Gash, 1994). While we understand that technological framing has political dimensions, as people attempt to influence others’ frames and achieve congruence (Azad & Faraj, 2011; Lin & Silva, 2005), we understand less about the mechanisms of attempts at influence and their consequences. Davidson (2006) has pointed to the need for further conceptual development of the framing process, and in particular a better understanding of the structural mechanisms of framing, such as: “the way individuals construct arguments, the breadth of issues considered, and the rigidity or fixedness of framing...” (p. 28).

This dissertation takes up such a call by demonstrating how a conceptualization of the technological framing process as a narrative-making one helps to elucidate the relationship between influence and organizational practice. I introduce a novel conceptual lens which I label “narrative assembly” to describe the strategic, yet improvised narrative making practices that influence technological framing. I also examine the organizational value these practices produce and their consequences on workplace subjectivity. As a lens, narrative assembly not only highlights how technological framing is shaped by the narrative form; rather, it provokes an attention to how such technological narratives are situated in specific narrative making occasions that configure relationships between those narrating, who and what is being narrated, and their audiences – and the broader consequences of those occasions on organizational life.

I draw on an ethnographic study of a high tech firm in the process of an organizational change campaign. This campaign involved incorporating data analytics capabilities in the company’s existing technological products and services, as well as the development of new ones. In conceptualizing this process as a narrative making one, I examine a number of ways the emergent technical capabilities known as “data analytics” came to be understood and situated within the firm’s organizational life. In doing so, my empirical analysis reveals how technological framing is: *multi-scalar*, with influence directed at achieving resonance across different scales of organizational life; *diverse*, with attempts to influence framing motivated by a number of strategic concerns; *dynamic*, with meanings situated in specific narrative plottings; *morally-charged*, with meanings driven by notions of how things should be; and *inhabited*, with expectations continually signaled and adjusted in the narrative-making process

Why have I turned to narrative, in particular? Storytelling is a central feature of organizational life – a practice through which collective meaning making arises (e.g., Boje, 1991; Czarniawska, 1997; Kunda, 2006; Martin, Feldman, Hatch, & Sitkin, 1983; Prusak, Groh, Denning, & Brown, 2004; Weick, 1995). Storytelling plays an important role in driving innovation (Levin, 2000) and initial work has pointed to storytelling’s potential in extending the technological framing literature (MacLeod & Davidson, 2007b, 2007a).

Narratives are a particular type of story, one that allows meanings to be understood in a connected and sequential whole – that is, along a beginning-middle-end progression (Boje, 2008; Czarniawska, 1997). Narratives involve authorial choices in how story elements are placed together. These choices are consequential in that their associations are a site of interpretation – by configuring people, things, ideas, and events in particular ways, narratives allow their audiences to imagine causality, infer intent, and assign meaningfulness to events (Czarniawska, 1997; Tsoukas & Hatch, 2001). Thus, my focus on the practice of narrative making gives attention to these choices, offering us insight into the strategic and improvisational way in which associations are put together and the consequences they hold for technological meaning making.

To inform my inquiry, I draw on a handful of concepts from existing literature. I have arranged this literature thematically, organizing it into three focal points I have derived from taking narrative-making practices as a unit of analysis. The first is narrative arrangement (the practice of strategic narrating). The second is narrative content (who and what is being narrated). And the third is narrative audience (how narratives are taken up). Each of these three offers a different vantage point into narrative making and each provides insights that expand our understanding of the technological framing process. I briefly outline the literature I engage with for each of these foci below (and in Table 1), and discuss these in more depth in this chapter’s following sections.

By *narrative arrangement*, I mean the choices made in telling a technological story. I draw on literature from organizational behavior, in particular: strategic storytelling (Barry & Elmes, 1997); issues selling (Dutton, Ashford, O’Neill, & Lawrence, 2001); and the garbage can theory of organizational decision-making (Cohen, March, & Olsen, 1972). In doing so, I provide insight into how efforts to influence technological framing both respond to and attempt to shape organizational life through a reflexive opportunism that is both strategic, yet improvised.

Narrative Focal Point	Narrative Arrangement <i>(Strategic Narrating)</i>	Narrative Content <i>(Who or What is Being Narrated)</i>	Narrative Audience <i>(How Narratives are Taken Up)</i>
Draws on Concepts From...	Strategic Storytelling; Issues Selling; Garbage Can Theory of Organizational Decision-making	Social Movements; Social Imaginaries	Strategic Storytelling; Strategic Sense-giving
Extends Technological Framing by demonstrating...	how efforts to influence technological framing both respond to and attempt to shape organizational life through a reflexive opportunism	the interplay between widespread and diffuse cultural discourses and technological framing within the organization	how technological framing is scrutinized and adjusted as it is taken up in everyday work

Table 1.1 Outlines Three Narrative Focal Points and Relevant Concepts

By *narrative content*, I mean the various cultural resources that are drawn upon in narrating – the ideas, values, artifacts, people, and events, for example – that are placed into stories. I draw on literature from social movements (Kling & Iacono, 1988; Snow, Rochford, Worden, & Benford, 1986); and social imaginaries (Anderson, 1998; Taylor, 2003). In doing so, I provide insight into the interplay between widespread and diffuse cultural discourses (happening “outside” the organization) and technological framing (happening “inside” the organization).

And finally, by *narrative audience*, I mean those who scrutinize and assess narratives. I draw on literature from strategic storytelling to understand how stories are evaluated (Barry & Elmes, 1997). I also draw on strategic sense-giving to understand how organizational reality is co-constructed during change efforts (Gioia & Chittipeddi, 1991). In doing so, I provide insight into how different agencies are emergent in the technological framing process, as audiences make evaluations and adjustments as narratives are assessed, scrutinized, and “taken up.”

In the following section, I set out the central body of literature this dissertation engages with and contributes to (technological frames). I outline the gaps in this literature and articulate my overarching research question.

1.2 Encountering Technologies at Work – The Technological Frames Lens

The rapid introduction of computers into workplace settings in the 1970s and 1980s prompted a wide range of scholarship aimed at investigating the organizational impacts of these changes. In IS, the introduction of new technologies is often conceptualized as a process of “adoption” and “acceptance” with a variety of models developed to explain these processes (e.g., Legris, Ingham, & Collette, 2003; Oliveira & Martins, 2011; Venkatesh, Morris, Davis, & Davis, 2003). While a number of different methodological and conceptual approaches and lens have engaged with the issue of organizational adoption of technologies, this dissertation engages centrally with one: *technological frames*.

In their foundational article, Gash and Orlikowski (1994) bring the concept of “frame of reference” from socio-cognitive research to bear on the issue of sense- and meaning making around technology in organizations. A “frame of reference” is a toolkit of tacit knowledge individuals draw upon to “impose structure and impart meaning on otherwise ambiguous social and situational information to facilitate understanding” (p. 176). In developing their concept, Gash and Orlikowski define technological frames as “the assumptions, expectations, and knowledge [people] use to understand technology in organizations” (p. 178). In articulating the lens, they drew on an empirical study of the introduction of early collaborative systems in the workplace. Commonly called “groupware,” these systems introduced novel technical capabilities for collaborative work, affordances understood differently across the organization. For example, while the strategists who decided to introduce the technology within the organization pointed to the improved coordination and collaboration among workers groupware would enable, the end-users were largely unaware of these collaborative features or their significance for the organization. Different groups held different technological frames, impacting how they understood and assessed the groupware intervention.

These differences can cause misunderstanding, confusion, and even frustration among groups within an organization and implementation strategies often aim to eliminate such ambiguity. To conceptualize the degree to which the technological frames of different groups within an

organization align around a technology, Gash and Orlikowski (1994) also introduce the concept of *congruence*. Congruence doesn't mean frames are identical but instead that they are similarly structured and that different groups hold, for example, "similar expectations around the role of technology in business processes, the nature of technological use, or the type and frequency of support and maintenance" (p. 180). The concept of technological frames has gained widespread traction in the IS literature (Davidson, 2006). This wide-reaching uptake speaks to its utility and resonance in understanding how people and groups make sense of and develop shared meanings around new technologies.

Extending the technological frames lens, Davidson (1997; 2002) emphasized the need for a processual understanding, calling for attention on *framing* as a practice (asking "how" questions) in addition to identifying frame content (asking "what" questions). A number of scholars have taken up such a process approach, identifying, for example, the ways that frames evolve over time (Azad & Faraj, 2008; Mazmanian, 2013).

While the original concept of technological frames drew upon literature from the field of socio-cognition, Lin and Silva (2005) pointed to the ways technological framing was also a political process. Highlighting the role of discourse and language in shaping framing, their study examined how certain stakeholders (i.e., the IT dept.) used technical jargon to increase other groups' reliance on them to interpret and explain the technology. This highlighted the need for further investigation into the political aspects of the technological framing process, hinting at the prominent role discourse features in these processes.

1.2.1 The Gap – Structural Dimensions of Technological Framing

Davidson (2006) provided a review and critique of the technological frames literature. While the lens had been taken up widely and applied often in the decade since its introduction, much of this work applied it as a means to analyze empirical field studies. The concept itself had received little treatment by way of extension or refinement. Davidson (2006) pointed to several areas that would help to further conceptual development of the lens. I focus on one in particular, what Davidson refers to as the structural aspects of framing, examples of which she lists as: "the way individuals construct arguments, the breadth of issues considered, and the rigidity or fixedness of framing..." (2006:28).

To answer this call, I turn to *organizational storytelling* as an area for guidance. Storytelling is a prominent feature of organizational life (Boje, 2008; Czarniawska, 1997; Weick, 1995). The practice of telling stories can “facilitate knowledge sharing, guide problem solving and decision making, and generate commitment to change” within an organization (James & Minnis, 2004:23). Part of the contemporary management toolkit (Prusak et al., 2004), storytelling practices play a role in “engineering” organizational culture (Kunda, 2006) and help to support a sense of shared lineage and collective sense of “uniqueness” and specialness to work life (Martin et al., 1983) as well as “heroism” to everyday work practices (Orr, 1996). As both a unit of analysis, as well as an analytical lens, an attention to storytelling is part of a broader move within organizational studies to apply literary metaphors and forms of analysis to studies of organizational life (Czarniawska-Joerges, 1995; Phillips, 1995). Such moves push conceptualizations of organizational behavior beyond the rational, psychological, and functional to also consider their dramatic, imaginative, and cultural dimensions.

While we might think of organizational stories as the sort of institutional tales memorialized in a company’s archives, or in its onboarding and marketing materials, storytelling in organizations is most often an interactional and dynamic process carried out through everyday talk (Boje, 1991). This everyday practice plays many important roles in organizational life. As Boje (1991:106) tells us:

In organizations, storytelling is the preferred sense-making currency of human relationships among internal and external stakeholders. People engage in a dynamic process of incremental refinement of their stories of new events as well as on-going reinterpretations of culturally sacred story lines. When a decision is at hand, the old stories are recounted and compared to unfolding story lines to keep the organization from repeating historically bad choices and to invite the repetition of past successes. In a turbulent environment, the organization halls and offices pulsate with a story life of the here and now that is richer and more vibrant than the firm's environments.

Given my aim in answering the call set out in Davidson (2006:28) (to elucidate “the way individuals construct arguments, the breadth of issues considered, and the rigidity or fixedness of framing...”) I focus on a particular type of storytelling – *narrative making* – and this dissertation’s central aim is to demonstrate the value it offers us in understanding the technological framing process:

Central Inquiry – A Narrative-Making Conceptualization of Technological Framing

- In what ways can conceptualizing technological framing as a form of narrative making expand our scholarly knowledge?

A narrative is a specific story form that places phenomena into a plot; the basic ingredients of a narrative are: “an original state of affairs, an action or an event, and the consequent state of affairs” (Czarniawska, 1997:2). The sequence or order of these elements is the plot, which offers an association between these elements with the use of “ands” (Czarniawska, 1997:6). These associations are sites of meaning making, as they offer inferences or implicit explanations of their relationships.

Narratives shape organizational reality by “providing members with accounts of the process of organizing” (Mumby, 1987:113) – they tell organizational actors *what* is happening and to *whom* and their internal plot structure offers an explanation of *how* and *why* it is happening. Because of this reality-shaping potential, narratives have implications for understanding organizational power – narratives do not reflect a pre-given reality, but instead construct one through “a politically motivated production,” a rendering of the world that “privileges certain interests over others” (Mumby, 1987:114). Thus, narratives are political in that they strategically shape reality and they are consequential in constituting organizational life. My focus on the active verb narrative *making* seeks to understand the situated practices that comprise such a “politically motivated production” (Mumby, 1987:114) and in particular how they come to construct technological realities.

As my dissertation will demonstrate, narrative making is instructive in answering the call in Davidson (2006) for further conceptual inquiry into the “structure of framing.” By narrative making, I mean an extension of technological framing that sees meaning making as a process grounded in accounts of action and consequence. The temporal sequencing underlying narrative plots enables us to investigate a number of concerns, such as perceived coherence and interpretations of causality and intention. In addition to the attention to discursive structure that a focus on narrative enables, narrative making as an organizational practice also implicates specific social relationships – between narrators, the narrated, and their audiences. These relationships provide a framework to guide analytical and conceptual development of the technological framing lens, which I set out below.

1.2.2 Narrative Making – Three Vantage Points and Three Sub-Research Questions

Implicit in the practice of storytelling are three conceptual vantage points: those who are telling a story; the people and things featured in the story; and the story’s audience. To tackle the question of how narrative making expands our understanding of technological framing, I use these three vantage points to organize my examination into three thematic clusters: *narrative arrangement* (the practice of strategic narrating). The second is *narrative content* (who and what is being narrated). And the third is *narrative audience* (how narratives are taken up). These three clusters each correspond with a sub-research question, outlined below. Also, in Table 2, I align each sub-research question with its corresponding conceptual gap, as articulated in Davidson (2006).

Narrative arrangement

- Sub-RQ1: In what ways can people attempt to influence technological narrative making?

Narrative Content

- Sub-RQ2: In what ways can norms and values shape technological narrative making?

Narrative Audience

- Sub-RQ3: In what ways can technological narratives be “taken up” and assessed?

Gaps Articulated in Davidson (2006:28)	Corresponding Sub-Research Questions
“the way individuals construct arguments”	Sub-RQ1: Narrative Arrangement
“the breadth of issues considered”	Sub-RQ2: Narrative Content
“the rigidity or fixedness of framing”	Sub-RQ3: Narrative Audience

Table 1.2 Connects the Sub-Research Questions to the Gaps Articulated in Davidson (2006)

I unpack each of these in the following three sections, setting out the different concepts from existing literature with which each engages. As I outlined in Table 1, this is organized as follows: narrative arrangement draws on strategic storytelling, issues selling, and the garbage can theory of organizational decision-making. Narrative content draws on social movements and social imaginaries. And finally, narrative audience draws on strategic storytelling and strategic sense-giving.

1.3 Narrative Arrangement - In what ways can people attempt to influence technological narrative making?

A narrative-making approach extends our understanding of technological framing by providing guidance in examining how efforts to influence technological framing both respond to and attempt to shape organizational life through a reflexive opportunism. To situate this claim, I engage with three concepts in this section from organizational behavior literature instructive in understanding the practice of narrative arrangement. These are: strategic storytelling, issues selling, and the “garbage can” theory of organizational decision-making.

In an effort to expand how strategy practice is conceptualized, Barry and Elmes (1997) introduced storytelling as a lens:

In contrast [to traditional views] a narrative view of strategy stresses how language is used to construct meaning; consequently, it explores ways in which organizational stakeholders create a discourse of direction (whether about becoming, being, or having been) to understand and influence one another's actions. Whereas authors of traditional strategy frameworks virtually ignore the role of language in strategic decision making, writers using a narrative approach assume that tellings of strategy fundamentally influence strategic choice and action, often in unconscious ways (p. 432).

When characterized as a storytelling practice, strategists and strategic initiatives must confront “the same basic challenge facing other fictionalist writers: how to develop an engaging, compelling account, one that readers can willingly buy into and implement” (p. 433).

Strategic stories, then, must garner buy in, if there is hope the ideas they put forward can or will be implemented. Instructive in understanding the notion of “buy in” is the concept of “issue selling” from organizational change literature. Issue selling is concerned with how ideas are “sold” within organizations. This concept explains how “individuals affect others’ attention and understanding of events, developments, and trends” within organizational life; in organizations, “no issue is inherently important or strategic,” therefore, “individuals’ claims about what matters (that is, their issue selling) determine, in part, which change initiatives get activated” (p. 716) (Dutton et al., 2001). By studying how middle-managers described pitching their ideas to upper management, Dutton et al. (2001) identified three factors managers attend to when selling issues to upper management – namely, how to package ideas, whom to involve in the pitch, and when to

time their pitches. Getting these factors “just right” relied on managers’ organizational fluency and know-how – to sell ideas well, individuals needed to be able to harness cultural capital:

Knowledge about the "how" of issue selling requires both skill in interpretation and a "feel for the game" being played inside an organization. It forces sellers to recognize that they have little control over many larger aspects of the organization but much control over small but important things. For example, issue sellers do have control over whom they involve, the timing of their moves, and their own persistence.... [T]hey indirectly control the process by being ready to act with others when the time is right.

From this quote, there are two points to take. The first is that successfully selling ideas within an organization requires situated knowledge – skillful interpretation of emergent context and a “feel for the game,” as it is phrased in Dutton et al. (2001). The second is the interplay between what can and cannot be controlled. Their characterization here – of “being ready to act...when the time is right” – implies an improvisational nature to strategic practice.

Such a view aligns with the “garbage can” theory of how ideas and arguments move around the organization. In a seminal paper, Cohen et al. (1972) talk about the “organized anarchy” that rules organizational life. Rather than a deliberate and rational process of decision-making and planning (a typical view of organizational decision-making literature), Cohen et al. argued that organizations move forward through a “garbage can” process – one where solutions are always in search of relevant problems to solve. The “garbage can” is a metaphor – a conceptual container where ideas are “tossed in,” and where they wait to be taken out and re-arranged as a situation arises that might reasonably be argued to call for them. A “garbage can” view casts organizational decision-making as interactional and emergent – with people always on the hunt for problems that might fit with existing ideas. It is through this process that solutions emerge and decisions are made – through a dynamic practice of saving and recycling ideas and crafting reasonable arguments about their novelty and “fit” with unfolding problems.

In synthesizing these concepts, I outline an understanding of influence that is strategic, yet improvised, that takes place through a practice of reflexive opportunism. The work of strategy is about “creating a discourse of direction” (Barry & Elmes, 1997:432). Getting others to “buy into” your vision for the company requires situated organizational knowledge and a “feel for the game,” but is also improvisational, necessitating a readiness to act when appropriate situations

arise (Dutton et al., 2001). It also involves an interactive “fitting” of organizational resources to problems they might possibly be of use to (Cohen et al., 1972).

Such a view – of influence as reflexive opportunism – is not reflected in our current knowledge of technological framing. Kaplan (2008) has demonstrated that organizational frames more broadly can serve as resources that both constrain and enable strategic maneuvers in what she labels “framing contests.” In the context of technological framing, Lin and Silva (2005) and Azad and Faraj (2011) have pointed to the strategic role of discourse in the technological framing process. Yet we know little about the improvisational nature of strategic influence or the impact of the seeming “anarchy” (Cohen et al., 1972) of organizational life specifically in the context of technological framing. My attention to narrative making, then, seeks to understand this dynamism more fully, of understanding how framing technologies is both calculative and improvisational – making sense of meaning systems at the same time they are enacted as coherent and legible. Building on the insights of O’Connor (1997) which demonstrated the value of using narratives to understand “garbage can” decision-making, I bring it in conversation with strategic storytelling and issue selling and apply it to the technological framing process in the formulation of my first sub-research question:

Sub-RQ1: In what ways can people attempt to influence technological narrative making?

1.4 Narrative Content - In what ways can norms and values shape technological narrative making?

A narrative-making approach also extends our understanding of technological framing by providing insight into the interplay between widespread and diffuse cultural discourses and technological framing within the organization. To situate this claim, I engage with two concepts from different literatures: social movements and social imaginaries.

In their seminal work, Snow et al. (1986) laid out the discursive mechanisms that activate or mobilize movements around social problems – as the concept’s name implies, they *frame* problems in ways that invite *collective action*. Kling and Iacono (1988), as I mentioned earlier, found inspiration in this concept, examining how computer technologies can be thought of as a social movement and how the social orders they envision provoke support and campaigning.

Looking at a handful of domains in the United States over several decades (such as AI, computers in education, and personal computing) they examined the implicit ideological values moving these movements forward, namely how computerization came to be seen as ushering in “a new social order” (p. 227). These *computerization movements* incite people to rally around and work towards accomplishing them. Barrett et al. (2013) added to this by looking specifically at the role of rhetoric in shaping movements around widely dispersed technological communities (their case, for instance, was the free and open source software community).

A similar concept helpful in understanding these kinds of cultural values is *social imaginaries*. Social imaginaries are the collectively held meanings and beliefs of a social group or community, that give a sense of order and wholeness to social life and make the experience of a shared culture possible (Anderson, 1998; Taylor, 2003). Social imaginaries enable shared norms and expectations and the moral claims that underpin notions of how things should or ought to be. Whereas social imaginaries asks: how should things be? Social movements asks: how do we effect change to make those things happen?

While work has examined the influence of social imaginaries on organizational strategy (Levy & Spicer, 2013), we know little about the role they play in the technological framing process. Barrett et al. (2013) examine the interplay between computerization movements and large, diffuse technical communities (through the case of free and open-source software), but we know little about the interplay between these cultural-level discourses and their impact within organizations – how are cultural resources (e.g., the widespread ideas and beliefs around analytics) “brought into” the organization? And what role do they play in the technological framing process?

Treem et al. (2015) have pointed to the need to further examine how technological frames move across organizational boundaries. In their study of social media platforms, they found that users’ experiences with consumer platforms shaped their encounters with similar platforms at work. In extending this work, I set out to examine how a variety of cultural resources (such as ideas about what technologies can and should do) move across organizational boundaries and influence technological framing:

Sub-RQ2: In what ways can norms and values shape technological narrative making?

1.5 Narrative Audience - In what ways can technological narratives be “taken up” and assessed?

Finally, a narrative making approach also extends our understanding of technological framing by providing insight into how technological framing is scrutinized and adjusted as it is “taken up” in everyday work practices. To situate this claim, I engage with two concepts from organizational behavior literature: I again draw on strategic storytelling and also on strategic sense-giving.

Drawing on the storytelling literature also helps us understand the role of scrutiny in technological framing – how do organizational actors evaluate efforts to influence technological framing? How do these assessments impact the ways that technological frames are taken up and spread across the organization?

In returning to the concept of strategic storytelling I discussed above (in 1.3), Barry and Elmes (1997) also provides a framework for assessing strategic stories. Borrowing two criteria from literary studies, the article sets out *credibility* (the believability of a story) and *defamiliarization* (the novelty or new point of view it offers). Expanding on what “successful” strategic narrative involves, Barry and Elmes (1997) explains that a narrative view of strategic effectiveness is “intimately tied to acceptance, approval, and adoption” (p. 433).

Here we can see parallels with traditional IS frameworks about technology adoption, echoing familiar language of “acceptance, approval, and adoption.” However, evaluating strategic narratives depends less on what we traditionally think of as part of the strategy field’s apparatus, things like “comprehensive scanning, objective planning, or meticulous control/feedback systems” (p. 433). Instead, success is measured by whether a narrative “stands out from other organizational stories, is persuasive, and invokes retelling. What the story revolves around, how it is put together, and the way it is told all determine whether it becomes one worth listening to, remembering, and acting upon” (p. 433). Such a view sees listening to narratives as an engaged and active process, one where meaning and value are co-created by both those who narrate and those who are in the narrative’s audience. This view “problematizes unitaristic notions of strategic success,” instead requiring “us to contextualize success, to view success as a social construction that is tied to specific cultural beliefs and practices” (Barry & Elmes, 1997:433).

The process of co-construction is important and echoes what Gioia and Chittipeddi (1991) have identified as “strategic sense-giving.” In organizational change efforts, they define strategic

sense-giving as: “the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality.” (p. 442).

These two views together – strategic storytelling and strategic sense-giving – contextualize the “success” of strategic efforts not as a bending of will to those attempting to effect change, but instead a re-defining of organizational reality. This interactive and co-constructed view points to the narrow treatment of identity and social roles in much of the technological framing literature, and also provides a way forward. Often in technological framing, there tends to be a focus on how different organizational roles interact in the framing process – the IT department versus end-users, for example, or managers versus workers.

Such categorizations then afford the study of influence, namely how one group influences another, persuading them to adopt their point of view (POV). For example Orlikowski et al. (1995) call this a process of “metastructuring,” and McLoughlin et al. examine a similar phenomena which they call the work of “configurational intrapreneurs” (McLoughlin, Badham, & Couchman, 2000). In these conceptualizations, members of the influencing group are typically conceived of as “change agents” – often aligned with executive management whose designated role is to “convince” workers to take up management’s POV around the technology. Such a view holds social roles and workplace identities as relatively stable constructs that serve as a central resource of influence in the framing process.

In a similar vein, other technological framing literature has looked at occupational groups as the unit of analysis in understanding the role of social influence in the framing process. For example, Davis and Hufnagel (2007) looked at how occupational values and norms of fingerprint technicians impacted the development of technological frames around automation in their field. And others have examined how differences across occupational groups within an organization have a hand in shaping technological choices and practices (e.g., Bailey & Leonardi, 2015; Mazmanian, 2013). While an occupational approach helps uncover the role of identity in framing, it conceptualizes occupations as relatively stable social categories – we can see similar approaches in the various literatures I have drawn on, for example strategic storytelling characterizes strategy as something strategists do.

While this work has been instructive in understanding the importance of organizational roles in the framing process, it is limited in the narrow conceptualization of organizational power it offers.

A focus on roles and groups as determinative of power relations presents a unidirectional and static perspective of organizational politics. But power and agency aren't always so clearly concentrated or statically defined, and instead are dynamic, relational, and "net-like" – individuals are "not only [the] inert or consenting target [of power]; they are always also the elements of its articulation" (Foucault, 1980:98). Such a conceptualization of power helps to extend our understanding of technological framing – at times, framing is the purview of change agents who explicitly attempt to broker meanings and convince workers. But the locus of influence in the framing process can move around as it's borne out in everyday practice, with dominant meanings "taken up" and advocated for by those whose role may not explicitly that of a change agent.

My conceptualization – of technological framing as narrative making – helps us move beyond the top down/bottom up binary typical of technological adoption stories (dividing people into "change agents" and "ordinary workers"). Instead, a focus on narrative making allows us to understand how objects and subjects emerge – and are strategically arranged – in everyday doings across the organization. A conceptualization of framing as narrative making allows us to examine the relational influence of power, moving beyond role or occupation-based understandings. If we think about technological framing as carried out through a variety of organizational stories, we are able to ask questions about the narrators and about the narrated – how through different stories, subjects and objects emerge as contingent organizational positions. Rather than asking, for example: *what does the IT department think about this technology and how are they trying to influence end users?* A narrative-making approach, as I will demonstrate in this dissertation, asks: *what view is presented in this narrative, and how does that view situate the technology, its advocate, and its audience in relation to one another?*

A focus on power in practice, on how it unfolds during various interactions across the organization, allows us to more closely interrogate its manifestations and grip in technological framing. This holds the potential to expand our knowledge of technological framing, opening up questions of the role technologies play in informing our understandings the complex relationship between subjectivity, technology, and labor. With this in mind, my third and final sub-research question is:

Sub-RQ3: In what ways can technological narratives be "taken up" and assessed?

1.6 Recapitulation and Plan for the Dissertation

To recap, in this introduction chapter I have identified the main body of literature this dissertation aims to expand – technological framing. In seeking to answer Davidson’s (2006) call for further conceptual development of the concept, and in particular identify how framing practices are structured persuasively, I have turned to organizational storytelling.

I have turned to narrative making as a particular type of storytelling because of the conceptual language it offers. By thinking about technological framing as narrative making, I am analytically able to examine three vantage points into framing practices: efforts to influence framing (narrative arrangement); the range of cultural resources considered in framing (narrative content); and how framing is evaluated and taken up (narrative audience). Doing so points to several new lines of inquiry that can deepen and expand our understanding of technological framing in organizations. In particular, I have laid out three sub-research questions focused on the three vantage points. I have illustrated these questions in Figure 1, and foreshadow how the dissertation will answer those questions in Table 1.3. With these research questions in mind, in the next section I will provide an overview of my ethnographic case, methods, and data analysis.

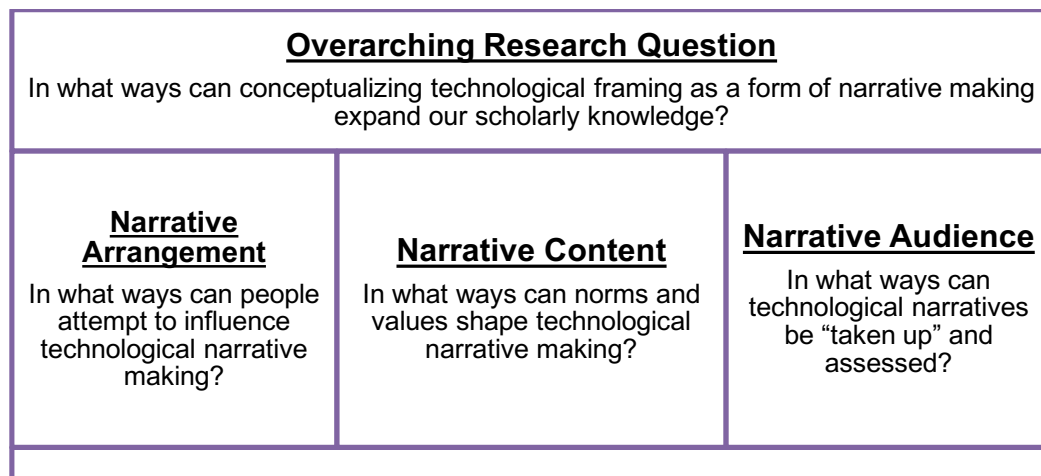


Figure 1. Diagram of the Dissertation’s Research Questions

Chapter	Theme	Organizational Value	Demonstrates how technological framing is...	Answers sub-RQ
Three	Crafting Multi-Scalar Resonance	Problems Technology Can Address	<i>Strategic</i> , yet <i>improvised</i>	One (Narrating)
Four	Making Strategic	Problem-Solving; and	<i>Dynamic</i> (situated in	One (Narrating);

	Associations	Ensuring Do-ability and Success	specific narrative making moments); and <i>Diverse</i> (motivated by a number of concerns)	Two (Narrated); and Three (Audience)
Five	Imagining Goals	Vision of Organization as “Fixing” Social Problems; Everyday Work Seen as Directly Contributing to Those Goals	<i>Morally-Charged</i> ; and <i>Multiple</i>	Two (Narrated); and Three (Audience)
Six	Inhabiting Narratives	Signaling Expectations to Workers; Sites of Flexibility for Workers	<i>“Somewhere in Between”</i>	Three (Audience)

Table 1.3 Table Outlines the Four Empirical Chapters

Chapter Two – Case, Site, Methods, and Data Analysis

2.1 Empirical Focus – The Case of Data Analytics

To examine technological narrative making, I turn to the case of commercial data analytics development. In particular, I draw on an ethnographic study of a high tech firm in the midst of an organizational change campaign. This change effort was focused on incorporating data analytics in a number of the company's technologies and services, as well as developing new technologies and services featuring data analytics, towards the goal of driving the nascent market of data analytics.

While “data analytics” is an expansive and equivocal term, I use it as it was at my field site – to connote a broad set of computing techniques used across “Big Data” streams to provide some type of business value. These computing techniques often incorporate machine intelligence, typically referred to as artificial intelligence (AI). “Big Data” is said to encompass the “3 Vs” – increased volume, variety, and velocity of data streams. Some examples of data analytics in the enterprise indeed incorporate all three – for example, the incorporation of social media data in marketing or “customer analytics.” But often, enterprise data analytics focus on enabling businesses to derive value from data generated within their organization. This means the “volume” pales in comparison to the truly vast datasets often associated with “Big Data,” and the promise of enterprise data analytics to produce value is often focused on increased “variety” of data (incorporating *new* types of data into workflows) and heightened speed or “velocity” (incorporating these data *more rapidly* into workflows).

I am deliberate here in my language – the promise of enterprise analytics to provide “some type of business value” is purposely vague. It remains uncertain whether (and how) data analytics are capable of providing value, pecuniary or otherwise. This ambiguity makes data analytics a curious site to understand technological framing and one particularly well-suited to examine narratively as various actors take moves to make sense of and strategically capitalize on data analytics' uncertain value proposition.

AI and data analytics has received intense attention in the popular media and press in recent years (e.g., Ford, 2016; Susskind & Susskind, 2016). This fanfare that can be described as “big” and wide – wide in the breadth of topical attention to data analytics and “big” in that treatments often talk of data’s potential to change fundamental aspects of social life. This means that *ideas* about data analytics typically precede any actual engagements with these technologies, with subsequent interactions colored by such conceptions (recall the scenes I opened this dissertation with, and the strong evocative reactions the topic aroused, even among those with no direct engagement with the technology).

Data analytics offers a unique case to examine the narrative dimensions of framing – not only because of its widespread discourses, but also because of the contentious character of those discourses. The reader with only a passing interest in the topic will regularly find searing op-eds in wide-spreading venues ranging from Financial Times, Wall Street Journal, and New York Times to TechCrunch, CIO, and Harvard Business Review. Heralded as the “future of work” at the same time it is feared to represent the “end of work,” tensions over the potentiality of “Big Data,” AI, and data analytics are palpable. Oscillating arguments saying at once: we are on the cusp of a new era, one of data. And, depending on the viewpoint, this will usher in heightened freedoms and equity or an imperiled future of machines overtaking humans. These discourses continually try to grapple with the ambiguity at the core of its value proposition – “business value” for whom? And how? And to what consequence? This uncertainty offers me a site to examine how different ideas and arguments are arranged, supported, and taken up around an emergent technology surrounded by such a saturated discursive environment.

Further, these contentious discourses are not happening “outside” or separate from organizational life and the technical development that takes place within it. Given the widespread discourses around data analytics, the uncertainty and risk typical of innovation is felt even more intensely – those working in commercial data analytics development must make sense of their everyday work as situated in this broader cultural conversations. Such a context allows me to examine how, against broad and at times conflicting discourses, those who work in high tech firms like my field site that develop and sell data analytics come to “believe in” the mission of their work. How are the ordinary demands of work – the struggle for meaningfulness, value, and contribution – labored towards in the face of such uncertainty? How is success seen as likely and desirable amid such foreboding discourses? In taking data analytics as my case, this dissertation sets out to examine such questions.

2.2 Field Site and Approach

To investigate these questions, my dissertation draws on approximately fifteen months of ethnographic fieldwork at the Silicon Valley research and development (R&D) lab of a large, global technology and consulting firm (referred to by the pseudonym “GloTechCo”). My choice of ethnographic methods follows the use of field methods for discovery in organizational studies (Locke, 2011) and is informed by the tradition of ethnography as a method to study workplace dynamics (Zickar & Carter, 2010). Ethnographic methods are well-suited given my interest in understanding narrative-making practices, allowing me to understand what people say, what they do, and the artifacts they produce.

As a “large and mature organization,” GloTechCo is also a uniquely suited field site to study how questions of narrative making and strategic influence shape technological framing, as it is often difficult for new ideas and products to gain traction in such organizations (Dougherty & Hardy, 1996).

2.3 Data Collection

In line with ethnographic field methods, primary sources of empirical data were participant-observations and accompanying field notes (Emerson, Fretz, & Shaw, 2011) as well as semi-structured interviews and accompanying transcripts (Wengraf, 2001). I also collected a number of organizational artifacts. I discuss this in depth below.

Data collection took place from June 2015-September 2016 and involved both a physical (on-site) and remote (off-site) presence, with approximately seven months (~28 weeks) spent on-site at the lab (where I had a desk, phone, and dedicated office/workspace). A large proportion (estimates figure around 35-40%) of GloTechCo’s employees work partially or completely remotely, cultivating an active “call in” culture in which my physical absence during my remote periods were not disruptive and only occasionally noted.

My engagement with the site was twofold: I was both a social scientist ethnographically studying R&D projects and the GloTechCo culture more broadly and also a student researcher employed by the lab, conducting organizational analyses, user studies, and contributing to the ongoing analytics development work on several projects within my group. By “my group” I mean the

overall research cluster reporting to a common upper-level manager and working broadly in the areas of cloud and mobile analytics. This group is comprised of about sixty researchers organized amongst four to six middle-level managers (I hedge between “four and six” because the exact management structure changed *twice* while I was at the company, a fact that speaks to the firm’s widespread climate of transition). Of the sixty or so researchers in my group, the majority have PhD degrees and a few have MS degrees, with a mix of fields such as computer science and software engineering, as well as industrial engineering, operations management, and social sciences. Only a handful (less than five) are women.

2.3.1 Generating Ethnographic Data

My access to broader GloTechCo employees (those working outside the R&D lab, in various business and product divisions with customer contact) was guided by the specific projects I worked on as a student researcher. These projects focused on three clusters: multi-device work practices; onboarding new hires; and mobile analytics. I outline each of these below.

The first project I was involved with focused broadly on multi-device work practices, which included an interview study to examine how workers incorporated multiple devices (e.g., laptops, phones, tablets, and wearables) in their everyday work, with an aim to inform the development and refinement of a new smart email client, which I refer to as “newClient.”¹ This was my first focus, starting in June 2015. This early and exploratory work around multi-device work practices allowed me to gain fluency with the firm’s extensive (and at times seemingly kaleidoscopic) range of software offerings, insights into its work culture more generally, an understanding of the lines along which the firm was “in transition,” and how these modes of transition were presented as furthering key firm strategies.

As is typical with qualitative data collection, I followed several threads from this early period of data collection over the course of my fieldwork. For example, I did follow up interviews in Winter and Spring 2016 with the workers I interviewed in June and July 2015 to “check in” on their projects, daily work practices, technology use, and to see how their transition to a variety of new technologies was going. I also actively followed several topical communities on the company’s intranet that discussed themes I had identified early on as potentially salient. These themes included the firm’s bring your own device (BYOD) program; mobile enablement; the

¹ I provide a glossary of relevant products and organizational campaigns in the following section.

rollout and ongoing adoption program around newClient; the firm's ongoing evangelism around "design thinking"; and the transition to a "Mac friendly" workplace more generally, to name a few. The company has an active and vibrant (if, at times, messy) intranet culture and ongoing discussions on these online forums were a key source of ethnographic data. I captured these data through copious contextual descriptions and quotes in my field notes, in line with virtual ethnographic methods (Boellstorff, Nardi, Pearce, Taylor, & Marcus, 2012).

The second and third research project clusters I worked on focused more directly on app development. One project focused on working with the HR department to improve the onboarding experience for new GloTechCo hires. This cluster involved the development and evaluation of a mobile "smart" app and a virtual agent/chatbot that "lived" inside GloTechCo's chat client. This project offered direct insights into the development process, including negotiations around technical features, how to "pitch" the project and demo features to garner support from executives, and how to shape user experience (UX) evaluation studies. It was also illuminating topically, as the project's focus on improving the onboarding experience for new employees required stakeholders to surface often implicit dynamics of the firm's cultural life in order to intervene and make the process more legible and welcoming to new employees. This project involved formative UX interviews (with various stakeholders, including members of GloTechCo's HR/onboarding team as well as recent hires – those who had started at GloTechCo within past 6 months) as well as usability interviews to evaluate a hi-fidelity prototype of the app.

The third project was an exploratory project on a somewhat amorphous area that came to be called "context analytics," which involved examining different data streams from mobile devices (such as sensor and gestural data) to spark generatively and inspiration for potential analytics research projects in the future. This project also involved an informal "journal club" where we would read and discuss relevant research articles and talk about their relevance to the lab's projects. These articles were typically focused on technical discussions of mobile analytics (such as papers analyzing data from the Nokia Mobile Data Challenge), but I also introduced some HCI papers around context more broadly (e.g., Dey & Abowd, 1999; Dourish, 2004). This project was helpful in understanding how exploratory technical research was shaped by strategic practice, as meetings typically featured discussions of translating concepts from the "journal club" into business opportunities.

The twofold nature of my presence was explained to participants when I was first introduced to them (often by my GloTechCo research mentor, a key informant) or when I first initiated interactions with participants. In all of my project-related work at the company, I conducted participant-observations of group meetings and presentations, which totaled 114 such meetings, with each typically lasting approximately one hour (presentations typically lasted 30 minutes). During this, I took extensive field notes on these experiences as well as the artifacts produced from these efforts. When appropriate, I collected these artifacts for further analysis. When it was infeasible or inappropriate to collect certain artifacts, I attempted to capture their role in situated practice through my field notetaking. Due to the confidential nature of some data, I pull in popular business press materials throughout my empirical analyses (particularly chapter five, around technological imaginaries) that echo the spirit but do not reveal the specifics of internal strategies.

I conducted a large number of formal, semi-structured interviews (77 in total) – with fellow researchers; with research interns; with product strategists, designers, product managers (PMs), technical architects, and delivery team members; and with everyday workers. Before each interview, I reiterated the purpose and context of my inquiry and explained the informed consent process in detail, describing the confidential and voluntary nature of their participation. All but a few participants consented to audio recordings; audio recordings were transcribed verbatim by a transcription service (Poland, 1995). During all interviews, I also took jottings and short notes, which I expanded into field notes and memos as I examined the transcripts and relevant artifacts. All proper nouns (of people, but also of products and organizational initiatives) are pseudonyms. Without altering underlying content, I obscure or omit certain details in interview excerpts or use composite vignettes to maintain the confidentiality of participants.

Formal interviews spanned a number of contexts and projects and I have organized them based on timeframe and corresponding research project in Table 2.1. The company follows an industry practice called “dogfooding” – meaning the technological products they sell are also used internally (i.e., - they “eat their own dog food”). Because of this, while an interview may have been with a developer or PM on a given product, they also spoke of their personal experiences and use of the company’s technologies. I mention this because, while the notion of “user” is often a “scenic feature” (Sharrock & Anderson, 1994) in the design process (meaning the “user” is the central feature around which design practices orient, but is a concept constructed by designers,

not informed by actual users) at my field site the notion of “user” or customer was also informed by employees’ personal experiences with using the company’s products.

Other than the summative UX interviews,² all interviews followed a semi-structured format (Wengraf, 2001) and lasted approximately one hour. My focus was on understanding work practices and I began interviews with a “grand tour” question (Spradley, 1979) to allow a natural discussion to unfold – to start, could you tell me about your work?

Timeframe	Project	Interview Category	No.
Summer 2015	Multi-Device Work	newClient Team	9
		newClient Early Adopters	14
		General/Background Researchers/Research Interns	6
Spring 2016	Multi-Device Work	newClient Early Adopters (follow up)	10
		newClient Users	7
		Apple Watch Users	7
Summer 2016	Onboarding	Formative UX (users and HR)	8
		Summative UX (app usability study)	5
	General/Background	Researchers/Research Interns	7
Fall 2016	Onboarding	Summative UX (chatbot usability study)	4
		Total	77

Table 2.1 Formal Interviews Completed

Beyond my formal participation in research projects, I also took part generally in the research lab’s social and cultural life including many informal conversations with people all over the lab – from researchers in other groups; intellectual property (IP) lawyers; visiting researchers and guest lecturers; and the list goes on.

And beyond formal observations, I took part in countless activities – attending lectures and talks; eating lunch with coworkers in the cafeteria; chitchatting at the lab’s teatime; swapping stories of weekend adventures; huddling for shade from the hot Silicon Valley sun during fire drills; chatting about industry news or controversies; and of course a quintessential part of any office life – messing around in the copier room and commiserating over yet another paper jam.

² Although not following a formal “structured” format, the summative UX interviews were more targeted than a typical semi-structured format, focusing specifically on evaluating prototypes. They lasted only 30 minutes.

In addition to the ethnographic data generated from my field site engagement, I also followed several topics in popular and trade news. This included news related to topics such as: the company itself; apps; the “future of work”; BYOD; automation; and AI development. These discourses inform my analyses both implicitly and explicitly. At times, I draw on them strategically to preserve confidentiality (as mentioned above).

2.3.2 Contextualizing Key Products and Initiatives – A Brief Glossary

Although I outlined the three research projects I participated in, here I briefly contextualize some of the key products and initiatives I analyze in the dissertation. The research projects at the lab were motivated by scholarly and academic concerns. These projects, though, often connected up with different company products or initiatives, which provided an “audience” for or possible application of research outputs. In this way, research projects touched several products or product divisions. I outline here company products and organizational initiatives that feature prominently in my analysis. This list is not comprehensive and some topics and products that played more minor roles in my analysis are contextualized in line with their respective chapters.

Enterprise Social Software (ESS): A product line that includes a range of workplace collaboration tools – the most prominent of which is the “email, calendaring, and contacts” bundle, a trifecta also referred to as “productivity tooling.” Also includes a chat client and online collaboration space.

newClient: an ESS product. A “smart” email client, meant to replace the company’s legacy client. “Smart” meant the client included several AI/analytics features to automate certain dimensions of email and provide personal assistant-style capabilities. Adopted a web-based “app” style implementation, instead of the traditional desktop email client. Also had both an iOS and Android mobile app.

Social Business: a philosophy and approach to the design of workplace technologies centered around the goal of increasing “social” activities, often manifested in the incorporation of social-media style features into software programs. Examples include social profiles and newsfeeds, “one-click content sharing,” and public or quasi-public communication modes (i.e., use of tagging and commenting instead of emailing).

Bring-Your-Own-Device (BYOD): an organizational policy allowing employees to use their personal, consumer technological devices for work purposes. In place at the company for several years, but primarily focused on email (using native iOS or Android mail app). Reinvigorated during the study period, due to both the switch to an app-based email client (see newClient above) as well as the overall mobile development initiative (see “iOS Push” below).

The “Analytics Push”: a company-wide organizational change and development campaign to pivot the firm towards “being in the business of data analytics.” This included efforts to incorporate data analytics into existing products and offerings and develop novel products and offerings featuring data analytics.

The “Agile Push”: a company-wide organizational change campaign to foster an iterative project management style. While adapted from Agile’s incarnation as a software engineering methodology, the “Agile Push” was a management methodology developed in-house. This “push” was meant to transform all project work across the organization, not just technical development.

The “iOS Push”: a company-wide development campaign to develop enterprise apps and rapidly gain dexterity as a “mobile friendly” software and services firm.

2.4 Inductive Data Analysis – The Emergence of “Contrasting”

My research takes a practice lens approach to studying information systems (Jones & Karsten, 2008; Orlikowski, 2000) which sees action as situated and embodied and the relationship between agency and structure as dialectic and mutually shaped through practice (Giddens, 1984). When I began my ethnographic engagement, my research interests were exploratory and broad – I was focused generally on understanding the sense- and value-making around data and data analytics.

The analysis presented here is the result of an inductive and iterative approach, one that is informed by a constructivist approach to grounded theory (Charmaz, 2014). Conceptual analysis and memoing was ongoing during fieldwork, with initial analytical work sensitizing and directing subsequent data collection. Given my interest in developing a grounded theory, I sought to understand the process mechanics of the sense- and value-making around data analytics. I have included an example of some questions that guided data collection and analysis in Table 2.2.

An early feature that emerged in open coding (Charmaz, 2014:109) was a practice of pointing out difference. From workers who would tell me about the difference between today and a “typical” day, to how they talked of wanting to show they were “really” committed, or how to distinguish a current project from a similar one, the contrast highlighted between alternatives formed a central part of making sense of life at work. The prominence of contrasting told me that a central mode of meaning making was carried out through the configuration of relationships – with meanings emerging “in relation to” an alternative and with each animating the other. Given the widespread use of contrasting emergent in the data, I subsequently used focused coding (Charmaz, 2014:138) to further understand the role of relationality in meaning making.

<i>What pressures and influences motivate the adoption and ‘taking up’ of analytics projects and campaigns?</i> <i>What is the role of opportunism in shaping these projects? How are barriers identified and overcome?</i> <i>Who are the envisioned audiences and what are the hoped for outcomes of analytics endeavors?</i> <i>How are these visions protected and contested in everyday work practices?</i> <i>How do workers articulate the ‘specialness’ and contribution of their work, particularly vis-à-vis overarching organizational change campaigns?</i>
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Table 2.2 Examples of conceptual questions that guided data collection and analysis

I am careful to make note of the difference between *binaries* and *contrasts*. Binaries have long been a topic of sociocultural concern – the seminal work of Anthropologist Claude Levi-Strauss, for example, paid particular attention to the structuring effects of contrasts on collective myth systems in his volume “Raw/Cooked” (Lévi-Strauss, 1983). In organizational life too, binaries come to inform how strategic efforts are evaluated with the success/failure binary a familiar staple (Vaara, 2002). Binaries offer a type of lazy comfort, as Rhetorician Elbow (1993) cautions: “Binary thinking is the path of least resistance for human perceiving... The easiest way to classify complex information is to clump it into two piles.” (p. 24)

My attention to contrasting couplets is not to “clump” things into two piles, but instead to understand the relationality of meaning making. Bradbury and Lichtenstein (2000) call for the need to further theorize the relational constitution of organizations. A relational approach “takes as primary the nexus of relations in organizations, rather than focusing on discrete, abstracted phenomena... [and] must account for the relationships among, rather than the individual properties of, organizational members.” (Bradbury & Lichtenstein, 2000:551). Attending to contrasting in the empirical data allowed me analytical traction in pointing out and understanding

the mechanics of these relationships. Given the dissertation’s focus on technological framing, I focused analytic attention on understanding the role contrasting played in everyday activities around technologies, particularly how contrasts came together to make relational claims of novelty and value around data analytics. Directed coding resulted in a number of contrasts and the conceptual value they offered organizational practice and I have included examples of these intermediary concepts in Table 2.3.

Contrasting Couplet	Conceptual Codes
<i>Old/New</i>	<i>Marking Change</i>
<i>Now/A Near Future</i>	<i>Breaking to Rebuild</i>
<i>Past/Present</i>	<i>Imagining Success as Possible</i>
<i>Me/Us</i>	<i>Dividing Up Teamwork</i>
<i>Us/Them</i>	<i>Creating Openings for Contribution</i>
<i>Parts/Whole</i>	<i>Integrating Efforts</i>
<i>Abstract/Concrete</i>	<i>Providing a Site and Symbol of Social Progress</i>
<i>Typical/Special</i>	<i>Maintaining the Desirability of Difference</i>

Table 2.3 Examples of Initial Contrasting Couplets and Their Intermediary Conceptual Codes

Developing these codes into conceptual themes was iterative and informed by several concepts from relevant literature (which I have set out above). Given my interest in articulating the value narrative making presents for the technological framing literature, each of the four empirical chapters that follow are set out to demonstrate a different conceptual dimension of narrative making. In Table 2.4 I have outlined these concepts, the organizational value they enable, and the contrasting couplets found within the specific empirical narratives examined in that chapter.

Chapter	Conceptual Dimension	Organizational Value	Contrasting Couplets
Two	Crafting Multi-Scalar Resonance	Problems Technology Can Address	Broken/Fixed
Three	Making Strategic Associations	Problem-Solving; and Ensuring Do-ability and Success	Inside/Outside; Same/Different
Four	Imagined Endings	Vision of Organization as “Fixing” Social Problems; Everyday Work Seen as Directly Contributing to Those Goals	Before/After; One/Many

Five	Inhabiting Narratives	Signaling Expectations to Workers; Sites of Flexibility for Workers	Old/New
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Table 2.4 Outlines the Four Empirical Chapters, Mapping their Contrasting Couplets

2.5 Summary

In this chapter, I have set out data analytics as my empirical case, discussing its appropriateness given my interest in further developing the technological framing lens. I described the context of my field engagement, detailing data collection activities and providing a glossary of key products and initiatives at my field site. I then set out data analysis methods and discuss the emergence of “contrasting” and its role in indicating and analyzing relational meaning-making practices. With these factors in mind, I now turn to the empirical findings chapters, beginning with an attention to the “use case.”

Chapter Three – Problems That Resonate: Technological Narratives Across Organizational Scales

3.1 Chapter Overview

In this chapter, I address my first sub-research question (narrating) and demonstrate how a narrative-making approach reveals the strategic, yet improvised nature of technological framing. I do so by examining the “use case,” an organizational practice that constructs shared meanings around a given technology. The “use case” plays on contrasts between broken/fixed to arrange narratives that make claims of a technology’s novelty and value by proposing a “problem” the technology will solve. The “use case” helps to align technological framing across multiple organizational scales by cultivating a *multi-scalar resonance*.

By this I mean a “use case” is crafted, as I will show, to resonate with both the micro-level of daily work practices and the meso-level of the organization’s strategic direction. This multi-scalar quality is co-constituted, with meanings at both scales shaping each other through the framing process.

Despite these strategic qualities, technological framing is also improvisational – even if a “use case” finds resonance across scales, the “garbage can” quality of organizational life means it could still fail to be taken up and affect change. Even though this colors the role of strategy in technological framing as having a haphazard and unpredictable quality, attempting to influence the technological framing process was presented as offering personal benefits in terms of the prestige and the possibility of “making your mark.”

This chapter extends Jochemsen et al.’s (2016) attention to the role of organizational scales specifically in the technological framing process; it also answers the call set out in Giorgi (2017) for further examination of the relationship between resonance and framing more broadly.

3.2 The “Use Case” – An Opening Point of Departure

Tameer, a researcher, was presenting one of his projects to the wider lab community. To introduce the project, a “smart” sorter that used natural language processing (NLP) algorithms to help prioritize text-based conversations, Tameer began: “It’s no secret that there is a lot of time

spent in the enterprise on collaboration, on emails and chat and so forth.” He explained that email was a “big topic now” after so many years because now we can use machine learning to help users with what he labeled as “information overload.”

“How many of you receive more than 10 emails per day?” The auditorium erupted with amused and friendly laughter at the idea of receiving so few emails a day. Everyone’s hands went up.

“What about 50?” Most hands stayed raised and people looked around, seeing whom among them got fewer than fifty.

“100?” Many more dropped.

“1,000?” he asked. All the hands dropped. “Okay, nobody has 1,000 here. But we have some clients, the client this use case is based on is a Wall Street executive who receives 1,000 emails a day and is under legal action for missing important emails. The executive is making the claim that he can only look at 11% of his emails on a given day and the emails in question weren’t in that 11%. So the question we are trying to address, can we make sure the important emails get into the 11% that are actually read?”

This scene illustrates how the “use case” serves as a central storytelling practice that helps to organize development work. Drawing audiences into the imagined use of the system, the “use case” helps to create consensus around some problem or “broken” state of affairs that system is meant to “fix.” This makes claims of a technology’s imagined worth and value by arranging them into a narrative form, one that begins with a “problem” – a broken state that will be fixed through the course of the story. Rather than leading with the project’s technical features (state-of-the-art NLP research that would no doubt impress a room like this, filled with computing researchers) Tameer began the narrative journey by grounding the story in a pressing and ordinary problem: email management. The sea of raised hands signaled to everyone the ordinariness and ubiquity of email overload, as if saying: this is a problem we all have. Or perhaps: this is a problem we could all *imagine* having.

After setting up email as a problem space, Tameer went on to demo the project, giving a high level explanation of its ML models and asking for volunteers to help generate training data for the next development cycle.

I open the empirical chapters of this dissertation with an attention to the “use case,” a seemingly straightforward example of organizational storytelling like this scene with Tameer. For those familiar with the high tech world, the “use case” is a well-worn and commonplace practice.³ A careful crafting together of people, problems, and technology, the “use case” calls to mind work examining the performativity of the high tech prototype (Suchman, Trigg, & Blomberg, 2002), the world-making of the “pitch” in start-up culture (Haines, 2015) and the user as a “scenic feature” in design practice (Sharrock & Anderson, 1994).

Adding to this work, my attention is on the narrative qualities of the “use case” and in particular how generating the “use case” impacts the technological framing process. When conceptualized as a narrative-making practice, the “use case” offers us a site at which to examine how emergent technologies come to be understood and evaluated against existing organizational registers and how they in turn shape and transform those registers. The “use case” offers a somewhat straightforward example of technological storytelling in that it quite literally tells a story about a technology. Narrative tension is built around the contrasts between a broken state of affairs that the technology’s use will fix.

In this chapter, I will show how the narrative-making process around the “use case” encompasses an interplay between micro and meso organizational concerns – the “use case” is shaped by the small UX moments it describes, but also by organizational-level concerns – in an effort to cultivate a narrative that feels “just right.” This multi-scalar quality is co-constituted, with meanings at both scales shaping each other through the framing process. I call this quality *multi-scalar resonance*, meaning a “use case” is meant to resonate with both the micro level of daily work practices and the meso level of the organization’s strategic direction.

Jochemsen et al. (2016) have pointed to the varying organizational scales implicated in the technological framing process. Their focus, however, was different – they examined how that while there may be congruence among frames at the meso level, those at the micro level might be incongruent. Thus, a failure to attend to scales in studies of technological framing can lead to what they call an “illusion of agreement” (Jochemsen et al., 2016). My focus is on how multiple scales of the organization are implicated in the technological framing process. Even a narrative that seemingly focuses only on the micro-level of technology “use” – at the level of user

³ For more details on the “use case” see: Jacobson et al. (2011).

interaction – draws upon, shapes, and is shaped by the broader meaning systems of the organization. A focus on narrative making enables us to examine the multi-scalar quality of framing more closely.

Doing so provides further insight into the influence of “Technology Strategy” on the technological framing process, a dimension pointed out by Orlikowski and Gash (1994) in their original paper. A focus on narrative making shows how the micro/meso interplay takes places – how the micro narratives of technology use are connected to the meso narratives of technology strategy. There are many possible “broken” problems a technology could fix. But the stories of the “use case” must be converged in ways amenable to meso narratives, aspects I discuss in section 3.3. Azad and Faraj (2013) have pointed to resonance as part of their “signature matrix” framework, meant to guide those analyzing IT implementations in applying the technological framing lens. We know little, however, about the process mechanics of “resonance” – how it comes about, what holds it together, what hinders it – and Giorgi (2017) sets out a call for further development of resonance as a process, a call this chapter helps to address.

In section 3.4, I discuss how individuals also attempt to “have a say” and influence meso narratives and how, at times, these efforts might be fruitless. Even if strategic efforts to craft a “use case” achieve multi-scalar resonance, there is no guarantee a framing will be taken up and capable of affecting organizational change. In this way technological framing is also improvisational – the “garbage can” quality of organizational life means technological framing has a haphazard and unpredictable quality. Despite this, efforts to strategically influence the technological framing process still offer benefits in terms of the prestige and the possibility of “making your mark,” pointing to the identity implications of strategic technological framing.

I conclude this chapter with a discussion of the conceptual challenges of a narrative approach to technological framing and set out how this dissertation aims to provide guidance in how to go about using this approach in understanding technological framing.

3.3 An Abstract and Ordinary Resonance – Arranging Believable “Broken” States

Taken at face value, the “use case” often identified a self-evident problem in corporate life, one that had a compelling “realness” to its claims. You could imagine the scenario it presented as

being reasonable without direct knowledge of it being so (like the 1,000 email case Tameer shared).

With many finding inspiration from their everyday lives, the “use case” took on an abstract quality, its intuitive claims offering a kind of inter-changeableness with *any* everyday life experience. This abstraction was important in creating the ordinary resonance at the heart of the “use case,” key in building its self-evident claim of utility. Around the lab, the “use case” was often explicitly based on the development team’s personal experience. Rather than seen as narrow or a potential source of bias, this was actually seen as a valuable resource, a kind of “built-in” user research. Wei-yin, whose extensive training at Apple HQ made him the lab’s *de facto* mobile design expert, spoke of this kind of personal inventory in a project he was working on – a suite of apps to transform the corporate travel experience with analytics-powered customization:

CW: How did you guys come up with the use cases?

Wei-yin: Oh, the use case. We have multiple sources. So first one, the main one is, of course, personal experience, right. So [the other developers on the project team] and me, we travel a lot - like myself, I’ve been everywhere. I go to New York, I go to Atlanta, I go to LA like, I’ve been to LA three times this quarter already. And then, in the next week, I’m going to New York. And [the PM on the project] travels a lot as well. Just within the last three, four months, he has been to London twice, to Switzerland once. I think, to Germany, it was one time. And he’s going to Asia for another business trip pretty soon. So we do travel a lot. Yes. And so this is one personal experience.

From his lengthy listing here, it is evident that those on the travel app suite’s development team did indeed have a lot of firsthand experience with travel. Wei-yin also spoke of other sources for their corporate travel “use cases,” like talking to subject matter experts (SMEs) from within the company or from talking to the company’s customers and vendors. Finding inspiration in everyday life, the “use case” isn’t meant to be bogged down in the mundane specifics. Instead, narrative elements are arranged so as to provide an abstract and ordinary resonance, one that anyone listening could imagine as real and significant.

Outside the lab, this everyday-as-inspiration was also a routine part of the design process on the company's various product teams. Rosalie, a UI designer for the new email product described how the product's strategic team decided on the most pressing problems to address first in their strategic roadmap. The roadmap was meant to set out a multi-quarter plan to incorporate AI features and align the product with the company-wide tilt towards analytics. The team engaged users with a series of surveys, asking them to rank problem statements as well as possible AI solutions. "Oh, it's a collaborative process," she told me, explaining how the team generates the questions for the user surveys. "I come up with things that feel right, just you know based on my personal experience, and then we pass it around the team to fine tune it."

Once returned, the team would meet to discuss the results and come up with "problem statements":

And so we took all of this [user survey] data back to the larger team and by larger team I mean design development PM (meaning product management) and we looked at that analysis and said 'Okay, well let's pick based on our understanding of this, based on our personal understanding of this product space, let's pick six problem statements that we want to move forward on.' So that was the way we were able to validate, you know, moving away from some of those 'eye candy' demo ideas.

Blending user survey data with their own assessment of what "feels right" for the product space, the team worked to craft a number of cases to move software development forward. But the "use case" doesn't just serve as a resource to guide the development work, it also executes a claim of the technology's novelty and value to others. Ideally, this claim is self-evident and easily defensible. Rosalie stressed the significance of a good "use case" – one that tells a simple, yet compelling story of a technology's utility:

I just keep going back to when the feature we are talking about gets in the product, or whatever design we are working on, what kind of blog post do I want somebody to write in response to it? Obviously you would want that to be a positive blog post where people are seeing the value of what you did, seeing how you're making someone's life better, excited about what's to come, and not just ranting and venting about how creepy or stupid it was or how much it didn't work.

The abstract quality of the problems described in the “use case” help others easily “see the value” of the technological solution it offers. The self-evident and ordinary quality of these claims lends them believability, a key component to telling strategic stories in the workplace (Barry & Elmes, 1997). This is part of why the “use case” is rarely scrutinized; often taken at face value, the claim it presents “feels right.” But a closer inspection helps us to reveal how this seemingly straightforward storytelling practice – an intuitive and self-evident arrangement of micro-narratives – is embedded in and influenced by the broader meaning systems of the organization.

3.4 Crafting a Multi-Scalar Resonance – Aligning Micro with Meso Narratives

Despite its self-evident quality, the “use case” requires a careful configuration of organizational resources. This is similar to the practice of “packaging ideas” (Dutton et al., 2001) described in issue selling. The “use case” tells a compelling micro story – one that “feels right” and resonates with everyday life. But it must also resonate with strategic directives, the unfolding meso narratives of an organization.

Creating this multi-scalar resonance requires care; an early scene from my field notes is particularly illustrative of this process. It centers around a conference call with Harvey, a strategic executive working with the lab on a variety of AI projects. Harvey was one of the audiences our research team had identified earlier on in the summer as an audience for the results of my interview study on multi-device work practices. I had prepared a fifteen-minute presentation for our thirty-minute call, ensuring time to have a discussion and hear Harvey’s thoughts on the interview study’s insights.

The presentation itself was the result of fine-tuning and negotiation among the research group – I did a practice run of the presentation with the group working on the ESS research project the week before. I had prepared the presentation as a research talk – using thick descriptions and lengthy interview excerpts to arrive at some initial analytical themes (very initial, in fact, as I had only wrapped up the interview study earlier that week). This was met with blunt feedback from Mattias, a researcher who was Harvey’s “point person” between the lab and the product team. Mattias flatly said Harvey wouldn’t find this “impressive” – the findings I presented seemed obvious and unexciting. “Focus on your *interesting* findings, things we don’t already know,” Mattias advised. Emphasize problems that we could imagine being solved with some type of AI solution, this was key, he counseled. Cut out the long quotes, leave the slides clean. Use engaging

photos with short phrases, Mattias said, short phrases that the audience can easily understand, ones they will remember afterwards. Mattias even sent me a template slide deck to use, complete with coordinated color schemes and the company's logo branding.

A stressful experience at the time, I am able to look back on this experience and understand the broader cultural learning processes going on. Moments like this presentation prep can be thought of as legitimate peripheral participation – a social process of learning through which newcomers to a community of practice gradually become members (Lave & Wenger, 1991). Becoming an “insider” with the research group meant I had to learn their “tricks of the (organizational) trade.” A central part of this trade was crafting narratives that packaged and “sold” the basic computing research going on within the lab as something executives could easily recognize along the organization's strategic registers.

The presentation, then, was a moment through which the micro narratives of “use” collided with the meso narratives of the organization's strategic priorities – the company's overall goal of making headwinds in the analytics market. “Actionable insights” – the short phrases Mattias counseled me to focus on (clever, intuitive, and memorable phrases) – helped to facilitate this multi-scalar resonance. Crafting these “actionable insights” meant framing research findings to align with the company's organizational priorities. Through the narrative-making moment of the “use case” researchers are able to position the basic research of the lab as recognizable and aligned with the ongoing momentum going on at the organizational level.

Such moments were expected and routine, repeated often – yet also temporary and outside the typical daily doings of the lab. But though transient – often experienced in bursty calls of 30 minutes or less – these moments of multi-scalar translation were mission-critical for the success of the lab. The “business side” must understand the “research side” as aligned with the company as a whole, working in tandem towards the same organizational mandates. Moments of translation like this one enabled the work of researchers – in all its abstract and vague messiness – to be read as organize-able, capable of being contained within and providing strategic advantage to the organization.

The “use case” crafts a technological narrative that resonates with both the ordinary doings of daily life (as I showed in section 3.3) and the strategic directives set out by the organization (as we see here). By pointing to this multi-dimensional resonance, I have aimed to demonstrate how

the technological framing process invokes multiple scales of organizational life. Technological development is driven by these multi-scalar configurations with the micro priorities of the “use case” shaped by the meso priorities of the organization.

This is not to imply that the micro narratives are shoehorned into established meso ones – as with any translation, meanings are transformed in the process. Nor does it mean that this process of multi-scalar converging was unidirectional. The element of craft in arranging and packaging ideas here means that the multi-scalar translation depends on the narrative-making moments emergent in the many, ordinary moments of organizational life – through, for example, the mundane conference calls like this one with Harvey. And some are defter at this than others (echoing Dutton et al.’s (2001) point about having a “feel for the game” within an organization).

My aim has been to show how an attention to scales expands the technological framing repertoire and points to the multi-dimensional constitution of technological frames. While Jochemsen et al. (2016) have pointed to the varying organizational scales implicated in the technological framing process, my focus extends their insights. They looked at what they called an “illusion of congruence” – technological frames might be aligned at one scale, but not another and a failure to examine the scalar aspects of technological frames might miss incongruence. My focus, though, has been different – by looking through a narrative-making lens, I have shown how multiple scales of organizational meaning are implicated at once in technological framing practices. Even a narrative that seemingly focuses only on the micro-level of technology “use” – at the level of user interaction – draws upon, shapes, and is shaped by the broader meaning systems of the organization.

This meso influence, though, is often rendered invisible, with the seemingly straightforward claims of the “use case” resonating as self-evident – grounded in common sense and everyday experience. Therein lies the reality-shaping power of narratives – that they give an account of organizing, an account that often is presented as a pre-given fact (Mumby, 1987). Technological frames, then, emerge from and cannot be understood apart from these reality-constructing practices; notions of “use” are neither self-evident nor pre-given, but rather meanings emergent in the strategic and multi-scalar configurations of organizational life.

3.5 A ‘Cutting Edge’ Point of View – Having a Hand in Shaping Meso Narratives

The interplay between micro and meso technological narratives I observed was not unidirectional, but instead mutually shaped. While the micro stories of technology use were shaped to align with the meso concerns of organizational strategy, efforts were also made to accomplish the reverse – attempts to “have a hand” in shaping meso-level strategy. At times in the lab, the “use case” was meant to draw attention to an as-yet unexplored (or underutilized) technical opportunity. A cleverly arranged narrative pitched to strategic decision-makers offered researchers an opportunity to “make their mark.” By providing a “cutting edge” point of view, such occasions held the possibility of shaping the company’s strategic direction.

This shows us how narrative making around technologies can serve as a form of identity work (Snow & Anderson, 1987). Ashford and Barton (2007) have pointed to the role of identity and identification in issues selling, for example in how women raise issues of gender equity in corporate life. Adding nuance to the strategic motives underlying issues selling, they explain:

Instead of asking, “what will selling this issue bring me?” a seller operating based on the identity motive asks, “is raising this issue consistent with who I am?” A seller operating on the identification motive asks, “is raising this issue a manifestation of my degree of caring about and identifying with this organization or group?” (p. 224).

Here too, we can see how certain forms of organizational and professional identity are implicated in the technological narrative-making process. This is particularly salient in talking about efforts to influence an organization’s meso-level strategy – how and to what extent change ideas are realized depends on the degree to which they can be “connected up” with various institutional structures (Kellogg, 2010). This was a factor in how research projects were formulated at the lab. Pitches were seen as opportunities for researchers to not only gain executive “buy in” and resources, but also provide a “cutting edge” point of view to others within the organization, one that demonstrated a professional perspective on the “bigger picture” of the technical work.

“What about the Apple Watch?” I threw out during a project brainstorming session. There had been a lot of buzz on the company’s intranet about the Watch, as it had recently been approved as a device employees could purchase with money from their Health Savings Accounts. I suggested that insights from an interview study with employees using the Watch who had recently started

using an Apple Watch might provide rich context in developing movement and gestural analytics, the general topic identified for the project.

Think more organically, one researcher said, don't start with a specific focus on devices or an existing technology. "I think that would probably be a wrong direction to take, purely from a research point of view," he advised. "It's okay to think about the Apple Watch and we are going to do that obviously as we develop apps. But you as a researcher, you need to think a little bit above that, think about the bigger picture."

What projects you pitched and how you pitched them reflected who you were as a researcher – someone meant to be providing insights into the "bigger picture" of technical development. Interns were explicitly instructed in how to go about doing this, with a "Design Thinking" workshop convened for them to put together a "hot topics" panel to present to the research group. "Think of what [GloTechCo] should be focused on in the next few years," one of the group's researchers told the interns. "Think of yourself as future employees, what kind of technology would you want your employer to have?"

What these perspectives – "thinking above and beyond" specific devices, conjecturing about the future – add to our understanding of technological framing is the personal distinction that comes from shaping the process. Seeing and projecting oneself as a visionary of sorts – of seeing new problems, of conceiving a particular technological future, and of getting others to "buy in" to your point of view around a technology – was not only a source of personal pride, but also caring about the company's future. I qualify my use of the word visionary here with "of sorts" to convey how it emerged from and is tempered by organizational structures. Researchers still had to contend with executives from the business side, who acted as organizational luminaries in their own right (as we saw above, in section 3.4, in how micro stories around technologies are aligned so as to be coherent with ongoing meso narratives within the organization).

3.5.1 Try, Try Again – The "Garbage Can" Quality of Technological Framing

Whether narrative arrangements resonant and are taken up across scales depends on a given organizational moment – if and how certain frames take hold is influenced by the resources at hand and any number of the "garbage can" factors that govern organizational life (Cohen et al., 1972).

To illustrate this quality, consider how one app project unfolded. There was ongoing work in the lab around indoor navigation – the development of Internet of Things (IoT) sensor arrays to generate novel data and then developing analytics to interpret that data and predict a location inside a building. There was also an effort within the company’s human resources (HR) department to redesign the onboarding experience for new hires. There was also ongoing work within research on iOS mobile app development, which aligned with an organization-wide initiative to transform the company into a “mobile friendly” environment. Building on this momentum, researchers in the lab pitched a mobile app – one that utilized the indoor navigation technology in helping new hires find their way around an office building. This is a classic case of the “garbage can” decision-making articulated in Cohen et al. (1972) – there were solutions (indoor navigation; mobile development skills) in search problems to solve. So when the research group heard about the HR redesign project, an opportunity arose.

With the alignment of these various initiatives and skill sets, support from several key executives was gained (both within the research lab, as well as the HR executive) and “summer resources” were approved to move the project forward. This meant a group of interns were hired to develop a “proof of concept” by summer’s end, with an eye to have a working prototype to deploy by fall.

The app concept evolved as the project continued, with the aim of providing not only indoor navigation, but also an interactive checklist of onboarding “to do” items. The existing process left new hires with a high number of emails, sending reminders of what tasks needed to be completed and when. The HR department had stressed the need to develop a tool to help manage this, by reducing what one HR project manager (PM) described as the “fire hose” of information that flooded email inboxes. A number of features were added to the app concept, as the team sought to address the issues raised by the HR department. The concept even expanded, enhancing the experience of new hires by adding social networking-style features to help them adjust to a new community.

When the project started it appeared strategic “buy in” was secured – work-in-progress meetings were met with warm (and from some, even enthusiastic) reception from stakeholders. And as the project progressed, all signs indicated it had found multi-scalar resonance, as the app concept aligned with not one but two meso-level strategies (iOS development; analytics) and was addressing a pressing micro “use case” around the onboarding challenges faced by new hires.

Towards the end of the summer, though, news came that another lab within the company was also developing an onboarding app. Suddenly, the stakes had changed and the team found their app concept – which I’ll call “EZerNU” – in competition with the other lab’s app – which I’ll call “NU2do.”

A couple conference calls coordinated the two app teams, as each demoed their prototype for the other. By many measures, EZerNU was more sophisticated. EZerNU had the “wow” factor – an iOS app, that featured analytics, and was designed to be interactive (with the potential to engage with and “pipe in” HR system data to provide a dynamic to-do list for new hires). Whereas, NU2do was a mobile-optimized web-based experience (HTML and not an app) and only provided a static checklist for new hires to read.

Yet despite this, when time came to discuss deployment of our app, EZerNU failed to be taken up and the project was disbanded. HR had decided to pursue NU2do instead, giving reasoning that because NU2do had already done a pilot deployment, they were closer to implementation.

The point here is not to highlight “failures” as embarrassments or wasted efforts, but instead to show how normal and ordinary they were. While the interns on the EZerNU project were disappointed in the outcome, the researchers on the project didn’t seem to bat an eye. Although indicating that the reasoning given by HR seemed odd (and perhaps not revealing the “whole story” behind the decision), the overall premise – that a project failed to be “taken up” and would not be implemented – seemed to be regarded as “business as usual.” The concept petered out as researchers found other possible outlets for their ongoing work (like the indoor navigation).

So while narrative making provided a sense of personal distinction in the framing process, the failure of one’s ideas to be “taken up” was regarded as the “cost of doing business.” This highlighted the strategic, yet improvised nature of technological framing – while every effort can be made to achieve multi-scalar resonance, the “garbage can” quality to organizational life meant that sometimes efforts fail without rational or predictable reasoning behind them.

3.6 Concluding Remarks – Technological Framing as Strategic, Yet Improvised

In this chapter, I have examined my first sub-research question (narrating) and opened the dissertation with empirical support for my thesis that conceptualizing technological framing as a narrative process within an organization is fruitful in expanding our knowledge of the framing

process. As we've seen, technologies come to be understood in relation to micro narratives of ordinary use – small and ordinary problems that have an intuitive resonance with everyday life. But technologies are also framed in relation to meso narratives of organizational strategy and vision – understanding these two processes together we are able to conceptualize the framing process as multi-scalar.

I have also shown how narratives at multiple organizational scales interact and influence one another. Micro narratives are simplified and abstracted, shaped by the taste and experiences of the narrators who wish to create compelling and believable “use cases,” ones in line with ongoing organizational priorities. Meso narratives are also shaped – with continual efforts made to pick at, expand, and re-arrange them. Providing a unique point of view was an opportunity to “have a say” in shaping the strategic trajectory of the company’s technological development. Yet despite these strategic quality, technological framing was also improvisational and at times even seemed haphazard. Understanding how efforts to influence technological framing are both strategic and improvised helps to expand our understanding of the dynamic role “Technology Strategy” plays in shaping technological framing, a point raised in Orlikowski and Gash’s (1994) original article.

Given these insights, a narrative approach to conceptualizing technological framing, then, must try and account for the ways that narratives are multi-scalar. Such a conceptualization opens up a number of questions, perhaps more than it might answer. In this dissertation, I will demonstrate how these open questions can expand our understanding of the IS adoption process. I will do so by first, using a narrative lens to help identify the complex and strategic constitution of technological framing as an organizational process, and second, by providing conceptual language that enables us to analyze these dynamic framing processes and the organizational value they render.

Each chapter of the dissertation contributes one prong to this endeavor. The first prong is what I have already laid out in this chapter: how an attention to *scales* and *resonance* and in particular how *multi-scalar resonance* is arranged in technological framing can help uncover how micro stories of technology use interplay with broader organizational priorities. The second prong is what I will examine in the next chapter: the role of narrative *plotting*. Plotting is the practice of giving sequential order to actions and events, placing them in narrative form, and I will show how creating different types of strategic associations around technologies enable problem-solving and help to ensure stories of success. The third prong is what I will examine in chapter five: how

narratives help to cultivate unifying goals, instilling everyday work with a sense of moral worthiness. The fourth prong is what I will examine in chapter six: how individuals signal recognition of the role they are to play in organizational narratives and how they, in turn, adjust and modify those expectations in a process I label *inhabiting*. Then, in the seventh and final chapter of this dissertation, I discuss these findings in relation to relevant literature and articulate *narrative assembly* as the overarching conceptual contribution of this dissertation. With these conceptual pieces in mind, in the next chapter, I turn to the topic of plotting.

Chapter Four – Plotting Strategic Associations: Putting Together Narratives of Do-ability and Success

4.1 Chapter Overview

Conceptualizing technological framing as narrative making also allows us to examine how *plotting* – the act of arranging phenomena into a narrative plot – enables different kinds of relationships to emerge and associations to be made. These associations are sites of interpretation, playing an integral role in the construction of organizational reality (Mumby, 1987). This chapter addresses all three of my sub-research questions (narrating, narrated, audience). In examining how individuals engage in plotting practices, I demonstrate how, in making their own narratives (narrating), they draw on (narrated) and respond to (audience) existing narratives from both within and outside the organization.

This focus reveals the *dynamism* and *diversity* of technological framing. By “dynamism,” I mean framing is situated in specific narrative-making occasions – that means that the associations created can change from occasion to occasion. For example, a technology may be framed as a threat in one narrative-making occasion, yet an opportunity in another. Furthermore, an individual’s relationship within the framing process can change dynamically as well – assessing a framing as a “audience” member in one occasion (for example, in assessing trade press narratives about a technology) and then attempting to direct and influence framing in another occasion. By “diversity,” I mean framing can be motivated by a number of concerns – both personal and organizational. For example, a technology may be framed to create a site of intimacy and shared experience on one occasion or may be framed to ensure the firm’s distinctiveness and competitiveness in another.

To demonstrate these points, I examine how three plotting relationships (cause/effect; similarity; and difference) are configured in a variety of scenes from the software development lifecycle and how the relational associations they present help to support organizational problem-solving and contribute to technological narratives of do-ability and success.

This chapter extends the technological framing literature by pointing to the central role associations play in framing. We know, even from the introduction of the concept, that

technologies are framed *in relation to* other technologies – individuals made sense of the groupware examined in Orlikowski and Gash (1994) by comparing it to the software program it was meant to replace. But, here, I show that framing associations can be far more dynamic, changing from narrative to narrative. In doing so, I extend Azad and Faraj's (2008) attention to frame change and evolution and Young et al.'s (2016) attention to inconsistency in framing, pointing to a conceptualization of framing as situated and rapidly unfolding in interaction.

4.2 Introduction – Narrative Plotting as a “Mode of Association”

A plot is the sequence of events that underlies a narrative, what Czarniawska (1997) calls a “mode of association” where things are put together with a series of “ands” (p. 6). These “ands” give order and flow to stories by bringing phenomena into a relational and sequential whole. These “ands” are often “and thens” which create a specific kind of order – temporal order – and enable interpretations of causality (Czarniawska, 1997:2). Patriotta (2003) describes these connections as producing “conjectural knowledge,” an integral, though under-appreciated, part of organizational knowledge practices. Given my interest in framing as a persuasive and strategic practice, my focus is on the active verb *plotting*. I am interested in how different plots are put together and arranged in everyday organizational practice and the impact of these conjectural practices on the technological framing process.

Narratives play a central role in shaping organizational reality – they signal to individuals *what* is happening and to *whom* and their internal plot structure offers an explanation of *how* and *why* it is happening (Mumby, 1987:113). Because of this reality-shaping potential, narratives have implications for understanding organizational power – narratives do not reflect a pre-given reality, but instead construct one through “a politically motivated production,” a rendering of the world that “privileges certain interests over others” (Mumby, 1987:114). Thus, narratives are political in that they strategically shape reality and are consequential in constituting organizational life. Despite their constitutive role, narratives are often taken-for-granted because they are so deeply interwoven into everyday practice (Mumby, 1987:114). An attention to the specific associations rendered in narratives – and their organizational impact – helps to extend our knowledge of their reality-shaping role in technological framing.

If we understand the role of narratives as constructing a reality (rather than reporting on or presenting pre-given facts), the analysis of various plotting occurrences does not focus on their

accuracy or veracity. Czarniawska notes that it is the “perceived coherence” of the ordering that “determines the plot and thus the power of the narrative as a story...rather than the truth or falsity of story elements” (p. 5). This “perceived coherence” is interpretive and situated, influenced by a number of factors. Related to this is the work of Barry and Elmes (1997), whom I discussed in the introduction. In their analysis of strategic storytelling, they drew from literary studies and set out two criteria for evaluating the persuasiveness of stories (believability and novelty), highlighting these as interactive and emergent qualities. To this, my focus adds an interest in understanding not only the believability and novelty of specific narrative plots, but also what they accomplish organizationally.

In what follows, I will show how, by arranging phenomena into particular sequences, different kinds of associations are made around technologies; these associations offer organizational value in a number of ways. In section 4.3, I will show how cause/effect associations support problem solving. In section 4.4, I will show how associations of similarity enable a sense of do-ability. And in section 4.5, I will show how associations that accentuate difference help to construct narratives of success.

Through these empirical examinations, I reveal the *dynamism* and *diversity* of technological framing by showing how framing is situated in specific narrative-making occasions (with the possibility of meanings to change from occasion to occasion) and can be motivated by a number of concerns (helping address both personal and organizational issues). While associations have always been a central feature in the technological framing lens (with technologies framed *in relation to* other technologies) here, I show that framing associations can be far more dynamic, changing from narrative to narrative.

4.3 Cause/Effect – Plotting to Problem-Solve

The first type of relational association I will examine is cause/effect. Cause/effect relationships enable organizational problem-solving; by asserting a cause to a given dilemma, sense is made around a problem, enabling potential solutions to be advanced. In demonstrating this process, I turn to the organizational practice of “bring your own device” (BYOD) and how it was addressed in the software design process during my study. BYOD was a policy in full swing at the company when I arrived – although originally implemented a few years prior, it was experiencing a reinvigorated flourish during the study period as the development of new iOS apps ramped up at

the company. This led many employees (about 1 in 4) to “work-ify” their personal Apple devices to be able to try out the company’s new app offerings.⁴

In some contexts, BYOD is the *de facto* workplace arrangement, where technological narratives have framed the incorporation of a variety of consumer technologies into work practice as the norm.⁵ But the corporate world, I would learn, is different.

IT consumerization, or the use of personal and consumer technologies for work, is a rapidly growing concern for contemporary organizations (Harris, Ives, & Junglas, 2012; Niehaves, Köffer, & Ortbach, 2012). This phenomena is often characterized as a story of potential loss or defeat in trade press literature.⁶ Workplace IT use is seen as a battle to ensure workers use only sanctioned company technologies, with BYOD positioned as a strategic move to guard against this potential loss. Businesses are told they should tackle the problem of IT consumerization head on, embracing BYOD and establishing policies to set the parameters of company-sanctioned personal device use. Employees are going to use their own devices whether they are sanctioned or not, the trade press laments. By creating BYOD policies, corporations can try to retain control around how technologies are used in the course of their employees’ everyday work.

BYOD policies often involve using company software on personal devices; this can require varying levels of overhead as enterprise programs are rendered compatible. Of particular note is the effort required to enable compatibility with Apple technologies (as enterprise systems have historically been primarily Windows-based). Thus, while BYOD offers companies the opportunity to set the parameters of personal device use – to control the narrative of IT consumerization – it also complicates the enterprise IT ecosystem, creating new demands and added complexities that must be grappled with.

In addition to back-end compatibility, app technologies pose unique design challenges. Known for their particular aesthetic, apps symbolize the epitome of modern and sleek design – a stark

⁴ This 1/4 number for BYOD includes those employees who use their personal devices for sanctioned work purposes – those on designated teams (such as sales, 100% travel, or high-level executives) are provided mobile devices paid for by the company. Estimates for this latter category are between 1/4 and 1/3 of the company’s employees, meaning in total, about half of the company’s workforce use mobile devices for work purposes. Employees who use their personal devices under BYOD are able to get a portion of their connectivity charges reimbursed by the company, though the employee must cover the cost of the device itself.

⁵ For example, BYOD (and lately Google Apps for Education) is often the norm in higher-education settings (e.g., Rossitto, Bogdan, & Severinson-Eklundh, 2014; Volda, Olson, & Olson, 2013).

⁶ For example, see <http://www.gartner.com/newsroom/id/507423>.

departure from the traditional IT systems of the enterprise (often called “legacy” systems to signal their old-fashioned status vis-à-vis contemporary design culture). In an effort to make headway in transitioning to a more app-friendly workplace (and competing in the more modern software marketplace apps represent), GloTechCo had initiated an ambitious iOS development initiative.

To understand this strategic development focus, I conducted several interviews early on in the project to understand the approach and scope of the work already going on. Although it was initially unfamiliar, I was quickly introduced to the sharp distinction between enterprise and consumer platforms. Despite the growing emphasis at the company on iOS development (which, as I mentioned above, has traditionally been considered a consumer platform), strategists and designers were quick and clear in pointing out to me the ways that “enterprise is different.”

In some contexts, “consumer” was almost a taboo word, eliciting dramatic reaction. In asking Lawrence, a strategic architect, if the new apps were aiming to provide a consumer “look and feel” to the user, he abruptly responded: “No, absolutely not!” Continuing on, he said:

We're by no means trying to make this seem like a consumer app. What we're trying to do is we're trying to take aspects from various technology, various pieces of research and feedback that we're getting from the market to build a very solid enterprise-level piece of software, an email service. But this is by no means a way to introduce ourselves into a consumer market or make our products more consumer-friendly.

Plots are a “mode of association,” but, as we see here they can also be arranged to de-associate phenomena. By de-coupling the two, Lawrence’s efforts aim to draw a clear contour around the narrative he is making: this product is not engaged in a story about the consumer market, its plot is focused on the enterprise. Such boundary setting helps to define (and delimit) the problem space a narrative engages with, providing signposting as to the plot’s general direction.

In this, we can also see the pivot Lawrence makes between “audience” and “narrator” – implicitly responding to the broader IT consumerization narrative (which sets the context for the enterprise/consumer dilemma), he also explicitly draws on “feedback that we’re getting from the market...”

With BYOD and the direct intermingling of consumer and enterprise IT experiences on a single device, a rigid division between the two felt untenable to me. Workers will interact with enterprise software (like the new email app) in near simultaneity with the rest of the consumer apps on their device. If these are separate stories, how do they connect?

I asked Lawrence if the consumer side influences the design of the enterprise apps. “It does impact the design, it does,” he acknowledged. “We’re seeing that, you know, if the research shows that the millennials that are coming into organizations, if the company does not provide the tooling which is sufficient,” he set out, “they will go out and use tools which are available outside of the organization. And some of those tools may not be as secure as you want them to.”

In this simple “if, then” explanation, we are able to see how Lawrence aligns causes and their effects in a senseful plot, one that offers a diagnosis of the organizational dilemma of IT consumerization. “Millennials entering the workplace” is set out first as a precondition, what Boje (2008) would call an “antenarrative” that sets the plot in motion.⁷ Given this catalyzing event, if organizational action (or in this case, inaction – the failure to provide “sufficient tooling”) occurs, then a projected consequence will occur (using non-company tools).

To illustrate this plot, he went on to explain how user-friendly consumer collaboration products like Google Docs pose a particular threat to the enterprise. Many young workers will have experience using consumer products like Google Docs in college, a hard habit to break if there are no equivalent tools available in-house. Using outside tools like this can unwittingly leak proprietary data and lose intellectual property. Companies like Google can easily mine information from their platforms, he reminded me. “They could have gone out and, for example, saw an idea in there and then went out and took their idea. That’s why trying to use other tools out there can be very dangerous,” he told me. “So, in comparing [our products] to the consumer side, we’re trying to avoid that type of situation and ensure that what these millennials want, it’s all available in-house,” he concluded, as our discussion moved on to other aspects of the email app project (like its integration with legacy products on the back-end).

⁷ The changing demographics of the labor force (and in particular the coming-of-age of millennials) is a common trope in contemporary organizations used to signal a recognition and justification for the need to “rethink” the relationship between workers and technologies.

The concern over proprietary data management is an obvious one when talking about IT consumerization. Data storage evokes themes of safety and risk. These themes have strong reverberations, ones we can clearly see in how he explicitly calls out consumer products as “dangerous.”

In this narrative-making occasion, we are able to see how arranging phenomena into a narrative plot enabled organizational sensemaking to take place. The threats of data leakage and property loss come to be understood as possible outcomes of organizational inaction. In setting out this type of cause/effect relationship, the plot also implicitly offers its own solution – if certain inaction is the cause, it becomes reasonable to think it’s opposite might protect against such a threat.

The power of perceived causality rests on just that, perception (not actual causality). Recall the point from Czarniawska (1997) that a good plot is about the “perceived coherence,” not truth or falsity, of its claims. In dissecting this plotting occurrence, my assessment is not about whether its claim that millennials are dramatically different from other generations is true or whether they are the central driver of the IT consumerization trend.⁸ Nor is it about blame or finger pointing. Indeed, Lawrence’s use of plotting here was not an effort to displace or assign blame for the problem of IT consumerization. Rather, it was a means of understanding and wrestling with this problem – it is through the cause/effect sensemaking that plotting enables that he does just that. By configuring relationships among phenomena along a narrative plot, those phenomena come to be understood, their relationships sources of interpretive meaning. Once understood, efforts can then be directed towards how best to go about changing or impacting the plot. As we can see here, Lawrence aims to strategically shape the email app’s technological frame by demonstrating its value as a solution to the company’s problem of IT consumerization.

My attention to “problems” and their solutions is similar to the broken/fixed dynamic of the “use case” I examined in chapter three; indeed, many of the dimensions of narrative making I examine throughout this dissertation are entangled in practice. I attempt to separate many of these processes for the purpose of analytical and conceptual development, without making the claim that they are rigidly distinct or exclusive.

⁸ Indeed, perceptions of “differences” between generations in the workplace are common and not necessarily tied to any specific inter-generational coupling, with Lyons & Kuron (2014) describing these perceived differences as a social construct within organizations, rather than a demographic one.

The broken/fixed dynamic of the “use case” is similar to the problem/solution one we see here. But, my aim here has been to show how attention to the cause/effect mechanics that underlie many plots is helpful in understanding how technologies can come to be seen as a “solution” to specific problems. Associations like the ones made in Lawrence’s plotting shape technological framing – technological meanings emerge in relation to the problem (cause) they are aimed to fix (effect). By “zooming in” on the plotting mechanics of the narrative-making process, we are able to further develop the multi-scalar framing process I set out in chapter three by demonstrating how the coupling of specific ideas in specific plots also reveals the strategic dimensions of the framing process.

4.4 Similarity – Plotting to Bring Together

While the narrative-making occasion with Lawrence was motivated by the desire to make sense of a dilemma, narrative making can also be motivated by a number of different factors. In this section, I examine the plotting technique *similarity*, showing two examples of how this relational configuration can serve as inspiration and the anticipation of future demands, as well as a source of shared experiences and intimacy. In so doing, I reveal the *dynamism* and *diversity* of technological framing. Situated in specific narrative-making occasions, framings can easily change as their relational dimensions are re-configured. A narrative-making approach allows us to see this dynamism, and investigate the diversity of motivations that influence practices of strategic association.

4.4.1 Plotting to Anticipate – Using Consumer Designs as Sources of Inspiration

Through plotting, individuals can arrange associations of equation or similarity between a variety of phenomena. Here, I examine one type of similarity – between products or designs (below, in 4.4.2, I will examine the same association – similarity – but between people rather than products).

Although “consumer” was often marked clearly and explicitly as different than enterprise IT (as we saw earlier in section 4.3) company designers often turned to consumer design patterns for inspiration. By keeping an eye on consumer designs, designers could anticipate UX expectations and fold those into their design process. Though different, when they were presented as similar, their dimensions of commonality become key design referents in the enterprise design process.

Consumer apps were seen as sources of creative inspiration and insight into the current state of interaction design – what are users expecting? What will they like? What will “wow” them?

Plotting similarity between consumer and enterprise designs created a feeling that accomplishing “good design” was a do-able endeavor – one where enterprise IT could reasonably compete with its consumer counterpart. Natalie, a UI designer, laid this process out; explicitly setting aside a product’s overall organizational strategy, she focused on the minutiae of user interaction. In seeking to satisfy users, she looked to consumer platforms like Facebook to reveal a sense of what users currently expect from their app interactions:

Well I don’t know if I can speak to those kind of higher level [strategic] decisions that are made [for ESS], but as far as like UI design and how decide on the functionality to include, we do heavily look at a lot of different things just to see what they are experiencing in other platforms. I know myself I’ve looked at reviews of other apps just to see, you know, what complaints - what do people not like about certain things just so we have a kind of a full picture of what is working for them and what’s not working for them.

“Facebook, you know, changes things a lot,” she continued. “And that’s obviously very different than [our company] products, but it’s good feedback for us because we can kind of watch that and the majority of people use Facebook and so that’s kind of what they’re coming to us with knowing that this is how this works,” she told me, careful to acknowledge there are differences between the two types of apps.

Yet despite these differences, she turned to consumer products to offer insight into employees’ experiences outside the firm, insights she hoped to put to use in her design work. “If we did something radically different and it wasn’t better we would really hear bad things about it,” she explained. By plotting them as similar, consumer designs helped her team try to anticipate and adapt to ongoing user expectations:

So we really do have to look at a lot at our competitors and just apps in general and, you know, that sort of thing, to see what’s going on and anticipate where to go next...I feel like I’m always looking at different types of apps so we have kind of a constant knowledge of what’s going on and what are our users experiencing other places.

By associating the designs inside and outside the organization as similar, Natalie is able to construct a narrative where the product's designs are on par and competitive with workers' broader IT ecosystem – making the challenge of doing “good design” do-able and capable of success.

What does this add to our understanding of technological framing? It shows how framing is dynamic – shaped by the associations emergently made in narrative making. Here, consumer designs are presented as *similar* to enterprise ones, enabling a story of success, whereas earlier (in 4.3) those same designs were framed as *different* in Lawrence's plot, marked as a threat or danger. An attention to narrative making allows us to see how technological frames are situated in specific narrative-making occasions – with each occasion providing a different organizational value. Whereas Lawrence was problem solving – trying to make sense of a dilemma by associating causes and their effects – Natalie constructs the challenge of staying “on top” of changing user expectations as a do-able endeavor.

In understanding these two examples side by side, they may appear on their face to be inconsistent (Young et al., 2016). But by attending to each as situated in their own specific narrative making moment – they become meaningful examples demonstrating the dynamism of technological framings.

4.4.2 Plotting to Share – The Case of “Dogfooding”

Plotting can also implicate people (and the relationships between them) as well as technologies. Arranging different individuals or groups of people as similar, making claims that they share or experience similar things, can create a sense of intimacy or kinship. This demonstrates the breadth of the framing dynamism I describe – people can be framed through plotting, as well as and alongside technologies. Even when motivated by similar concerns (here, as above, establishing the do-ability of one's daily efforts) the specific associations put to use within a narrative can be different.

An example of this is the company's practice of “dogfooding” – a common industry practice where software companies use the products internally that they sell externally. While companies may articulate its value differently, one common premise behind dogfooding is that it offers an in-house QA test bed for products, ideally revealing bugs or glitches before the product reaches customers. For some, dogfooding was an annoying, though accepted reality of working at a

technology corporation. But others found this practice to be useful, offering benefits to their daily work.

Devon, a sales architect, for example, saw dogfooding as meaningful in his work. His team worked on selling the company's various tooling to support software development and delivery or "DevOps" as it is commonly called. In talking about his use of the company's project management tool among his own coding team, he explained:

The idea is we want to, you know, eat our own dog food, or drink our own champagne, however you want to describe it... The idea is we always want to use the applications we are selling and developing so that one, we're familiar with it, but two, we also get to have the same experiences as the customer and we're seeing things ahead of them because, you know, we want to make sure we're not just producers but consumers of what we're providing, because it kind of helps us improve the quality of it all around.

Dogfooding allows Devon to take the position of his customers, constructing a narrative that enables a shared experience and the ability to "see like a customer." This offers direct benefits to his daily work, as he is able to understand the product more fully by drawing on personal experience with it. But, by creating an association of similarity between his team and their customers, Devon also creates a shared reality, one in which they are capable of partaking in together with customers. The imaginative position-taking in this narrative-making moment – claiming that "we're consumers too" – engenders a sense of intimacy and solidarity with his customers.

The value of dogfooding, then, for Devon and his team, is not only about drawing on their first-hand experience with the products – but also imagining that experience as lived-through with customers. Such plotting gives meaning and value to dogfooding, helping to elevate it as an almost mission-critical practice for his team's broader work. While motivated by a similar concern – establishing the do-ability and success of his daily work. Devon's narrative making arranges people, whereas Natalie arranged technologies. This shows us the breadth of framing's dynamism, asking us to more closely examine how the unfolding modes of association emergent in plotting are embedded in organizational life.

4.5 Distinction and Complexity – Plotting Difference

The third and final type of plotting association I will examine in this chapter is difference. I draw on two examples that show how difference is accentuated in the plotting process. When embedded in narratives of similarity (what I call “same-yet-different”) the directed use of difference creates nuanced associations that highlight the distinction and complexity of the phenomena they arrange. This extends our understanding of technological framing’s dynamism by demonstrating the complex associations plotting can enable.

4.5.1 Plotting to Valorize – Establishing “Our Brand” of Agile

The “same-yet-different” type of plotting is paradoxical – phenomena are both framed as similar, yet also separated as distinct. This simultaneity situates a phenomenon in relation to its counterpart, yet at the same time makes strategic claims of association that distinguish and valorize it. To demonstrate this dynamic in practice, I turn to the company’s Agile campaign.

Though not about framing technologies *per se*, Agile offers us a site at which to understand how broader organizational changes at play in turn shape the framing of technological work.

Originally a software development methodology, Agile has gained attention in recent years as an all-purpose management style that promises to transform work processes with its focus on rapid iteration and contextual responsiveness.⁹ The “new way of working” envisioned by Agile is closely tied to the notion of the “future of work” often articulated with AI and advanced analytics. Agile’s new ways of working are valorized as different than current or prior work habits; yet, at the same time, they are also paradoxically portrayed as the same or rather a continuation and natural progression of the old and existing ways of doing things. This creates a sense of continuity and reprieve from the overwhelming change Agile presents, while still maintaining the claim of its heightened value as “new.”

To see these “same-yet-different” strategies in practice, let’s turn to the company’s online learning portal devoted to “Becoming Agile.” One video in the portal lays out the “History of Agile” – situating Agile within a long trajectory of workplace progression, making far-reaching claims that connect its focus on iterative practices with the course-correcting decisions in tales as iconic as Moses’ demand for freedom, Henry Ford’s assembly line, and the break from Waterfall’s rigid division of labor.

⁹ I treat the case of Agile in more depth in chapter six, where I discuss its role in shaping narratives of organizational change.

“Where did this Agile come from?” Denise, an Agile evangelist begins the video. “Since time immemorial people have been getting work done,” she began. “And to get work done, you have work practices.” She pointed to the tale of Moses as a cautionary tale about how authoritarian work regimes “don’t last.” “Think about the pyramids, they used whips,” she says. “That was a practice, but did it work? Yes, it worked. They built the pyramids. Did it last? No. There will always be a Moses who suddenly says, ‘No, let’s go.’ Someone will eventually refuse, it will happen, because people don’t respond well to that.” She then went on to discuss Henry Ford’s implementation of assembly line manufacturing and other marvels of American industrialism like the building of the Empire State Building.

“You might be thinking ‘Oh, was that Agile? Are these examples of Agile?’” she posed. “Of course it was Agile! These are all examples of Agile; iterating through problems, making mistakes, sometimes expensive mistakes, but always striving for improvement,” she said, setting up Agile as the similar to these prior practices. Here, the claim of similarity helps to build continuity. Such continuity naturalizes Agile’s plot, as if to say: this is just part of the trajectory of technological innovation in organizational life. By creating an association of similarity between Agile and long-run labor histories, a story of natural progression unfolds, one that builds anticipation at the same time it insulates itself with an inscrutable and common-sense quality.

Denise then sets out the more explicit thread of Agile’s origins, talking about the Waterfall method, about the drive to decrease changes in an effort to minimize redundant costs. “But they forgot about collaborating,” she pointed out. “They forgot about iterating and about learning.” An increased focus on bringing collaboration back in the development process led up to the state of Agile, she explains giving a brief trajectory of various methodologies developed in the 1980s and 90s. “So, that’s how Agile was born,” she begins to wrap up. “Is it new? Of course not,” she said matter-of-factly.

After she established Agile as a narrative of continuity, she then goes on to distinguish how the company’s specific approach to the methodology is different. Agile at GloTechCo is new, she added, a special incarnation they have developed in-house. “We have absorbed all sorts of learning from Lean, from design thinking, from neuroscience,” she said.

Describing the process she went on. “So, you might be asking yourself: what is the condition for taking a practice and making it an Agile practice?” There are many ways of doing things, she explains. Everyone has an opinion on what makes a good practice. The central criteria goes back to the core values the company has set out for their specific brand of Agile: “If it meets the values and principles, you can use it for Agile,” she said. “Doesn't it make sense? It's that simple. So everything that you will see in our portal, we've got 70 or 80 practices now, you can use and adapt any of those for your work,” she excitedly added, ending with a little addendum: “And you can invent your own!”

The same-yet-different association created in this plot first situates the story, normalizing it and offering the audience context of its origin and the criterion upon which to judge its novelty. It then distinguishes the story, accentuating the plot as different, unique, or special in some way. In the example of Agile I include above, this same-yet-different association helps to support the claim that the company's unique brand of Agile will be different – compared to both the long-run history of transformations in management styles and compared to Agile's existing instantiation as a software development methodology. This valorized difference is key in setting apart their story of Agile – arranging a plot that supports it as new and valuable.

4.5.2 Plotting to Complicate – Highlighting the Demands of Enterprise Design

The nuanced differences highlighted in same-yet-different associations can also be used to accomplish other strategic goals. In addition to valorization (as I discussed above), the same-yet-different coupling can also draw attention to the complexity of phenomena. Highlighting the complexity of a situation can further strategic efforts, for example by influencing others to see and appreciate the difficulty of a situation when measuring its success.

I saw an example of this in how the user-centered, enterprise design process was articulated. One example that demonstrated this was an app suite project focused on the corporate travel experience, an ongoing project in the research group when I arrived. As I discussed earlier in section 3.3, widespread changes in consumer IT experiences have influenced how traditional enterprise software is evaluated – often labeled “legacy,” denoting its status as old-fashioned. This is particularly true of the travel sector, where the “self service” ethos of many Web 2.0 platforms can make corporate requisition and approval systems feel jarringly anachronistic and unduly cumbersome.

Wei-yin, a software developer on the project filled me in on the different considerations that impact the design process. He began with a high-level description of the project, aimed at designing mobile apps to support the booking process. The basic workflow of booking seems straightforward, he explained. “A lot of the booking tools operate for consumers, for personal travel, leisure travel,” he added, explaining: “But for business travel, there are other things that we need to take care of. For example, the approval process, right, getting your manager to approve before you buy. And then there is always auditing, creating records for auditing. And then also the vendors, making reservations in line with [organizational] policy.”

The consumer platforms we have all used to book holiday trips or vacation getaways, like Expedia or Orbitz, are organized implicitly around the idea that cost is a top if not the top concern. Or perhaps the location of lodging is a top concern, if we want to reduce transit costs by getting a hotel closer to particular venues. But in corporate travel, cost may not be as important as other organizational concerns, Wei-yin explained. Staying at a further away hotel might be preferable even though it costs more (and requires a taxi) because your client has an existing relationship with that hotel:

For business travel, cost – reducing the cost – is not always the first priority, you know. Controlling, documenting, keeping good records, having a good relationship with vendors, having a long and, you know, sustainable relationship with vendors – that is also important. Cost is not usually important. And do you know the reason? The reason is because the client is paying for it, the client is paying for the travel, so you want to make sure it matches how they want to do things.

So while the project’s overarching goal seemed straightforward and similar to the consumer space (support travel booking with a simple, self-service platform), Wei-yin was careful to highlight how it was different. Enterprise designers must consider the special context of corporate life. Enterprise designs might bear resemblance to their widespread consumer counterparts (finding inspiration in consumer designs, like we see here and earlier with Natalie’s work). But they are strikingly more complex in the factors they must consider and accommodate:

Design today is all about personalization, right. But personalization is also not a new thing. Everybody is doing personalization, and so users want it, expect it. But the - I think, to make this really outstanding you don’t need to do many kinds of personalization, but you

want to do it very well, right. To keep users happy, but also make sure the business needs are being designed too.

Making note of this complexity and drawing attention to it, as he does here, is a key part of making sure projects like the travel app suite can be successful. Any measure of success needs to take this complexity into account, and his use of the same-yet-different plot helps to do just that.

The same-yet-different associations created in both Wei-yin's narrative and the Agile History demonstrate the multi-dimensionality of technological frames – with relational nuance positioned strategically in plots to familiarize and at the same time distinguish.

4.6 Concluding Remarks – Technological Framing as Dynamic and Diverse

In this chapter, I have further addressed my first sub-research question (narrating) by talking about the organizational value of plotting – that is, the process of arranging phenomena into linear and cohesive narratives. Plotting is a sensemaking process that allows phenomena to be understood as meaningful and relevant; it is, as I have shown, also a strategic process, wherein different kinds of arguments and claims are executed through the various associations presented. I have examined how three different kinds of associations – cause/effect, similarity, and difference – are used to problem-solve, foster a sense of do-ability and success, and valorize and distinguish.

This chapter extends our understanding of technological framing by demonstrating how framing is dynamic and diverse. Technological framing, from its initial introduction in Orlikowski and Gash (1994), has drawn attention to the relational nature of technological interpretation. Their case of a new groupware system showed how users made sense of its purpose by drawing on their prior experiences with similar programs – the new software program was framed in relation to older programs. We can see this relationality at the heart of much of the technological framing literature, for example with Treem et al. (2015) pointing out how enterprise social media platforms are framed in relation to experience with consumer social media platforms.

But my focus on plotting reveals how the associations that shape framing can be far more dynamic, changing from one narrative-making occasion to the next. These are diverse, not only in the things they arrange and associate, but also in the organization value they provide. As I've shown here, technologies are not only framed vis-à-vis other programs or platforms, they are also

framed in relation to the problems (or solutions) they represent, to the forms of shared experience and intimacy they enable, and to the competition they confront. What's more, by drawing attention to the same-yet-different association, I've demonstrated how these associations are anchored in specific narratives to then be distinguished. These points add further nuance to what we mean when we say technologies are framed "*in relation to*" – showing how technological relationships emerge and are arranged in a number of unfolding narrative-making occasions. Consumer technologies, for example, are a danger in Lawrence's narrative, yet offer a competitive edge in Natalie's. Plotting relationships offer a site of intimacy to Devon and an assertion of complexity by Wei-yin. Attention to the modes of associations accomplished through plotting, as I've done here, offers us purchase in understanding how these seemingly contradictory framings are rendered senseful and coherent in organizational practice.

Chapter Five – Goals That Unify: Narrative Vision And The Power of Imagined Endings

5.1 Chapter Overview

A narrative-making conceptualization also enables us to examine how technological framing is a moral process. In this chapter, I focus on the role of imagined goals – a narrative’s outcome or ending – to reveal how technologies are understood as contributing to large-scale social agendas. In doing so, I address my second sub-research question (narrative content) and reveal how technological framing is *morally charged* and *multiple*.

By “morally charged,” I mean that framing is shaped by implicit ideas of how things should be (social imaginaries) and the role of technologies in bringing about those ideals (social movements). And by “multiple,” I mean that there are several simultaneous value-driven goal-streams across an organization, creating different repercussions for everyday practice.

To make this argument, I show how a desired end-goal helps to create a shared vision of a technology’s purpose, one that its design and implementation strives to achieve. For example, a certain technological intervention may have a goal of increasing efficiency by making a workflow faster; or a change in work practices may be implemented because it is seen as “silo-ing” information. In these examples, implicit values and assumptions undergird the perception that these goals are good and worthy – that efficiency *should be* the central focus of a technology and that a faster workflow *ought to be* its key measure; or that information inherently is *supposed to* flow freely across contexts.

Moral goals can provide a unifying vision, one that workers can rally behind and thus can be beneficial for organizational cohesion. But organizational life is filled with, and driven by many goals, producing what might seem to be contradicting forces. I will show how a narrative-making approach is helpful in grappling with this multiplicity. A focus on narrative making helps to reveal how the values that fuel organizational visions are often narratively re-configured – enabling what may appear to be contradictory tenets to be understood as internally consistent within a narrative-making moment.

Finally, I also show how, despite contributing to a cohesive outlook with a sense of consistency in understandings of a technology's vision, the imagined goals of a technology can also displace alternative narratives and points-of-view. In this chapter, I examine this duality in depth.

To make these conceptual points, I examine how “increased productivity” and “social business” served as unifying goals at my field site. Specifically, I show how the idea that technology can and will “make things better” is embedded in the goal of “increased productivity,” and how this provided a moral imperative that animated everyday work.

Then, I examine how underlying goals like this were continually tweaked in practice – for example, in how the goal of “social business” products (namely, to increase collaboration and content sharing) was often re-written in light of customers' specifications and the longstanding tradition in enterprise IT to provide heavily customized, “bolted on” systems. At a certain vantage, these two goals seem in opposition – with the space between “hoped for” and “realized” goals wide, making an adherence to the former seem idealistic or even naïve. Yet, I show how, when conceived of as narrative making guided by a central, unifying goal – service to the customer – what appears to be contradictory comes to be understood as consistent.

Finally, I examine how, despite this unifying potential, imagined goals can also be a site of conflict or tension as different stakeholders scrutinize the appropriateness and equity of the visions they enact.

This chapter addresses my second and third sub-research questions; it does so by demonstrating how technological framing implicates notions of social order and progress (what is being narrated) and that those notions are both re-configured and called into question through everyday practice (how narratives are taken up). I further our understanding of the roles inconsistency (Young et al., 2016) and granularity (Vaccaro, Brusoni, & Veloso, 2011) play in technological framing. I do so by explaining how the re-configuration of goals through narrative making – in a process similar to, though distinct from granularization – enables individuals to maintain a sense of moral consistency, showing how (in)consistency is not a stable fact but an unfolding construction.

Additionally, I extend our discussion of these concerns by pointing to the role of scrutiny and displacement – highlighting how, even though individuals may understand and work towards an

organization's technological goals, they may have misgivings about the futures such goals enact. This extends our knowledge of technological framing contests and what Azad and Faraj (2011) call a "truce frame." While we know that the spirit of "getting work done" may eventually force a "truce" in framings (Azad & Faraj, 2011), we know less about the experience of such a "truce" process and its effect on individuals. I examine these points in this chapter.

5.2 Our Imagined Organizational Life – Opening Points of Departure

"I have a feeling that whoever put [Max] together – I don't know how [Max] was built, but I feel like [Max] was probably modeled after something and has a slight, a little personality," Consuelo explained. "I didn't think it's like a very big one – I didn't notice a big one. But definitely very friendly, and willing to use happy faces and things like that." Consuelo was a new hire at the company, evaluating a chatbot called Max who "lived" inside the company's chat client. Max was designed to answer HR-related questions and also provide new hires with "friendly reminders" of onboarding tasks to complete over the course of their first 30 days with the company.

Her verbalized thought process allows entre to her search for narrative sense – who made Max? What were they like? What's the purpose of Max? How does Max compare to other chatbots I've experienced? I asked her to elaborate:

CW: So when you say a 'little personality,' what exactly do you mean?

Consuelo: Like Siri for example. Siri, like especially if you ask her a question that doesn't have to do with like something you need that she can do, her answers are all very sassy. And she's not afraid to kind of – and there! I see I talk about her as a person. But like she's coded so that she has, it has almost an irreverent attitude, which is probably not what you want with a workbot, but Siri very obviously has an irreverent attitude. And so I don't think it's a bad thing that [Max] doesn't really have a really obvious personality because I can't think of an obvious personality that wouldn't be annoying in a workbot. So like I think if you ask Siri something at work, and get that sassy response, it might annoy you.

In making sense of their experiences with Max, many of the new hires I interviewed drew heavily on their experiences with consumer chatbots like Siri and Alexa. Aware that a chatbot in the

enterprise setting is different, these *consumer technological frames* (Treem et al., 2015) provided a point of reference for new hires, allowing them a starting place to even begin evaluating Max. Although cursory, their consumer experiences provided a first-hand legibility with this type of interactive AI technology as they attempted to understand the “story” around a work chatbot.

But conceptualizing Consuelo’s framing process as one of narrative making allows us to more fully understand how seemingly ordinary encounters with a technology – a few small interactions with a chatbot – implicate diffuse organizational engagements. Her curiosity (of the developers who made Max, what the project is aimed to achieve, how Max relates to other chatbot products, what is and isn’t appropriate for a work context) points to a broader cast of characters and a broader set of interactions implicated in everyday technological encounters. Going beyond the interface, Consuelo’s evaluations of the chatbot situate their encounter within broader organizational life, an imaginative process that asks – what are we doing here?

Jump to an interview with Abhinav, a technical PM on the company’s email server product. “[Alabaster] has been our flagship mail product, mail messaging collaboration product actually for about 25 years now, going on 26,” he said with precision and pride, a noticeable excitement in his voice. Explaining the different components of the company’s back-end email products, he talked about how the mobile email product “adds-on” to the underlying server infrastructure and how things were changing as the product transitioned to the cloud.

From this “in the weeds” talk about servers he moves directly to the goal of the new smart email client: “And then [newClient] is, to me, a strategy of how we can empower users to work better, to take control of their inbox, focus on the items that are important, clear out the clutter.” With a straight-forward ease revealing its intuitive claim, he traces a thread clearly connecting the technical back-end technology to newClient’s strategic vision: “...and [newClient] sits on top of [Alabaster] technology, and as we work on [Alabaster] we are trying to enhance [newClient] even further for the client experience.”

More than just selling server solutions, we can see how technical work like Abhinav’s is understood as contributing directly towards the company’s particular vision and hope for the workplace of the future. Such goals provide a powerful focal point, elevating everyday doings to the level of grand strategic vision, one that “empowers users to work better.”

These two examples side by side – Consuelo’s chatbot interaction and Abhinav’s server description – show how technological framing is shaped by implicit ideas of how things *should be*. It’s good the developers only gave Max a little personality, because workplace chatbots shouldn’t be too sassy. And similarly implicit in Abhinav’s excerpt is an assumption – and eager approval – that, ultimately, all pieces of a technical infrastructure should be working to enhance the client experience. The collectively held meanings and beliefs of a social group, imaginaries make the experience of a shared reality possible; they give a sense of order and wholeness to social life by enabling shared norms and expectations about the morality of actions – how things *should* or *ought to be* (Anderson, 1998; Taylor, 2003). Social movements builds on this by asking, what is the role of collective action in bringing about those ideals?

I bring these two concepts (social imaginaries and social movements) together to more fully examine the technological framing process. Studying them allows us to uncover and examine these values and how they undergird everyday life. In this chapter, I will examine how the imagined goals of a technology – the “after” state of intervention articulated through technological narratives – help to establish shared visions of a technology’s impact. Establishing a unified vision, narrative making configurations help enliven everyday work with a sense of personal meaningfulness, moral worthiness, and social good.

How is this different than the process of meso/micro narrative convergence I described in chapter three? These processes are similar but accomplish different things organizationally. Whereas the “use case” involves a strategic recasting and convergence of current affairs (creating a “broken” story grounded in everyday doings) the imagined impact examined here reinforces a shared vision and hope for the future (creating a story of how solving the problem is also a type of societal progress). The two bookend technological narratives – working together, problematic beginnings and optimistic endings create a sense of pressing urgency and moral worthiness to everyday work.

5.3 Building a Unified Goal – The Goal of “Increased Productivity”

The fanfare around “Big Data” (and AI more broadly) has grown dramatically in recent years. Such grand discourses cultivate large, societal-level narratives that portend data as a transformative force capable of (and inevitably) reaching every facet of modern lives – with some even going so far as to claim that recent technological trends signal a “Fourth Industrial

Revolution” (Schwab, 2016). Talking about the application of analytics and AI technologies to everyday workflows – ranging from scenarios as diverse as manufacturing lines, automotive maintenance, to email inboxes and sales projections – is provocative. It incites both hope and fear. We can read such conflict in popular and business press articles, where everyday imagery of AI as a harbinger of the “future of work” are held alongside those that claim it is the “end of work.”

These discursive tensions point to AI as a “contested imaginary” (Levy & Spicer, 2013). Social imaginaries give a sense of moral order and wholeness to social life through imagined meanings and beliefs. Anderson (1998) pointed to the role of imaginaries in enabling the nation-building of the 18th century, allowing diverse people to come together and produce social cohesion around figured notions of nationhood. Taylor (2003) further developed the concept of imaginaries by pointing to how their complexity and multiplicity has increased in modern life with the rise of socio-economic forces like capitalism. Social imaginaries enable shared norms and expectations and the moral claims that underpin notions of how things should or ought to be. Studying them allows us to uncover and examine these values and how they undergird everyday life.

With this complexity comes conflict. Imaginaries are diverse and can arise along ideological divides. Such conflicts are at the heart of what Levy and Spicer (2013) call “contested imaginaries.” Drawing on theories from political economy, they examine how social imaginaries, in addition to being community-building catalysts, also “entail strategic struggle to assemble coalitions, mobilize state projects and stabilize conjoined economic and ideational systems.” (p. 662). They examined these strategic processes around the topic of climate change. The environmental climate provokes diverse and conflicting imaginaries – for example “fossil fuels forever,” lives alongside “climate apocalypse,” and “sustainable lifestyle” imaginaries. In each imaginary, actors and actions are framed differently, depending on what economic and political interests take center stage. By strategically arranging the cast of characters and the narratives around their actions, each imaginary configures a different value regime. These regimes help to explain how it is that firms take very different stances towards environmental obligations and how a firm’s stakeholders come to understand these stances as sensible and morally congruent.

Dissecting these value regimes – and the various arrangements of people, attitudes, ideas, technologies, and cultural resources they bring together – allows us to better understand both their underlying mechanisms and staying power. We know that strategic work within organizations

involves creating a shared orientations towards the future (Kaplan & Orlikowski, 2012). I argue that narrative making plays a role in shaping shared visions of the future, with the role of imagined goals (the endings that culminate technological narratives) a central mechanism in aligning the interests and values across an organization. To arrive at this, I first examine how the goal of “increased productivity” operated across a series of projects at my field site.

While rooted in scientific management and the quest for optimized production, “productivity” also serves as a beacon for many everyday concerns of workers such as recognition, meaningfulness, and fulfillment. Increasing productivity (in the case of my field site, designing technologies hoped to increase productivity) then becomes a goal that everyone within an organization can and should strive for, not only for the increased capital it promises shareholders, but also the increased happiness and fulfillment it promises workers. This twining together of firm and worker interests was evident in narrative-making efforts around the imagined need for a smart email client, which I call “newClient.” I have examined different pieces around newClient so far in this dissertation. But here I examine how, through the articulation of its market opportunity, my narrative making approach also reveals the underlying values that support its basic premises.

As I arrived at the lab in summer 2015, several R&D projects were focused on developing a variety of AI and analytics features for everyday workplace technologies. Referred to by the industry acronym “ESS,” this line of technological products stands for “enterprise social software.” ESS includes a range of workplace collaboration tools – the most prominent of which is the “email, calendaring, and contacts” bundle, a trifecta also referred to as “productivity tooling.” Several research projects focused on working with ESS in developing a new (and smart) email client, newClient.

Email has a long and checkered past, holding a complicated role in the social life of work, email is simultaneously the bane of daily work – symbolizing the strain of one’s work obligations and commitments (Barley, Meyerson, & Grodal, 2011) – and also a touchstone, giving a personal order and structure to one’s digital resources and rhythm to one’s social relationships (e.g., Mackay, 1988; Tyler & Tang, 2003).

Email is reliable and ubiquitous; it’s ordinary. But email isn’t sexy – it doesn’t exactly conjure the gasped excitement you’d imagine from cutting-edge AI/data analytics development going on

in Silicon Valley. The challenge for developing a new email program becomes: what exactly do you change? And how do you sell that change? As Sanjit, one of team's PMs, put it during an early conference call where I was introduced to the project:

Focusing on mail and calendaring, it reinforces our comfort and maybe even addiction to email in the workplace. But part of the excitement of building on mail and calendaring is the richness there. Even if we start imagining a space that is much different than what we are used to, there is a big space for impact... The market is crying out for better ways to manage your productivity.

It is not difficult to see how Sanjit was creating a story around newClient – a narrative that mobilizes a belief that technical development is solving important problems – not only organizational ones, but societal ones. Email is a ubiquitous part of corporate life. Yet, rather than seen as a saturated market (one difficult to make an impact in), Sanjit's narrative making focuses on this ubiquity to say: this is a big problem, but nobody has really solved it yet. A saturated market, then, becomes an arena offering a "big space for impact..." – one that "cries out" for better solutions. In Sanjit's narrative making the company's technologies are seen not just as products to sell, but also as taking on the yoke of a social problem – managing your productivity – one that has the potential to have a "big impact" by improving the lives of workers. Such an understanding expands our view of technological framing – as implicating notions of social problems and social order and an organization's stance vis-à-vis those problems and orders. Through Sanjit's narrative making, productivity is problematized as a pressing social issue – with newClient positioned as a possible "fix" and the company as a "fixer."

Stories that equate "productivity" with happiness and fulfillment echo wider work imaginaries of relief and recognition. These types of narrative-making occasions allowed employees to imagine and situate the broader social value of their work, to see it as contributing to something good. There was a strong sense that the daily doings – the technical work being done, the solutions being sold, the consulting counsel given – were directly attempting to improve people's lives, in whatever task was at hand.

Such noble goals influenced many projects, even heavily specialized and technical projects that on the surface might not easily signal their moral underpinnings. One example that showed me

the width and depth of productivity's unifying thread was an interview with Kartik, a researcher in the lab.

"The idea is, how can we make you more productive?" he started out, as I asked him for an overview of his latest project, developing analytics from Internet of Things (IoT) sensor data. I was anticipating a more technical discussion around sensors based on the handful of talks with other researchers in the lab I'd had, who were excited about the potential of IoT, their faces animated at the prospect of developing analytics "from the ground up" by fabricating custom sensor arrays and figuring out how to best tackle the metrics and benchmarks for such novel and sporadic data streams. IoT had been heralded as the ability to capture data about "anything" you might want to know about the physical environment, an exciting prospect because it enabled analytics to get "away from the computer" as Mattias, another researcher working on IoT, described it to me.

Expecting a similar engineering-focused discussion, Kartik took me somewhat by surprise. To animate his vision for the transformation potential of IoT analytics, he began to tell me of a "use case" focused on supply-chain management.

Take the example of milk, he said. "Milk sits in a warehouse in a cold store, in cold air. And, sometimes we don't know, like, what is the life cycle of a container of milk? When it arrives from the farm, does the distributor know if this milk is going to spoil in five days? Or is it going to spoil in ten days?" he asked. IoT sensors offered the promise of more precise logistics, he explained. Continuing, he went on:

If you were sending an entire batch from New York to California, how do you know that you're not sending a batch to California where the milk is going to spoil in five days? It will take 3 days to get there, maybe I should serve it on the local market. Well, sensor data can help you know – give some indicator of its freshness. And then analytics on top of that, predicts how long it will stay fresh. So analytics takes out the uncertainty, there is uncertainty in data too of course. But if you ask somebody, which milk is going to spoil soon? Right now, it's all in the guesswork based on smell maybe. But data adds another point to consider, now you can chart the life cycle of milk with more precision.

So IoT data can really increase efficiency, he told me. “It can enable the process to be more self-directed, more efficient. And always, efficiency affects the bottom line. Less activity means more money.”

More data meant more efficient and “data-driven” decisions, ones that workers could make more confidently and proactively: “How do you gather information faster, when otherwise you would be spending a lot of time to get it?” he posed rhetorically. “Analytics improves the speed of information, you get it faster, and it helps you to understand the context better. It makes the human part of it, the judgment more precise.”

Kartik’s account is a “use case” that paints a problem, similar to the process I examined in chapter three. But my aim here is to show another dimension of technological narratives – in it, we can see how the “goal” or imagined benefit of the technology reveals the values and motives that undergird the everyday work seen as working towards it. In the language Kartik uses to animate his point, we can see a concern with the experiences of everyday workers and how analytics can make those experiences better – eliminating the “uncertainty” and “guesswork” of their work, technologies can help them to “understand the context better” and make decisions with “more precision.”

Intrigued by the importance placed on the experience of workers in his narrative, I wondered how he accounted for individuality. Each worker has their own set of preferences, how are such differences taken into account in such clear stories of increased productivity? I asked Kartik about the role of experience, how experiential dimensions of work practice are captured in such an efficiency-focused premise. He and I had both been a part of a friendly debate earlier that day – a handful of researchers in our group were eating lunch around one of the large, round tables in the cafeteria. One researcher, Clinton, was preparing for a trip the following week, a family vacation to Sedona: “The trouble with packing is always deciding what books to bring!” Clinton’s comment sparked a debate at the table over reading from print books versus handheld devices like the Kindle. “Well, that’s why I use a Kindle, I can always read whatever I want!” Tsubasa chimed in, and the table erupted into a playful debate with everyone voicing their preferred formats.

“So we have a overarching plan of using analytics to enable people to be more productive,” I followed up on Kartik’s appeal to productivity. “But then, there’s also – not a ‘flip side’ exactly but a different facet to, how we as people experience things.” Bringing up our friendly debate at

lunch, I continued: “Just like how we were talking at lunch. And some people like to read books, just because the way it feels in your hands.” So maybe an eReader is more efficient – you can store a lot more books on it, it’s lightweight, it’s back-lit, you have less eye strain, you can search for words instead of relying on an index – I continued listing off some of the points made at lunch. But some still just prefer books (myself included). “So do you think there is a distinction between productivity and efficiency but then, also, the experience of things?”

“But you have to have both. The experience makes people more productive,” Kartik replied. “If you have somebody who likes to the feel of a book and suddenly you give them a Kindle, they’re not going to like it, they’ll be less productive,” he explained. We can see how, as an imagined ending to the narrative of IoT analytics, “increased productivity” operated as a central goal, an organizing principle that allows a variety of individual activities to be understood in light of and seen as contributing to that goal.

In this imaginative process of telling the story of a technology’s benefits, we can see Kartik tie his current project around IoT sensors to transforming supply chain and ultimately improving lives through increased productivity. Kartik’s perspective that technical development could contribute to large, grand goals like making workers happier and more productive – relieved from mundane or imprecise and inefficient information-gathering activities to focus on other pursuits – was a point of view shared by many of the researchers across the lab. Such an attitude speaks to an earnest belief in the goodness of the company’s grand visions around analytics and the worthiness of their daily work, a belief made possible by such optimistic stories that imagine “win-win” endings.

What may appear on its face to be a solely technical practice, the elaborate and specialized tinkering of gas sensors, is enlivened by an earnest desire to “make things better.” Yes, the company develops analytics that offer firms some promise of capital gain. But while these organizational logics drive the company’s bottom line, the belief that the technologies developed would do some good in the world, improving the lives of workers, provided a sense of conviction and purpose to back up the excitement behind development projects. The narrative’s unified vision helps reconcile the goals of capital with the cultural values of technologies as social goods, offering promise of progress and a better future.

Such endings allow the company's employees to hold fast to the notion that the technologies they are building are doing good and that analytics and AI are social goods, in the face of the negative public discourses around AI as the "end of work." Researchers like Kartik and so many that I spent time with, worked with, and got to know saw their AI development as working towards a good and worthy goal of making peoples' lives better – more productive – by designing systems that would be more adaptive to them.

Including the concerns of everyday workers (to be recognized and valued for efforts that tend to feel invisible or unnoticed) into narratives around "productivity" is akin to the process of "frame extension." In their study of social movement organizations (SMOs), Snow et al. (Snow et al., 1986) identified a handful of key framing processes that help in mobilizing individuals to join and support social movements. One process, frame extension, is where a SMO tries to "enlarge its adherent pool by portraying its objective or activities as attending to or being congruent with the values of interests of potential adherents." (p. 472). The key part in this process is identifying "individual or aggregate level values and interests" and then aligning them "with participation in movement activities." (p. 472). One example they offer of frame extension in action is the nuclear disarmament movement. By including adjacent concerns – like drawing attention to the services local communities must sacrifice in the face of escalating defense budgets – SMOs, hoping to enlarge their potential adherents, attempted to extend their organizational mandate beyond simply weapons disarmament to also include appropriate allocation of taxpayer money.

Focusing on a unified goal – the imagined outcome of an organization's cohesive effort – blends the priorities of the organization together with those of workers and extends the technological frame around AI and analytics. This is similar to the extension around nuclear disarmament that Snow et al. (1986) examined. Extending the movement's frame to also include concerns around local communities and taxpayer funds allowed a more diverse group of adherents to mobilize and rally around the movement's cause. Extending the frame around analytics – to include workers as beneficiaries of increased productivity – taps into the drive of many at the company to develop technical solutions that would "do good" in the world by helping make workers happier through increased productivity.

Snow et al.'s (1986) emphasis was on social movements. Instructive in understanding similar value-driven motives in the workplace is the notion of meaningfulness in work. Grounded in workplace and industrial psychology, Kahn (1990) examines personal engagement at work,

defining it as: “the simultaneous employment and expression of a person’s ‘preferred self’ in task behaviors that promote connection to work and to others, personal presence (physical, cognitive, and emotional), and active full role performances” (p. 700). The notion of a “preferred self” at work resonates with the broader notion of identity work (e.g., Snow & Anderson, 1987). In thinking about ideals and the role of aspirational identity, we can see how narrative goals – the imagined endings like we see here – reveal notions of a “preferred company” that guides organizational life.

These types of identity work happening at the organizational level can contribute to a sense of a collective emotions or what some have labeled “organizational affect” (Parke & Seo, 2016). Emotion colors all aspects of organizational life, often in an implicit and difficult to articulate way. Menges and Kilduff (2015) for example point to the collective sense of dread and embarrassment felt across the global organization British Petroleum after the Gulf of Mexico oil spill in 2010 or shared grief across Apple Inc. after the death of CEO Steve Jobs. At my field site we see a similar process of organizational affect, though one with a more optimistic valence. The focus on “increased productivity” helped imbue technological narrative making as exciting and hopeful, by enlivening everyday work and allowing workers to understand their daily practices as contributing to grand societal movements.

While the moral imperative to “fix” perceived social problems is part of the interventionist underpinnings of an engineering worldview (Harris, 2008) and design ethos more broadly (Irani, 2013), the identification of GloTechCo as being in the business of “fixing problems” influenced technological framing on product teams as well.

Seeing everyday work as helping customers (rather than just selling them things) allowed many PMs and sellers to derive personal meaningfulness and attachment to their activities. PMs and sellers described interactions with customers, which, when seen as narrative-making occasions, reveal how customers are “enlisted” in the broader imaginaries around AI and analytics. This helped to allow customers to see AI and data analytics not only as a gimmick, but as having an impact on “productivity.” Sure, Siri is fun and occasionally useful but it’s hard to imagine Siri becoming an integral part of work practice. But the excitement and novelty over cool AI gadgets and tricks are often used as an opening “hook” to start more serious conversations with customers, as Peter a sales PM described it. GloTechCo offered a series of open-access online platforms that allows anyone to “test out” various AI features – like creating a personality profile

based on your Twitter feed or a sentiment analysis of a piece of prose. Such experiences give customers a “taste” of AI, whetting an appetite for novelty with “eye candy” demos that create an opening, as Sean a sales PM, described:

I mainly use it (meaning the open-source AI tools) now as an entree into talking about everything else that [our company] can do. A lot of people are interested in [our AI products] because they can use it for free without anything from [our company]. It’s cool, they can play around with it. And then, we kind of talk to them about ways they can use it as an enterprise tool. And then, we also use it to kind of leverage a conversation around all the other, all the different things that we can offer in terms of analytics.

We can see how the narrative goal (of increased productivity) works to both extend the technological frame and also contribute to the image of a good and worthy organization. Embedded in the company’s long history of consulting, a strong ethic of service focused on serving customers, not just selling products to them. As Roger, an account manager put it: “It’s fun meeting with customers. I think that’s the best part of my job – talking with them about ways in which [our company] can help them do cool stuff and help them solve their problems.”

These tales of “afters” are put to use strategically within the organization – allowing workers, both builders and sellers, to derive satisfaction and meaningfulness by seeing their work as contributing to good and grand social projects. They also help those on the client-side start conversations by providing a “hook” – these “eye candy” aspects are meant to inspire and excite but they also familiarize and reframe AI. Rather than a scary science fiction trope portending the “end of work,” AI is situated as a “real” – or rather, imagined as real – technology that can really improve people’s lives, not displace them.

Through these examples, I have shown how conceptualizing the technological framing process as a narrative-making one reveals the moral orders that underpin meaning making around technologies. Narratives tell stories that are going somewhere – these provide unifying goals, able to rally diverse actors within an organization around a social cause. “Increased productivity” is one goal, and I have shown how unraveling its underlying assumptions helps to reveal how narrative making connects everyday work practices with grand, societal agendas. In doing so, we are able to better understand how it is that the stories technologists tell about their work focus on serving workers, while the technologies they

develop and sell serve firm-level goals like increased automation, which are far more likely to actually displace workers than empower them. Imaginaries help make a shared social reality possible (Anderson, 1998; Taylor, 2003) but imaginaries can also be sites of conflict as different value regimes are activated and reinforced (Levy & Spicer, 2013). Through my analysis here, we are able to see how these concerns factor into the technological framing process, framing not only the technologies an organization develops and sells, but also the kinds of worlds they hope to cultivate.

5.4 One Goal Among Many – Moral Consistency and the Organizing Logic of Service

The big goals (like increased productivity) that culminate technological narratives inform the daily work of many company employees, as I've shown. But while such grand goals have a unifying effect – rallying together many under a banner of “fixing” a given problem – they are also multiple, meaning many goals are held simultaneously across an organization.

Organizational life is filled with, and driven by many goals, producing what might seem to be contradicting forces. In this section, I will show how a narrative-making approach is helpful in grappling with this multiplicity. In so doing, I extend our understanding of how the notions of inconsistency (Young et al., 2016) and granularity (Vaccaro et al., 2011) factor in technological framing. By demonstrating how the re-configuration of goals through narrative making – in a process similar to, though distinct from granularization – enables individuals to maintain a sense of moral consistency, I show how inconsistency is not a stable fact but an unfolding construction.

To do this, I draw on the underlying goals of “social business” products – namely, to increase collaboration and content sharing. These goals were continually tweaked in narrative making, allowing their alliance with the longstanding tradition in enterprise IT to provide heavily customized, “bolt on” systems. At a certain vantage, these two goals appear in conflict – with the bold vision to increase collaboration and “social” through a series of social media-style, content-sharing features continually eroded as customers “lock down” the software for a number of reasons. Yet, I show how, when conceived of as narrative making guided by a central, unifying goal – providing good service – what appears to be contradictive can be experienced as consistent.

While the support of collaboration has long been a focus of workplace computing technologies, the recent “social push” in enterprise technology responds to the widespread growth of social-networking sites (SNSs) and other web 2.0 platforms in everyday life. The social push is an approach to enterprise software design that tries to leverage web 2.0 capabilities and harness user-generated content. These trends are tied closely to the rise of “Big Data” in that the copious amounts of data generated by social activities can be put to use by providing more nuanced and robust organizational analytics.

In popular business trade press, the imagined benefits of social business are articulated as twofold: making things better for the organization (e.g., promoting knowledge transfer, increasing efficiency of workflows, creating more robust data traces/accessible in the cloud) and making things better for workers (e.g., supporting relational work, promoting collaboration, enabling increased visibility and awareness by making it more convenient to share resources, strengthening social bonds).¹⁰ While analysis of this rhetoric is beyond my scope here, I point to it because social business technologies undeniably aim to achieve grand organizational goals – to make everyday work “more social.” In this way, the goals of social business are similar to those around increased productivity – offering a unifying and lofty goal that helps motivate diverse aspects from development, to sales and delivery.

But the grand vision of becoming “more social” lives alongside the logic of customization. How the “more social” vision is manifested in a given context depends on the specifics of each customer – their own organizational culture, history with GloTechCo products, and industry norms more broadly.

Let’s return to my interview with Abhinav, a technical product manager (PM) working on the company’s social products. He told me how the vast majority of the customers he interacted with were existing oldClient customers and for them it’s a matter of “upgrading” to newClient and a cloud-based mail experience. For the remaining 20%, they are brand new customers, what are referred to as “white space” customers – totally blank slates. I asked if these different histories influence the strategy in talking to them about the back-end server. “Yes definitely because

¹⁰ For more background on social business, see, e.g., <http://www.informationweek.com/11-ways-to-explain-social-business-benefits/d/d-id/1101178> and <http://sloanreview.mit.edu/article/how-finding-exceptions-can-jump-start-your-social-initiative/>

they're coming in from two different perspectives. They have different backgrounds with the technology, they you know, the factors completely change,” he said. Elaborating, he went on:

It's even different within customers that already have our technology because each customer – if you're talking about healthcare or you're talking about a different industry like communications – they're going to have different needs. So we change the conversation to you know, talk about how [newClient] and “social” impacts them. I think it's not really even organized by “white space” customers or existing customers. It's really about the customers themselves.

He continued: “If you're talking to a financial institution, they're going to want to know more about the compliance side – how do you lock things down?” A central part of the design of social enterprise applications is enhanced flow – or movement – between platforms that makes content generation and sharing easy for users. “But now those types of sharing (meaning between applications) have to be accounted for when you're talking to a company that's under heavy compliance standards like a financial institution. So we have more discussions around security.”

In these examples, we can see how the situatedness of each organization takes center stage. What are their concerns in terms of security? What are the standards in their industry? “Whereas another customer who is let's say retail, they will have some security questions but not to the same degree that a company that's under heavy compliance will.” This was echoed in several interviews with those who had experience selling the company’s social products. Christopher, for example, was a PM on the ESS product line. He explained to me how industry values impact whether and how “social” is implemented:

Government customers, they're very concerned about budgets, because they don't know where their money is coming from, if things will change next budget cycle. So you kind of know that going in that this is very much a “bottom line” kind of environment and they tend to be a little more skeptical about the social collaboration part of the pitch. And you understand that, so you make sure their bottom line is being met... [Whereas more creative industries] tend to be more open to the idea, more excited by social features and productivity enhancements and things like that.

As Abhinav put it, every customer is “looking for ways to turn different features on and off, depending on their needs.” The point I want to make here is to highlight the bespoke logics that organize enterprise software delivery – the broad and optimistic goals, even those around “social business,” are always tailored to the specific organizational needs of each customer.

Analytics add another layer of customization to the equation. Tweaks and pivots are “baked in” to analytics from a technical perspective. Analytics provide value by the real-time processing of data – they are by definition transformative, changing data to enable organizational meaning making around it. This means analytics can never be ready “out of the box.” Getting to a place where data can be processed in real-time, and provide value and “insight” often requires vast amounts of historical data to first train systems before reliable outputs can be achieved. This requires a longer-term conversation with customers, often even before a formal contract or deal is in place (which isn’t a given, as some engagements may peter out for a number of reasons).

Such inherent customization can be an advantage, as Tameer told me. Machine learning (ML) in the enterprise context has to take data restrictions into account – each organization has its own requirements on this front, like Abhinav laid out above. These restrictions can be framed as a value-add feature – scoping the ML to process only certain pools of data and building models capable of taking specific group norms into account. In talking about the smart conversation sorting project, Tameer explained how the feature could be arranged to learn from a specific department or even group within an organization. So imagine if the accounting department has a specific way of phrasing things in their emails or chat, he explained. Then the ML models could be tailored to each department individually.

But this inherent customization can also prove difficult. The hype around AI can actually become an obstacle to overcome, because people have developed expectations based on shiny marketing materials or consumer experiences with platforms like Google or Netflix who have access to treasure troves of data. Expectation management is required here, as the company aims to get customers excited about the potential but also understand the work that has to go into enterprise analytics. Enterprise data can be messy. Getting different recordkeeping systems throughout an organization aligned to enable processing can be a challenge. “The work to get those in a state that can routinely produce results is hard,” as Calvin, one of the researchers in the lab plainly put it.

Reflecting on the difficulty in developing new features at a rapid pace, Abhinav said: “I think the most challenging aspect is we're dreaming big...I think the speed in which we do it has proven to be the biggest challenge in terms of how fast we can get it to customers, put it in their hands and let them start trying it out.”

I point to these experiences because they demonstrate the difficulty faced in striving to meet grand goals; difficulties that call into question whether such goals are actually achievable. Aligning these various demands requires significant effort – in terms of the technical components (getting data, cleaning data, getting it to produce consistent outputs), in terms of expectations (getting customers excited about the potential, yet also understanding of its uncertainty), and also in terms of specific organizational and industry contexts (getting a product's bold vision to fit with specific customers' situations) – and with varying degrees of “success.” Some engagements might flop; others may produce a “bolted on” program, with “locked down” features that fall far from the envisioned product. While there is an imagined impact of the technology, one that provides everyday work with a sense of moral urgency, there can be a wide space between its *hoped for* and *realized* impact.

Why is there an adherence to these hoped for outcomes, then, when they are rarely (if ever) realized? If customers continually tweak software programs, and analytics projects run the risk of letdown, why maintain such bold visions? Are such technological framings inconsistent (Young et al., 2016)? Idealistic? Naïve? At a certain vantage, they may appear so. In taking a narrative making approach, however, we come to understand how they can be experienced as congruent in practice.

Through narrative making, goals are dynamically re-configured. It is through this process of re-configuration that individuals are able to maintain a sense of moral consistency. Rather than static, the grand, societal issues a technology is meant to address changes for specific narrative making occasions – “more social” becomes “more social, for this industry” or “more social, for this industry, and specifically for this customer” (and on and on, with even Tameer breaking it down to the department level). What connects all these? How are they held together as a unifying goal the company can imagine themselves as working towards?

When understood as motivated by *service to the customer*, what appears to be contradictory comes to be understood as consistent. This is similar to *granularization*, described in Vaccaro et

al. (Vaccaro et al., 2011) as the “decomposition of a problem into coarse or fine sub-problems” (p. 102). What an attention to narrative making (and the social imaginaries they invoke) adds to this is how technological framing is morally charged. Going beyond the quip “the customer is always right,” the motivations I have described here instead reveal technological framing as a form of value and meaning making that places customers as central. Strategic moves around technological framing, then, are not only motivated by a desire to “make your mark” but also “provide good service,” each dynamically re-configured in practice.

5.5 What Are We Working Towards, Here? – Recognizing Multiplicity in Imagined Goals

So far in this chapter, I have shown how a narrative-making approach helps to reveal how technological framing is morally charged. Ideas about a technology’s impact are shaped by imaginaries – these ideas, values, assumptions, and expectations shape how employees understand the broader, societal impact of their work, as if asking: what are we working towards, here? Such moral goals have a unifying effect, as I showed in section 5.3, bringing together many projects and products across the organization with a sense that they are all working towards a similar goal. In section 5.4, I added further nuance to technological framing’s morally-charged dimensions, showing how narrative-making practices continually re-configure imagined impacts and goals vis-à-vis specific customer engagements; allowing different outcomes to be understood as unified and coherent when viewed as furthering service for customers.

Here, I draw attention to the contingency of these unifying effects – narrative goals do not always bring about cohesion and consistency. Organizational understandings of a technology’s vision can also displace alternative narratives and points-of-view. The imagined goals underlying technological framing can be a source of conflict and tension as individuals scrutinize the appropriateness and equity of the visions they enact. In pointing to the role of displacement and scrutiny in technological framing, I extend our understanding of framing “truces” (Azad & Faraj, 2013). I highlight that even though individuals may understand and agree to framings in the spirit of “getting work done,” (in the words of Azad & Faraj, 2013)) the imagined goals and societal work the technology is imagined to work towards may still be a source of conflict and exclusion.

To illustrate what I mean by this, I turn to a conversation I had with Alix, a veteran UX designer at the company. The reach of “social” enterprise goes beyond collaboration groupware like email

and chat, influencing most of company's software offerings in some fashion. The social mantra of "share often" influenced, for example, the redesign of the company's CRM tool. Used to track client engagement by sellers, the redesign was hoping to reinvigorate its potential to capture more detailed and varied information on sales to provide more refined analytics, helping product teams chart and predict sales cycles.

Alix had several experiences designing to integrate the "social push" across the company's software portfolio. Alix had worked on a variety of product teams during a multi-decade tenure at the company but designing to make sales more social was hard. "You have to be in the mind of a seller," Alix explained. Commission is what drives sellers – they don't make money unless they close. "They themselves will use the phrase – 'I am coin-operated' so if you would, that's your memorable tagline for a seller's persona."

"And everyone understands that," Alix said. Yet despite this known truth, the design roadmap for sales technologies prioritized integrating the social features. There was an idealized workflow for design – that sellers would keep the information up to date in near real time. Doing so would enable more collaboration among sales teams and help managers monitor trends, as she explained: "there is this idealized version that sellers will be out there micro-blogging about a particular sale or about a client and share it with each other. And they won't be because they just want to get commission," Alix said.

Alix told me a hypothetical scenario to explain this. Say you have a seller, Nate, working hard to snag a big deal with a new client – a 5 million dollar deal with a regional restaurant chain, NuFoodz. Nate doesn't want to put this into sellABC until he's very nearly closed. Why? "Sellers don't want other sellers to know about the sale, they are very strategic about sharing information," Alix said. Nate's been working really hard on this deal and doesn't want to jeopardize it. He wants to be able to handpick the solutioning team, bringing in technical architects he's known and worked with for years. Nate also doesn't want his manager to know about the deal until it's nearly final. "Sellers don't wanna be fielding phone calls from their managers saying 'Hey, hey! How's that [NuFoodz] deal going? We need that sale to come in this month, not next quarter'," Alix told me. "Sellers are complicated beasts, there is a lot of smoke and mirrors. They're under a lot of pressure." These situated practices though aren't fully reflected in the design work. Instead, idealized workflows see sales as a linear process – one that will benefit from knowledge sharing and the "free flow" of information in the "push" model we saw articulated earlier.

The central goal of social business technologies – to be more social – privileges a specific type of being and doing corporate work. “Not everyone is extroverted,” Alix said, arguing for a more situated approach to thinking about social interactions at work.

“Not everyone wants to tell you everything or even anything about themselves at work,” Alix stressed the importance of understanding how workers think and what motivates them. “How are people compensated for being social? How are people assessed for being social?” Alix posed. “You have to think like your user, what’s my motivation? If my motivation is to get my project done on time so I can go home so I don’t have to work overtime? Or am I assessed on ‘I have 5 blog postings this week.’”

In pointing to the role of displacement and scrutiny in technological framing, I extend our understanding of framing “truces” (Azad & Faraj, 2013), highlighting that even though individuals may understand and agree to framings in the spirit of “getting work done,” the imagined goals and societal work the technology is imagined to move towards may still be a source of conflict and exclusion.

5.6 Concluding Remarks – Technological Framing as Morally Charged and Multiple

This chapter has focused on one dimension of narratives – their endings – and how they impact the technological framing process. I have examined my second sub-research question (narrative content) and showed how technological framing is morally charged and multiple. When conceptualized as a narrative-making process, technological framing is revealed to take shape from implicit ideas of how things should be and the role of technologies is bringing about those ideals. Providing a unified goal or vision, narrative endings help to animate work practices with both a sense that everyday work contributes directly to broad organizational goals and that those goals are morally worthy, social goods.

Further, attending to specific narrative threads shows the multiplicity of imagined goals, with several simultaneous value-driven goal-streams across an organization. This multiplicity creates different repercussions for everyday practice with technological work involving the near-constant re-arrangement of motives and values to balance these multi-dimensional goals. This multiplicity points to the potential for contradiction in organizational meaning systems; certain narratives

might be in focus at certain times while others are obscured or sidelined – creating implications for the political aspects of the framing process. This also creates the possibility for displacement or silencing of alternative points-of-view that unified goals might create, complicating their promise for organizational cohesion.

Chapter Six – Inhabiting the Plot: Appreciating and Adjusting the Narrative

6.1 Chapter Overview

A narrative-making approach enables us to examine another dimension of narratives – characters and roles – and how expectations are communicated around technologies. In addressing my third sub-research question (audiences) I show how workers *inhabit* technological narrative making. Inhabit is the label I use to describe the process through which workers signal their recognition of the part they are expected to play in a given narrative and also how those parts are adjusted as they are played out in everyday practice. Adding further nuance to the dynamic of narrative multiplicity and tension I described in the previous chapter, here I demonstrate the potential for different types of agencies to emerge in the technological framing process.

To do so, I empirically draw on the deployment and adoption of newClient email program as well as the company-wide evangelism of Agile Methods at my field site. I show how, through a number of new/old distinctions, expectations are signaled to workers in narratives of organizational change. In particular, I examine how strategic interface design and employee education are seen as a means of signaling expectations to workers, directing behavior and attitudes with an aim to foster an eagerness for change.

Workers, in turn, also show recognition of these expectations. In particular, I examine how the language of “challenge” operates in this process of recognition, signaling a “taking on” of change expectations. Finally, I show how change is aspirational and always “on the way.” This can create tension in that expectations of the old remain while expectations of the new emerge, placing concurrent (and often conflicting) demands on workers. I examine this through the case of Agile at my field site, where its fast-paced, iterative approach gets stalled when up against the firm’s entrenched bureaucratic structures. Despite this tension, I show how workers articulate a space “somewhere in between” new and old narratives, a space that offers a site of flexibility as workers inhabit and transform the expectations placed on them. Through a variety of brief and ordinary moments – through acceptance of being “partially Agile,” through hybrid use and

hacking code, through an attitude of “business as usual” – the potential for varied agencies in the technological framing process is affirmed and invigorated.

This chapter extends our understanding of technological framing by showing how subjectivities are implicated in the framing process. Adding further nuance to the role of ambiguity in technological framing (van Burg, Berends, & van Raaij, 2014), this complicates organizational change not as stark division between new and old technologies or new and old work practices, but instead a site of flexibility that resides “somewhere in between.”

6.2 Introduction – An Opening Point of Departure

“In Agile, there's only one question you ask yourself always, just one question: How do I get better? That's all,” the video begins. Filmed during an in-person training session to a room full of the company’s employees, it was one of many such thematic videos placed on the company’s learning portal for firm-wide consumption (recall, I examined the “Agile History” video earlier, in chapter four). This particular video, “Agile Basics,” was the first in a series of nearly a dozen videos on the company’s online learning portal guiding employees through a module labeled “Becoming Agile.” Todd leads the training session, a company executive focused on employee engagement. He starts out the session by emphasizing the simplicity of Agile’s basic tenet. “So, how do you get better?,” Todd rhetorically asks the room. “How do you do that faster?”

For any veteran technologist, Agile Methods are not new. It has roots in a handful of different management methodologies and toolkits that popped up in the 1980s and 1990s. The label “Agile” (and its subsequent and widespread uptake by the world of software engineering) can be traced to the publication of the “Agile Manifesto”¹¹ in 2001. And, indeed, Agile Methods is not a singular framework, as “Agile” is often invoked to mean different things in different settings. In the context of my study, I point to a firm-wide initiative at the company to become a “fully Agile” organization. Launched shortly before the study period, this campaign aimed to gain widespread adoption of Agile-style collaboration practices that focused on iterative and responsive teamwork. This was, in part, an effort to increase and reinvigorate Agile adherence among software development teams (Agile’s traditional purview) but also to gain momentum in transforming all forms of project work throughout the global company. In this way, we can think of Agile as one prong in the company’s plan to usher in a “new way of working,” a phrase used to

¹¹ <http://agilemanifesto.org>

signal the large-scale changes in working arrangements and conditions in light of “Big Data,” AI, and automation that ongoing organizational change campaigns within the company were both responding to and attempting to direct.

Building out from this starting point on “how to improve,” Todd sets up Agile in contrast to how things are typically done at work:

When we work, we very rarely give ourselves time to stop and look at how we're doing it. We're always running about and doing things, we're very busy, we have lots of e-mail. So, you have to take time to think, and you have to take time to learn and to look at your process.

Agile was positioned as offering a new narrative to workers, one that promised a rare and precious chance for mindfulness and reflection – a narrative that stands in contrast to the current one of “always running about,” of turning the everyday story of work from “very busy” to one where you “take the time to think.” Implicit in Todd’s rhetoric are clues to the roles workers play in change narratives like this – workers themselves become the measure of organizational change, expected to bring about the promised transformation through their everyday work.

So far in this dissertation, I have shown a variety of ways that technological narratives are used throughout organizational life and the value they offer collaborative work. In chapter three, I demonstrated the strategic, yet improvised nature of technological framing by examining how micro and meso narratives converge to create technological frames with multi-scalar resonance. In chapter four, I demonstrated how the practice of plotting creates emergent and dynamic associations between phenomena, helping to articulate the dynamic and diversity of technological framing, and remedy barriers to success. In chapter five, I demonstrated how the imagined goals set up in technological narrative making helps imbue technological work with a sense of social good and moral worthiness.

In this final empirical chapter, I point to another dimension of technological narratives – the ways they implicate “workers” and “employees” as a particular type of subjecthood. As characters in organizational narratives, workers are expected to play certain parts – the skillful salesperson, the flexible team player, the innovative leader, and the list goes on. We are all familiar with the expectations for behavior and comportment in specific workplace contexts. In this chapter, I will

show how technological narratives help signal such expectations to employees – and how those expectations are in turn recognized and reckoned with in everyday practice.

6.3 Signaling Expectations in Narratives of Organizational Change

In the study of organizational change, Gioia and Chittipeddi (1991) have identified what they label “strategic sense-giving,” which they define as: “the process of attempting to influence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality.” (p. 442). This notion is informative in understanding how narrative expectations are implicitly communicated to employees. In applying their notion to my study of technological framing and narrative making, I describe what I call “role-giving.” Helping workers make sense of strategic change campaigns, role-giving, as I will demonstrate, involves practices that signal the expectations or roles workers are aimed to take on in these campaigns.

I present two types of role-giving from my ethnographic study – the first involves roles in narratives of technology use and interface interaction; and the second involves roles in stories of work practice transformation and the cultivation of a specific stance or attitude toward change. I set out each below.

6.3.1 Expectations and Technology Use – Interface as Strategic Encounter

A company’s products themselves are often a way of conveying the organization’s strategic direction – to both employees and also customers. Decisions on what AI features to include in software products and how to shape user interaction with those features, then, was a question of implementing the company’s overall strategy through design. This was explained during a conference call where I presented initial findings from my study of multi-device practice to Harvey, a strategic executive on a number of projects (recall that I discussed the experience of preparing for this presentation in chapter three where the translation of researching findings into “actionable insights” helped facilitate multi-scalar resonance).

With some time remaining on our call after we finished Q&A on the presentation, Harvey took the opportunity to use the call as a platform to further reiterate the product’s strategic point of view – specifically on how we should be thinking of the relationship between the app’s design and the ability of users to customize their own experience. While my presentation aligned with organizational priorities – identifying problems that we might address with AI solutioning – it

still aimed to center users, giving voice to the issues and desires they expressed in interviews. Taking existing practices as a starting place, I offered suggestions for AI features that might help users define and shape what they wanted out of interaction – putting AI to use for their own purposes – by providing some ability to set the agenda of interaction through a type of adaptive customization. This approach prompted a course correction from Harvey, as he filled in those on the call about how we should be thinking of user’s interactions with AI products.

Trying to create a personal assistant-type experience in enterprise email is a “big leap,” Harvey emphasized. “We are used to computers doing what we tell them, when computers start to act on their own, we lose trust in them very quickly when they make mistakes. So it's a big leap and a risky one that we have to be careful with, especially around email,” he continued. In this moment of strategic sensegiving (Gioia & Chittipeddi, 1991) Harvey clued us in to the product’s broader strategy. He was attempting to re-write the typical narrative of human interactions with computers – rather than one where computers play a passive role in relation to users, AI-enhanced software tells a different plot: one where computers also act. Harvey signals recognition that this strategy – giving AI the ability to shape everyday interactions – asks a lot of users. Changing the narrative shifts the locus of control at the interface, moving agency away from users, not only vis-à-vis machines, but also vis-à-vis the organization as they must learn to adapt to this new strategic direction.

He went on to say a lot of the issues I raised in my presentation (issues around users’ frustration over the loss of end-user customization) could be resolved with “better user education,” making sure to explain the vision behind some of the bolder design logics of new products and asking users to “hold on” during what might be a rough transition. The implication here being that if users understand the strategic vision behind the product, they will understand the role they are to play in the technology’s narrative of change.

We need to think about simple ways to allow users to provide feedback on their experience with the agent, he said. “We want to be able to let users give feedback on specific actions – telling the system ‘Yes, that's right’ or ‘No, that’s not right,’” he continued. “But we don't want to give the user power to ‘tell’ [the AI] what to do, to find new patterns or request new logics or turn it off.”

The narrative of customization then is re-written, becoming represented through a “thumbs up/thumbs down” feedback mechanism that retains a flavor of user agency while at the same time

dramatically reshaping it. Harvey's articulation of the strategy around the new technologies was meant to help align everyone on the research project around this new narrative, of the new way we should be thinking about users and user interaction in relation to the company's software products.

This implicit role-giving and narrative re-writing also came through in perspectives of designers, who signaled such expectations to users directly through interaction design. Natalie, a UX designer, for example, reiterated the new narrative of user feedback and customization Harvey set out. She laid out the role of design in realizing the product's strategic vision:

[The AI features] are not something that I'm going to even let them "X" out of (meaning to close or disable certain features of the app). You know, I'm putting it there because it's helpful and it's going to provide value. Otherwise it wouldn't be here as opposed to something that's like 'Oh, I'm here if you need me but I'll just be over here,' like a design that easily goes away. If we're really saying 'AI is the future,' then we should believe in what we're doing and the design should speak that.

In this excerpt, Natalie explicitly calls out the power of design to speak to users by shaping the direction of interaction. The implication here is that users, in turn, must learn to listen, adapting to their role in these new logics of interaction. Through these subtle acts of direction and control – the inability to “turn off” a personal assistant or merely turn away from it – interaction design is tied to strategic vision. The interface, then, is a way of signaling narrative expectations to workers, its arrangement bringing them in line with broader organizational narratives around change and adaptation.

6.3.2 Expectations and Comportment – Agile and Cultivating an Attitude of Change

In addition to these more direct forms of role-giving through interaction design and contouring the parameters of technology use, role-giving can also convey a particular type of stance or attitude expected of employees. Similar to emotional labor and the expectations of “service with a smile,” (Hochschild, 2012; Illouz, 2007) workers are often expected to earnestly engage with organizational change campaigns, making good faith efforts to adapt to new demands. As we will see, Agile is set out as a reflexive work practice, one that requires workers to take on the challenge of self-discovery, requiring hard-hitting inventories of the self towards the pursuit of a handful of soft skills like courage, respect, and cooperation.

Let's turn back to the "Agile Basics" video I mentioned at the beginning of this chapter. Todd had the room full of employees form into several small groups and then led them through a series of rapid-fire exercises to ground the points he wanted to make about the benefits of Agile. After the exercises, Todd poked the room with a series of questions. Did your team appoint a project manager? He asks. "No. So how did you do it without a project manager? I mean, how can anything happen without a project manager?" he jokingly asked.

He makes a small note that, yes, Agile Methods still have project managers. But there is a difference – in Agile teams, leadership is a practice not just a job title. "Did anyone in your team show leadership? Yes. But was there a leader?" Todd asks. No, there wasn't just one leader, he said. "Anyone can show leadership, and that's very important in Agile," he continues, highlighting the opportunity Agile represented.

With a promise of increased recognition and the breaking down of rigid role definitions, in the story of Agile "all forms of leadership are recognized," he told the group. We just have to adjust the way we've been thinking about what being a "leader" means, he explained. "Now, sometimes leadership can be the first follower. You think the first person who gets up is the leader," Todd sets out. "But if nobody follows them, that person's alone. The second person is just as much a leader as the first." The unique mindset laid out in Agile's narrative is contrasted as a departure from established ones – a change that requires the adjustment of one's thinking. This new mindset is posed as both an expectation, but also an opportunity – following can be leading too, Todd counseled workers.

He went on to query the room, trying to draw out the "lessons learned" after the room completed quick-fire group exercises. After discussing Agile's expanded view of "leadership" (followers can be leaders too!) and its connection to innovation, he asks about the values each group displayed. "What were the human values that you showed to each other?" he leads. "Respect. You respected each other." Nobody told others in the group to shut up, to be quiet – "You didn't do that, because then there's no respect. It's finished, straightaway finished. So, you have to respect each other."

Probing the group to "go deeper" into their experience, Todd continued: "What else was underneath? Trust." Nobody had a fear that a team member would leave, abandon the exercise, or participate half-heartedly. "You trust each other that you're working towards the same outcome.

You trust each other that you will work towards, let's say, achieving the goals that you set out for the team.”

He then stressed the intuitive nature of Agile’s most basic values, “They're not values you have to go to school to learn. They're in us. One is courage. I call it the mother of all values, because without courage, it's difficult.” He drew out the vulnerability required to take up Agile’s reflective tenets, explaining how courage propels those practices: “Do you notice how it's a bit difficult to stand up, to say something to the team. It takes a little bit of effort, even to put your hand up and give a suggestion, doesn't it?” He bantered: “Be honest. Yes, it is. It takes courage.”

He then mentioned a second human value essential to the Agile process – openness. “You must have certain amount of transparency, certain amount of openness,” he counsels. “Now, if you don't share your outcomes, if you don't discuss, don’t talk, don’t share, then you won't be able to achieve it. You must have honesty and openness.”

Agile’s emphasis on courage and openness here (and the broader appeal it makes for a new narrative of everyday work – one with a more humane and reflective approach) dovetails with much of the rhetoric around AI, analytics, and the future of work. Both praise flexibility and adaptation and elevate unique human qualities and so-called “soft skills.”

Through these subtle moments of role-giving, workers are expected to take up narratives of change, enlivening them by playing their new part. The “new” way of working framed by Agile is provocative, egging workers on to be brave, open, reflexive – courageous, even, in pointing out areas of work practice (and areas within themselves) that need to be improved. The adaptive and flexible stance advanced in Agile is a type of aspirational identity (Thornborrow & Brown, 2009), one meant to inspire and embolden workers.

6.4 Signaling Recognition of One’s Role – Taking Up Narratives of Change

Workers, in turn, signal an acknowledgement of these subtle expectations, demonstrating their recognition of the role they are meant to play in technological narratives. We can most clearly see this signaling/recognition interplay through the notion of “challenge.” A common invocation in change narratives, the dramatic language of “challenge” provokes workers to buck up and eagerly tackle the demands of transformation.

In the Agile training materials I examined, the language of “challenge” was central. It will be hard to change your mindset, to change your attitude. But this is a “challenge” that should be confronted head on. Todd, for example, drew back to courage, one of Agile’s core tenet. Courage will get you through the challenge of change. “All your processes, all your procedures, we’re going to challenge them,” he says enthusiastically. “We’re going to challenge every single one of them, because you’re going to find out if something is going to keep you from getting better, it needs to change.” You need courage to challenge the old ways that were holding you back.

The personal challenge of transitioning to these new narratives is explained more fully by Steven, in the “Agile Values and Behavior” video. “The more vulnerable you are, the more you are open, the more people trust you,” Steven said. “That’s almost an oxymoron, isn’t it? So, you have to put yourself out there and dare to do something.” The language of “challenge” further demonstrates how the inner lives of workers – vulnerability, trust, courage – are woven into change narratives. People, and the organizational roles they are to play, are the measures of narrative change, not just work processes or end products. But the emphasis on the “challenge” of this change paints Agile’s call to action as an intrinsically difficult request, setting up struggle and conflict as necessary conditions of workers’ role in the narrative. Workers are expected to take up these conditions, playing their part in narratives of change.

This emphasis on challenge could be seen in other areas of the organization too. One example where this came through vividly was an event that occurred during Summer 2016 called the “newClient Challenge.” Disappointed with low adoption rates within GloTechCo a year after newClient was launched, the CIO office held a “Two Week Challenge” contest to drum up use. This included a variety of materials, like instructional videos, game-like quizzes, points that could be “earned” from competing a variety of tasks (like trying out certain features in newClient). The language of “challenge” here was meant to cultivate “worker” as a playful, experimental subject, one always willing to try new things – new software, new practices, new mindsets – in service of the organization.

The “Two Week Challenge” culminated in a blog contest – offering rewards like “GloCoins” (an internal currency that could be used to purchase company merchandise) for the most compelling blog posts about the experience of participating in the Challenge. “Tell us about your journey,” the contest call invited employees. The contest sparked a variety of discussions on intranet

forums around the benefits of newClient and the new way of working it envisioned. In many of the blog posts a strong theme of “personal transformation” emerged, as we can see in one popular blog post by Javier, a product PM.

“It is true that I had to change my mindset completely,” Javier reflects in a blog post. There are some functions from oldClient that can be recreated in newClient, but require some tinkering. Others must be completely abandoned in favor of newClient’s new way of working. It’s difficult to stop using the oldClient, Javier acknowledged, but committing to two weeks without using oldClient helps kick the habit. “It is definitely worth the change,” he writes.

The handful of blogs I encountered read like Javier’s: a listing of the blogger’s favorite newClient features, an acknowledgement of the difficulty in switching, but a cheerful crescendo that ends with explanations over how the challenge was “worth it.” One blogger, William, even included a clever twist on the change campaign’s phrase “a new way to work,” talking of how newClient “required a new way of thinking on my part.”

In these reflective blog posts, we are able to read the transition to the “new” way of working not only as a process of gaining dexterity with a new software program. From one vantage, this is a traditional technology adoption story, one we know so well that describes the process of becoming familiar with the particulars of a new interface, as the awkwardness of its novelty wanes over time. We can also see another process taking place – how workers orient themselves as actors in new organizational narratives and signal their recognition of the character they are expected to play in the story of change.

In these new narratives of work, it is workers who must change – adapting to the re-written software of the future, they are expected to change their mindsets. Such public displays of recognition, like we see here in the “Two Week Challenge” blog posts work to underscore these expectations, reinforcing them as they are modeled for other workers as well.

This type of peer regulation was a key way that the expectations of change were taken up among workers and spread throughout the organization. Though executed much more subtly than the blog posts of the “Two Week Challenge,” this dynamic came up in talking with Albert, a technical PM on the ESS line, about the transition to Agile.

“I have no doubt Agile is better,” Albert told me, confident in his assessment. Explaining his position, he connected the ability for a software team to be Agile and responsive with the sure-fire outcomes of better products and services. “Because just think about it, the traditional workflow. The workflow process is that you do design for a month, or let’s say two months without even talking to engineers.” Then the software engineers get their pass, coding on their own. And another two months goes on. “And then the product that you come up with, it’s four months old in relation to the market. And it isn’t competitive anymore, right?”

Even though the value Agile work practices offered to work products – they are, in Albert’s words, no doubt better – the day-to-day impact of Agile can still mean difficult working conditions. “It is a totally different way of working,” he told me, again contrasting the new expectations of everyday work from the old. With Waterfall, there were periods of stability, focus, and intensified effort. “And now engineers will start coding and then in the middle of doing that work you tell me, ‘Okay, you are going to change it and then I have to change too, right?’ It is annoying, no question.” I asked him if it was difficult for people to make that transition. He thought about it for a moment, ultimately reflecting: “I think the top engineers and project managers, they will just have to adapt to it, right?”

His reflection reveals the affective dimensions of the new – stating matter-of-factly how Agile can be annoying. Yet his acknowledgement of its difficulty is tempered with a re-affirmation that workers are still expected to adapt – the new may be difficult, but the top workers will figure out how to deal with it. Recognizing this dynamic – difficult, yet still expected – re-affirms these type of expectations as normal and ordinary. Normalizing the demands of narrative change works to re-enforce those demands, regulating one’s self and one’s peers in the process.

6.5 “Somewhere in Between” – Flexibility, Friction, and the Adjusting of the Narrative

So far, I have set out two dynamics of narrative roles – how expectations for behavior and comportment are signaled to workers and how workers, in turn, demonstrate their recognition of those expectations. The third and final dynamic I am going to discuss is how these expectations are adjusted in practice. Workers find points of narrative “give,” flexibility that allows for situated agencies to emerge as various stories unfold in practice. These three dynamics together

comprise the process I call *inhabiting* – how workers both appreciate and adjust the expectations laid out for them in the technological narratives of organizational life.

6.5.1 “Somewhere in Between” as a Source of Flexibility

In Agile’s change campaign, the focus is on changing one’s daily practice. Such expectations place both burden and opportunity on workers – the transformative potential of Agile is only possible if its tenets and values are brought to life in everyday work. Let’s recall the video we examined in the very beginning of this chapter, with Todd the engagement executive and a room full of Agile trainees. As Todd started to wrap up the session, he pointed to a large dry-erase board behind him on the stage, where he had written out several keywords during his talk. You’ll remember, these were the basic tenets of Agile he stressed, like trust and respect, courage and openness. “So, let’s imagine we take photographs of that now,” he motions a pretend snapshot with his hands. “And we make posters and put it up on every wall in your building,” he says. “Will it change the way you work? Will it?” he asks the room. “No, of course not.” He continues on:

It won't change our behaviors by itself. The only way to make these values and principles come alive is to practice them. When you practice something, doing it a certain way over and over again, then your behavior changes. When your behavior changes, you start to live the values and principles, they become a habit. That becomes your culture. And that's what Agile is, Agile is a new culture of working.

In this narrative of change, dramatic organizational transformation is presented as a matter of will, a set of concrete and do-able practices that workers can commit to each day. If you do your part, grand organizational change towards an “Agile Culture” is not only possible, but inevitable.

But while the aspirational qualities that new narratives of change campaigns (like the one around Agile) set up high expectations, their aspirational quality also means they are always “on the way.” Daily work practices are *en route* to achieving such noble goals, but never quite meet the moving target of their imagined destinations. The gap between actual and aspirational narratives can be a source of flexibility, allowing workers room “in between” to modify the demands placed on them.

We can see this in an interview with Freddie, a technical PM on one of the company's mobile app products. In explaining his team's experience with Agile, he offers recognition of the expectation of being "Fully Agile," but also of their in-between status:

CW: Does your team have experience with the Agile, iterative process?

Freddie: We are - yes, and no. So we are, I would say over the course of the last few years, probably like most software development teams within [the company], we're continuing to mature. I would say, our maturity posture with kind of being "Fully Agile" and following the continuous delivery process is still something we're working through. We're definitely not mature in it yet, but it's not new to us anymore. We're kind of somewhere in between.

He then continued to list off different processes within his team that were "more" Agile and those that were less so. Reflecting on the challenges of becoming "Fully Agile," he noted:

I think our biggest challenge right now is, you know, every time we do a release, we do also have to be very careful because this is enterprise software. Its not just, you know, a consumer software, but we have to make sure we're not regressing any functions or going backwards in terms of bugs or anything. And then there's usually a quality process we have to go through before we'll vet something going out the door, and there's a lot of overhead with that.

Freddie's reflections tell us of the need to contextualize the demands of the "new" narrative (of Agile) within those of the existing or "old" narratives – some things in enterprise technologies are not flexible (and shouldn't be). This means that workers must continually situate the demands of new narratives, with the old: tempering Agile's flexible mandate (to iterate often, to constantly improve outcomes) with the existing requirements of enterprise environments (to ensure enterprise standards are consistently maintained). But recognizing these competing demands offers flexibility, as daily work resides in an "in between" space and allows Freddie and his team leeway in being mostly, but not fully Agile.

6.5.2 "Somewhere in Between" as a Source of Friction

While it can be a source of flexibility, working from "in between" new and old narratives can also be a source of friction, as a conflicting set of obligations are placed on workers. In the case

of Agile, workers are expected to personally bend and transform themselves to meet the challenge of its new narrative, yet they are also still constrained by many organizational systems that exert old narratives (like the bureaucratic underpinnings of many companies). The issue of this new/old friction came up during a “Two Day Intensive” – an online event meant to spark conversation and brainstorming around a given topic across the global organization. Only open for participation over a two-day period, the platform was intended to act as a virtual workshop that helped to spark rapid discussion, debates, and skill-shares to drive innovation around a central theme. One particular “Two Day Intensive” was focused on fostering an “Agile Culture.” The data generated from the event was seen as a way to measure Agile engagement within the company, by running analytics over them like sentiment or social network analysis. These analytics also involved topic modeling, and a findings report provided tidy charts, neatly organizing the Intensive’s forum posts into “Issues Raised” alongside their attendant solutions, in a column labeled “Recommendations for Action.”

Delving into the particular issues raised in over 1,000 forum threads is not my aim here. Instead in many of the themes identified in the findings report, we can see a concern from workers over the efficacy of Agile vis-à-vis the company’s entrenched bureaucracies. How is Agile compatible with the myriad auditing systems we must comply with? How can we make quick course-corrections when the resource management system takes weeks to approve purchases? How do we incorporate Agile when we have customers that expect Waterfall? Such concerns point to the tension workers experience in the expectations heard loud and clear across the organization – to wholeheartedly adopt and practice Agile – while the existing structures of their day-to-day work raise ongoing barriers to meeting those demands.

One such issue makes these tensions particularly clear. Participants of the Two-Day Intensive wondered: how will the demands of Agile be reflected in our existing employee review system? The system, GloGoals, was an interface that allowed quarterly goal-setting and assessments of individual employees to be aligned with larger strategy decisions, set and monitored by middle and upper management. This was a process called “cascading” where firm-wide business objectives would trickle down throughout the organization. GloGoals was a sore subject among many company workers I interacted with, its complex system of scoring left many confused or frustrated with the process of employee evaluation.

Vis-à-vis Agile, GloGoals’ evaluation structure – focused on quarterly and yearly individual

goals for each employee set with one's manager – felt particularly out of sync with the new expectations on quick iterations, bold decision-making, and team-based assessments. “We’ve lost the evaluation of teamwork and risk-taking,” the “Issues Raised” column in the report reads, “we need to re-infuse it if we are to be an Agile Organization.” The proposed solutions in the “Two Day Intensive” report only briefly addressed these tensions and the repercussions they have on workers, relegating such dilemmas – significant and heavy – to a small cell in the chart, a simple list of actions placed in the column alongside the “Issues Raised” that reads: add team objectives into the GloGoals system; revisit the timing of evaluations and how risk-taking is assessed.

I draw attention to this report because it offers us a glimpse into workers’ sensemaking practices around Agile’s “new” plot in the face of the organization’s “old” one. Workers must make sense not only of Agile and the emergent expectations of the “new” but also figure out the relationship between these new expectations and existing ones. While this source of narrative friction can have negative repercussions (as we can see in, for example, the clear frustration that comes through from some participants in the “Two Day Intensive”) it also points to possible sites of flexibility as workers aim to adjust the ongoing narratives within an organization. By pointing to the disconnect between the expectations set out for them in the new narrative of Agile vis-à-vis the old narrative of the company’s evaluation system, these workers have opened a dialogue that exists “in between” the two – revealing the friction between the two begins to adjust the narrative of each as they are read alongside one another.

This raises attention to how narratives can clash or compete across an organization, similar to the point I raised in chapter five about the need to recognize narratives as multiple and offering points-of-view from different vantage points within an organization. But here, my attention on multiple narratives is the demands they place on workers, who are expected to play different parts in different narratives simultaneously. This means workers are tasked with figuring out how to handle this multiplicity. In these processes of sensemaking, they continually adjust narratives, inhabiting their mandates while also transforming them through everyday practice.

I saw many moments of adjusting across a variety of scenes in my ethnographic work, each enlivening everyday work with clever ingenuity and skillful tinkering. One such example is the partial adoption that was common with newClient – many employees used newClient for certain tasks, yet kept their old mail client “up to date” for more routine tasks. There was even a growing movement across the company intranet to “hack” newClient, attempting to tweak its HTML5

shell to revive some of the customization ability lost from oldClient – with a vivid crowd-sourced code share taking place on the company forums.

Others adjust the narrative of change by resisting that much change is actually underway. In reflecting on his multi-decade career as a software developer, Trevor, a technical architect on ESS, talked of how he has seen a lot of changes in DevOps management styles over the years – different schemes and strategies, trends that come and go. “We still have those long nights, you know, bad weeks leading up to a major deadline, where we have to get work done,” he told me.

“Does that happen more or less now that we are Agile?” he wonders aloud, thinking about the pressured coding crunch that developers are up against around major deadlines, a well-worn ritual for any professional developer. “I don’t know, it’s hard to really say.” Even with short and iterative cycles, software-developing teams still find themselves up against the clock occasionally during big coding cycles. Such reflections like Trevor’s ask us to ponder – how different is the new narrative of Agile from the typical narrative of work? Asking these types of questions adjusts the narratives of change, instead creating continuity by claiming that the essence of daily practice is “business as usual,” despite the implementation of new campaigns like Agile. This has implications for technological framing and the meanings given to emergent technologies, provoking us to consider what changes with new technologies and new ways of working and what stays the same.

There are a number of different ways that narratives of change are adjusted through everyday practice and my intent here isn’t to catalogue all that I saw during my ethnographic study. Instead I offer these examples to demonstrate how even in intense and dramatic narratives like those around Agile or software meant to bring about a “new way to work,” there are degrees along which narratives are “lived through” – adjusted and inhabited as they are borne out in everyday practice.

6.6 Concluding Remarks – Technological Framing as “Somewhere in Between”

Anyone familiar with conducting UX studies knows the frequent uncertainty expressed by participants, grasping for clues as to the “right way” they should use a system. Was I supposed to do that? Is this the way it’s meant to be used? How did others use it? Implicit in these kinds of moments is a sense of the normativity that forms around technology use, as users both pick up on the subtle cues signaling their expected behavior vis-à-vis technology but also find its uncertainty

a source of imaginative speculation. In the context of the enterprise, these norms and expectations involve not only the direct interaction with technologies, but also how those technological encounters fit within broader workplace narratives.

In this chapter, I have examined my third sub-research question (narrative audience) and looked at a particular kind of workplace narrative – that of organizational change. I’ve demonstrated the parts workers are expected to play in change narratives and how those parts are signaled to workers – through, for example, strategic interface design or educational materials. Workers, in turn, signal recognition of these narrative expectations – taking up the yoke of change’s “challenge.” But workers also adjust these narratives in practice, as daily work resides “somewhere in between” the expectations of the new and those of the old. This dynamic – of appreciating but also adjusting narrative expectations – is what I call *inhabiting* the narrative.

This extends our understanding of technological framing by showing how subjectivities are implicated in the framing process. Norms and expectations help to signal the organizational significance of a given technological encounter, shaping social categories like “worker” in the process. Specific software designs, for example, help accomplish organizational change campaigns, so using that software, then, becomes a way that workers are expected to help bring about that change. But while workers recognize these expectations, and take them up in a number of ways, they also demonstrate agency as they tweak and modify the narratives of change. This adds nuance to the notion of “resistance” in the IS adoption process – complicating organizational change not as stark division between new and old technologies or new and old work practices, but instead a site of flexibility and ambiguity that resides “somewhere in between,” a site that offers emergent agencies as technological narratives are lived through and inhabited.

Chapter 7 – Discussion and Conclusions: Towards Technological Framing as “Narrative Assembly”

7.1 Shorthand Heroics – Elliptical Stories and Assembling a Rally of Success

An early scene from my fieldwork takes on new meaning when revisited with the analytical attention to narrative making laid out in this dissertation. An executive spoke at a lab gathering, giving updates on various product divisions with snapshots of what “we’re expecting to see” during the upcoming business quarter. The company had just been featured in the news for a hardware breakthrough, hubbub that had prompted me to read up on the relationship between AI and hardware (the former, I was only familiar with in its nexus with software). This offered me new insights into how the “hard science” done in the lab’s clean rooms (tucked away along the corridors in the building’s basement) were closely tied to all the other computing and services R&D going on at the lab. Congratulating the hardware team, the executive continuing on with his “quarter ahead” overview, turning to the topic of mobile and IoT.

“Just imagine,” he said, taking the kind of pause that builds anticipation. “Just imagine what we could do if we brought the ‘heavy artillery’ of this company to bear on this problem,” he said. He was discussing the challenges of data storage and transfer in mobile and IoT technologies. His careful arrangement here is revealing – having just lauded the hardware advancement, he then tied the hardware work together with the software and services work that has been driving the company’s “analytics push” forward. He used the recent hardware breakthrough to provoke those in the room. “The expectation... is not just to be doing deep technologies research on hardware and devices,” he said. “But also, we are meant to be out there driving new markets and industries,” he continued. “We have to tackle this with an artistic balance of risk and innovation,” he counseled. “These aren’t just hardware or software problems, services or delivery,” he said. “They’re [GloTechCo] problems.”

In this storytelling moment, tucked away in an ordinary lab meeting, I see a brief yet meaningful encapsulation of many of the things going on at the company during my time there. This executive’s arrangement – of using the hardware team’s accomplishment as a lead in to the upcoming challenges around mobile and IoT analytics – is an elliptical story (Orr, 1996). His

arrangement offers an ellipsis, a space that allows the audience to “fill in the blanks,” drawing out the broader significance of the organization’s ongoing narrative of change and reinvention and connecting it with the narratives of everyday work. By taking the organization’s “old” expertise (its decades-long reputation in hardware innovation) and making it “new” (by associating it with “hot topics” like mobile and IoT), such ellipses let the audience envision the company as bold and cutting edge, uniquely positioned in its approach to tackling emergent market problems.

If we too “fill in the blanks,” we are able to see how this brief rally cultivates a story of success. The four narrative processes I have developed in this dissertation are subtly implicated in this ordinary narrative-making moment; by overlaying them onto the executive’s talk, we are able to see the broader organizational significance of this casual “pep talk.”

The narrative directs our attention to a specific issue – data storage and transfer – and frames this issue as a “problem” for the organization. This problem has *multi-scalar resonance*, understood as pressing for both the micro- and meso-levels of organizational concern – data management poses a problem for the design of specific products and features (micro) and also a problem for the company as a lost business opportunity (meso). In this narrative-making moment, the executive also uses *strategic associations*, placing this “problem” narrative directly after the hardware congratulations. Doing so creates an implicit association between the two R&D groups (software and hardware) as similar and working together as a “unified front,” an association reaffirmed when he says: “these aren’t just hardware or software problems... They’re [GloTechCo] problems.”

Further, we can see how this narrative making moment presents tackling the problem of mobile and IoT data management as a *unified and worthy goal*, one that offers benefits to both firm-level goals (to capitalize on this potential market opportunity) and individual worker-level goals (to derive personal meaningfulness as researchers on the cutting edge, whose work “drives markets and industries”). Finally, we can also see how through this narrative-making moment the possibility for *inhabiting the narrative* is rendered. The executive explicitly sets out expectations for workers (“the expectation for research is...”). But he also explains that approaching this challenge requires an “artistic balance of risk and innovation,” signaling space for different interpretations of the narrative as workers adapt it through practice. In this elliptical story, everyone in the organization “plays a part,” from hardware to software, to the number of services

re-design going on throughout the organization – all are enlisted in the company’s efforts for relevance and prestige.

Narrative Dimension	As Seen in the “Heavy Artillery” Pep Talk
Multi-Scalar Resonance	directs attention to and frames a specific issue (data storage and transfer) as a “problem” that resonates as pressing at both the micro- and meso-levels of organizational concern (micro: data is a design problem specific products and apps should be concerned about, due to its potential to impact features; meso: data is also a problem for the company, due to the lost business opportunity it represents)
Strategic Associations	places this “problem” narrative directly after the hardware congratulations, creating an association between the two R&D groups (software and hardware) as similar and working together as a “unified front.” This association is reaffirmed by asserting “these aren’t just hardware or software problems... They’re [GloTechCo] problems.”
A Unified and Worthy Goal	addressing this “problem” offers benefits to both firm-level goals (to capitalize on this potential market opportunity) and individual worker-lever goals (to derive personal meaningfulness as researchers on the cutting edge, whose work “drives markets and industries”)
Possibility to Inhabit the Narrative	sets out expectations to workers (“the expectation for research is...”) but describes approaching this challenge with an “artistic balance of risk and innovation,” signaling space for different interpretations of the narrative as workers adapt it through practice

Table 7.1 Maps Four Narrative Dimensions to the “Heavy Artillery” Pep Talk

In situating the significance of this short story, Orr’s (1996) work looking at the social worlds of copier technicians is useful, and in particular his analysis of the organizational value of the “war story” (p. 125). Orr describes these “war stories” as “elliptical stories” – madlib narratives, fragmentary and filled with jumps and ellipses – barely coherent to those unfamiliar with the work, yet an integral part of technicians’ worlds. Others in the organization viewed the technicians’ storytelling practices (which typically occurred at the beginning of meetings) as essentially “water cooler talk,” primarily for social bonding. Orr saw their value as providing deeper insights into the technicians’ social world, a mechanism central not only to the technicians’ diagnostic work and knowledge sharing practices, but also a way of constructing and asserting their collective identity and value within the organization: “This celebration of the technicians’ competent and collectively heroic practice is, perhaps, necessary as a counter to the image of service presented by the corporation in their insistence that service work is merely following directions.” (p. 142). For Orr, these short stories were bold moments of identity work and prestige claiming: “[The technicians’] own presentations of their skilled work allow them to claim their identities as practitioners of the literally black art of restoring harmony to the relationship of customer and machine.” (p.143).

Stories about GloTechCo's new technical offerings – of AI and analytics, of the cloud, mobile, and IoT – provide similar moments of everyday celebration. Narratives give structure to meaning making, allowing individuals within the organization to not only “get on the same page” about the grand change taking place, but also imagine its conclusion. These stories go beyond sensemaking – like Orr's “war stories” they also take on affective dimensions, enabling certain types of selfhood and collectivity to be recognized and valued. Narratives offer momentum – a sense of conceptual movement and force through which people not only understand the challenges they collectively face, but also imagine their resolution as successful (and their contribution to that success) as possible, likely, and good. Through the struggle for meaning, meaningfulness emerges – with challenges (like data management) transformed into rallies and sources of celebration.

The types of stories Orr examined are different from mine. His were the kind of impromptu story swapping that begins with a “*you won't believe what I had to deal with...*” Meant as assertions of heroism and value, the stories Orr analyzed countered the dominant assumption that the technicians' work involved “merely following directions.” The stories at GloTechCo that I have examined in this dissertation are more calculated – careful moments through which individuals seek to contribute to and influence organizational strategy and “make their mark” on the company's technical offerings.

In this regard, though, they are similar to Orr's stories – also accomplishing collectivity by advancing preferred images of selfhood – not only of successful people and products but a successful organization, one that elicits pride and honor. Calling on the company's “heavy artillery” (like we see here) cultivates a shorthand heroism – in such brief, mundane moments the organization's heroic status is perpetuated. Its mundane character weaves such grand aspirations into the fabric of everyday organizational life – reaffirming the meaningfulness of everyday work and the ongoing part it plays in driving heroic narratives forward. Mapping the four narrative-making dimensions I have set out in the dissertation to this elliptical story illustrates how an attention to narratives – and the mechanics of narrative making – uncovers the significance of brief and fleeting moments like this one.

7.2 Recapitulation of the Dissertation's Findings

In this dissertation, I set out to answer the call for more conceptual development of the technological framing concept, particularly identifying underlying structures or patterns of

framing and “the way individuals construct arguments, the breadth of issues considered, and the rigidity or fixedness of framing” (Davidson, 2006:28).

Recall that the overarching research question of the dissertation has been:

- In what ways can conceptualizing technological framing as a form of narrative making expand our scholarly knowledge?

I have demonstrated a number of ways that conceptualizing the technological framing process as a narrative-making one helps to extend our understanding. My focus has been not simply on narratives, but on narrative making – the broader meaning making practices through which narratives emerge. Doing so provides insights into how technologies are framed narratively, but also how those frames are situated in, draw upon, and seek to influence broader meaning systems.

To analyze narrative making, I organized my inquiry along three sub-research questions. Recall these three sub-research questions have been:

Sub-RQ1 – Narrating

- In what ways can people attempt to influence technological narrative making?

Sub-RQ2 – What is Narrated

- In what ways can norms and values shape technological narrative making?

Sub-RQ3 – Narrative Audience

- In what ways can technological narratives be “taken up” and assessed?

These questions were inspired by the three vantage points implicated in narrative-making practices: narrating, what is narrated, and a narrative’s audience. Rather than implying a rigid boundary or division between these three, my aim was to use these vantage points to secure analytical traction. Doing so has provided me with language to investigate narrative making empirically, as well as engage conceptually with relevant literature streams and situate the new knowledge this inquiry provides for the technological framing process. These three vantage points also map onto the gaps set out in Davidson (2006:28), which I listed in the introduction and reproduce here in Table 7.2.

Gaps Articulated in Davidson (2006:28)	Corresponding Sub-Research Questions
“the way individuals construct arguments”	Sub-RQ1: Narrating
“the breadth of issues considered”	Sub-RQ2: What is Narrated
“the rigidity or fixedness of framing”	Sub-RQ3: Narrative Audience

Table 7.2 Connects the Sub-Research Questions to the Gaps Articulated in Davidson (2006)

I will now recapitulate the findings I have examined in this dissertation. In chapter three, I examined my first sub-research question (narrating) and showed how, through the narrative-making practices of the “use case,” technological narratives converge across multiple organizational scales – producing a technological account that “feels right” with the micro-narratives of everyday work, but also resonates with an organization’s ongoing meso-level strategic priorities. This *multi-scalar resonance* continually evolves, with technological experiences (micro) impacting executive decision-making (meso) and vice versa. In this chapter, I demonstrated how efforts to shape the narrative-making process are both strategic, but also improvised. Even if a technological narrative resonates across scales, the points-of-view it offers may still fail to be “taken up” and affect change within the organization. This improvisational character of framing efforts give the process an unpredictable quality; yet despite this quality, the process still presented individuals with the possibility to “make your mark” by providing a “cutting edge” point of view. This showed how efforts to influence the framing process exhibit a “try, try again” spirit of resilience and adaptation in the face of possible failure. In turning our attention to narrative making, I have extended our understanding of “influence” in the technological framing process – as something dynamic, fleeting, and unpredictable. An attention to narrative making also provides traction in examining this situated and emergent quality of technological framing through a number of focal points (how plots are constructed; how narrative vision imagines endings; and how narratives implicate characters), aspects I addressed in the remaining empirical chapters.

In chapter four, I further examined my first sub-research question (narrating) and showed how narrative making involves *plotting* – the practice of arranging phenomena into narrative form. Through plotting practices, different kinds of relationships emerge and associations are made. I showed how these associations render a variety of strategic value in organizational practice – for example, by enabling organizational problem solving and a belief that organizational efforts are do-able and likely to succeed. My attention to plotting practices revealed how technological framing is *dynamic* and *diverse*. By “dynamic,” I mean that technological framing is situated in specific narrative-making occasions. Ideas (and one’s position in relation to them – e.g., audience

to narrator) can change rapidly. And by “diverse,” I mean that efforts to influence and shape technological framing are motivated by a number of concerns, helping to explain how technologies might be framed as a source of shared experience or intimacy in one occasion and a source of distinctiveness or competition in another.

In chapter five, I examined all three of my sub-research questions (narrating; what is narrated; and narrative audiences) and showed how narrative making produces a series of unifying goals, revealing how technological framing is *morally charged* and how such moral goals are *multiple*. Through an examination of goals such as “increased productivity” and “more social,” I showed how technological framing is shaped by implicit ideas of how things should be (social imaginaries) and the role of technologies in achieving those ideals (social movements). The visions cultivated in narrative making help instill everyday work with a sense of cohesion and meaningfulness. Organizational life is filled with many such grand goals, though, and I showed how these values are continually re-configured in narrative-making practices to enable a felt moral consistency in what may appear contradictory.

Furthermore, in chapter five, I examined how, while such goals contribute to a sense of meaningfulness and unity, they can also displace alternative points-of-view, challenging such cohesion. For example, individuals can experience tension when they do not believe in the morality of a technology’s underlying tenet (i.e., that corporate life should be “more social”), yet must still work towards accomplishing it. Thus, while narrative making can be morally unifying, it also has the potential to displace and fragment.

Finally, in chapter six, I examined my third sub-research question (narrative audiences) and illustrated how narrative making produces a number of expectations, particularly in the “parts” workers are expected to play. In this chapter, I described what I label the *inhabiting* of narratives; inhabiting is the process through which workers signal their recognition of the parts they are expected to play in organizational narratives – and how those parts are adjusted as they are played out in everyday practice. Such insights expand how we think about “resistance” during the technological framing process. By drawing attention to the space “in between” narratives, this chapter pointed to its role as both a site of friction and flexibility, creating potential to renew and adapt narratives as they are “taken up” across organizational life.

Together, these chapters have addressed my three sub-research questions (see Table 7.3).

Sub-Research Question	Corresponding Findings	Chapter
In what ways can people attempt to influence technological narrative making?	By crafting a “use case” with “multi-scalar resonance”; and by arranging specific phenomena into narrative form (“plotting”)	Three; Four
In what ways can norms and values shape technological narrative making?	Through a narrative’s imagined and ideal ending (“unifying goals” that articulate the preferred state technological work is moving towards)	Five
In what ways can technological narratives be “taken up” and assessed?	By “inhabiting” the narrative, a practice of signaling and adjusting the expectations implicitly communicated in narratives	Six

Table 7.3 Outlines Sub-Research Questions and Corresponding Dissertation Findings

This dissertation has provided an empirically-grounded understanding of technological framing as a series of everyday narrative-making practices – demonstrating how, at my field site, the emergent technical capabilities known as “data analytics” came to be understood and situated within the firm’s organizational life. These chapters also provided conceptual insights that each extend technological framing literature in their own way, addressing the gaps I identified in my introduction chapter. In doing so, my empirical analysis revealed how technological framing is:

- *multi-scalar*, with influence directed at achieving resonance across different scales of organizational life. This extended insights from Jochemsen et al. (2016) into the multi-scalar dimensions of technological framing, pointing to how resonance across scales is worked towards. It also answers the call in Giorgi (2017) by offering a processual understanding of the mechanisms underlying framing resonance (rather than simply identifying whether a particular framing had resonance or not, its typical treatment).
- *diverse*, with attempts to influence technological framing motivated by a number of strategic concerns; and *dynamic*, with technological framing situated in specific plottings. This extended insights about the role of “inconsistency” in technological framing (Young et al., 2016) and the evolution and change of technological frames (Azad and Faraj, 2008), offering a conceptualization of framing (and frames) as situated and rapidly unfolding.
- *morally-charged*, with technological framing driven by notions of how things *should be* and the role of technologies in bringing about those ideals. This extended our knowledge of technological framing by revealing it as a normative and moral process. In doing so, it extended our understanding of “inconsistency” (Young et al., 2016) and “granularity” (Vaccaro, 2011) in technological framing, showing how narrative making continually re-

- configures goals to render the perception of a morally-consistent technological vision. Further, this chapter extended our understanding of “truce frames,” and how framing compromises are made in the spirit of “getting work done” (Azad & Faraj, 2011) by pointing to the lived and felt tensions of working towards goals one may not agree with.
- *inhabited*, with expectations continually signaled and adjusted in the technological framing process. This extended our knowledge on the role of identity in the technological framing process, going beyond existing literature which primarily examined identity as a question of job roles or occupation and instead highlighting how broader notions of “worker” and “employee” are also implicated. Further, this chapter extended our understanding of the role of “ambiguity” in the framing process as a resource not only in framing and knowledge generation (van Burg et al., 2014), but also by the generative space “in between” it provides for workers to adjust and adapt the expectations placed on them.

In explicating these conceptual dimensions and their contributions to specific literature, my aim has not been to provide heuristics to be applied or content to “look for” in future IS research. Instead, the analytical work I had done in this dissertation provides a novel conceptual lens, one that helps to drive technological framing literature forward. I call this lens “narrative assembly” and set it out below.

7.3 Articulating A Novel Lens for Technological Framing – Narrative Assembly

By *narrative assembly*, I mean a conceptualization of technological framing as: a strategic, yet improvised practice; that takes place in relation to broader socio-cultural life; and is contingent in specific narrative-making encounters. I derive this lens from the culmination of all three of my sub-research questions and discuss how it provides a novel conceptualization of the technological framing process below.

By conceptualizing technological framing as a narrative-making practice, my dissertation has set out to situate framing as a type of narrative practice – one that enables everyday work activities, the projects they contribute to, and the technological products they produce to be understood as connected to grand organizational and cultural stories of social order and progress. But my addition of “assembly” reaffirms technological framing as an ongoing and emergent practice of putting things together – a strategic practice that seeks to intervene and shape existing meaning

systems at the same time it is responsive to them. “Assembly” connotes the making or manufacturing of things; but it also connotes social and organizational activities, for example a “school assembly” or the act of “assembling the troops.” Similarly, in this dissertation, I have shown how technological framing too connotes both the making of technological meanings, but also the broader social and organizational arrangements from which they arise.

In situating the significance of this lens, I discuss each of its three components (strategic, yet improvised; in relation to broader socio-cultural life; and contingent). I set these out here and treat them in depth below.

By “*a strategic, yet improvised practice*,” I mean a view of influence in technological framing as calculative and purposeful, that is aimed to persuade and direct attention, as well as improvisational and reflexive, shaped in response to specific social, organizational, political, and material contexts. Decision-making in organizations does not necessarily follow a rational trajectory (Cohen et al. 1972), nor does technological framing. A narrative assembly view attempts to understand how technological framing arises amid the “organized anarchy” of organizational life (Cohen et al., 1972).

By “*in relation to broader socio-cultural life*,” I mean a view of technological framing as encompassing, but going beyond organizational meaning systems. Narrative assembly seeks to understand how technological framing is enmeshed with cultural imaginaries and the preferred futures they are seen as advancing. Such a focus helps to uncover how technologies and technological work are imagined as causally connected to contemporary social and moral orders.

And by “*contingent in specific narrative-making encounters*,” I mean a view of technological framing as *plural* (multiple narratives ongoing at once) and *contingent* (narratives – and individuals’ relationships to those narratives – as rapidly changing). Such a view focuses on perceived coherence of such complex meaning systems.

7.4 “Strategic, Yet Improvised” – An Expanded View of “Influence” in Technological Framing

What does it mean to say technological framing is “strategic”? “Technology Strategy” has been a part of the technological framing lens since the lens was introduced (Orlikowski & Gash, 1994).

The lens provides analytical traction in understanding how different people within an organization make sense of new technology. New technologies are often introduced as part of organizational change; new technologies, therefore, are often sites at which employees encounter – and make sense of – organizational change initiatives. Strategy, then, as conceptualized in the “Technology Strategy” factor in Orlikowski and Gash (1994) are individuals’ understanding of the meso-level change decisions around a technology, which come to influence the meaningfulness they assign to technology as they make sense of its role within the organization.

In taking narrative making as a unit of analysis, I have shown how the role of strategy in technological framing is not limited to the strategy department or decisions made at the executive level that ordinary workers – often characterized as end-users – must then make sense of. Indeed, executives played roles in the empirical stories I have examined, but they were not the only people who can be considered “strategic.” In focusing attention on narrative making, I have offered an expanded view of strategic practice, one that sees influence and persuasion as central – and everyday – features of the technological framing process. This dissertation has built on insights into the political dimensions of technological framing, as set out in Lin and Silvia (2005). Their study revealed how different groups attempt to influence the framing process through the use of discourse – for example, members of the IT department using technical jargon to increase other groups’ dependence on and more readily accept their interpretations of the technology. Similarly, Azad and Faraj (2008) examine the using of “black boxing” to develop congruence across groups’ frames. Both perspectives, though, conceptualize influence in the framing process as largely a practice of obscuring knowledge or increasing dependence. By focusing on narrative making, I have shown another facet of influence – how individuals attempt to influence technological framing by providing coherent accounts about technologies. Although often presented as commonsense and self-evident, these accounts offer a strategic rendering of organizational life, rather than a pre-fixed reality. Narratives are a central mode of sensemaking in organizations (Weick, 1995); but they are also “political productions” in the words of Mumby (1987:114) in that they come to influence the shape of organizational reality, often in invisible and taken-for-granted ways. Narratives accomplish this reality-shaping feat by presenting a rendering of the world. In attending to narratives, I have shown how technological framing is not just about making sense of emergent technologies like “data analytics” – it is also about constructing new organizational realities.

But what does it mean to say technological framing is “strategic, yet improvised”? In articulating a narrative assembly lens, my use of these two words together – strategic, yet improvised – is deliberate. This is meant to reiterate influence’s constitution as both purposeful and deliberative (proposing and re-affirming a new organizational reality), but also improvisational and reflexive (reactive to unpredictable and at times seemingly random events). My attention to technological framing as a strategic narrative practice has drawn on issues selling and strategic storytelling, both perspectives that highlight the artistry and craft of influence – one that requires a “feel for the game” being played inside the organization (Dutton et al., 2001) and care in creating believable and novel points of view (Barry & Elmes, 1997). To this, a “garbage can” perspective adds the provocation: chance matters. This shifts the focus of a technological framing inquiry. Rather than asking: what are people’s ideas about a technology and how do they get others to agree with them? A narrative assembly approach asks: given the prominent role of chance, how are technologies rendered as coherent and orderly organizational phenomena? How is meaningfulness preserved given the “organized anarchy” of work life?

I have shown how a narrative-making lens is helpful in this regard – by attending to narrative making, I have examined ways in which the uncertainty around “data analytics” is rendered as deliberate and meaningful through “giving accounts of organizing” (Mumby, 1987:114) by: establishing the problems it might address as urgent and far reaching; configuring its daily efforts as do-able and likely to succeed; affirming its pursuit (a commercial endeavor) as morally worthy; and valorizing novelty and flexibility.

Chance is “often personified or treated as a positive agency,” connoting luck or fortune (Chance, n.d.). But chance also has the potential for negative connotations – with events possibly seen as senseless. A sensitivity to the role of chance in technological framing, then, asks us to consider its felt repercussions. How does recognition of chance settle with individuals’ efforts to influence projects, products, markets, and careers? An attention to narrative making opens up such questions and future work is needed to more fully understand the role of affect in the technological framing process.

7.5 What Are We Assembling? – Technological Framing and Broader Cultural Life

What does it mean to say technological framing takes place “in relation to broader socio-cultural life”? By this, I mean that a narrative assembly approach sees technological framing as a socio-cultural activity accomplished through narrative making.

In answering Davidson’s (2006:28) question on “the breadth of issues considered” in the framing process, I have demonstrated that technological framing encompasses but goes beyond organizational meaning systems. Technological frames literature is often constrained by a focus that bounds the organization as a relatively “closed” meaning system (Davidson, 2006). Recent work, however, has expanded our view by pointing to the ways individuals make sense of technologies within the organization by drawing on their experiences with similar consumer versions (Treem et al., 2015), which I discussed in chapter four. This work is instructive in understanding how individuals re-encounter technologies and deem them similar and how those framings move across organizational boundaries; indeed, my study found analogous types of consumer-to-enterprise transfers (for example, in the user study around the conversational agent or “work chatbot” project and how individuals compared to Apple’s Siri or how the company’s smart email client was often compared to Google’s Inbox). However, a platform perspective (i.e., how frames of a consumer platform impact the use of its corporate counterpart) limits our scope, failing to account for ways that technological meaning making is situated in broader cultural contexts.

The approach I set out here advocates for attention to more diffuse kinds of cultural engagements. Informed by the notion of “computerization movements” – set out by Kling and Iacono (1988) – a conceptualization of technological framing as narrative assembly seeks to understand how technological framing is enmeshed with cultural imaginaries and the preferred futures they are seen as advancing.

Rhetoric (or discursive persuasion) plays an important role in shaping beliefs and ideologies around technologies (Barrett et al., 2013). Barrett et al. (2013) examined the role of rhetoric in shaping software movements, looking at how different arguments in the software debates (around whether software should be free, open, or proprietary) framed the F/OSS movement. To these insights, a narrative assembly approach emphasizes the role of narratives in the construction of technological ideologies. Why is narrative instructive here? As I have shown, it is through a variety of narrative-making practices that workers make connections between their everyday

work practices and notions of how things should be (social and moral orders) and the role that cutting-edge technologies play in achieving such ideals. As I've examined, narratives tell stories that are going somewhere – building momentum and a sense of urgency (if not inevitability), a narrative's temporal arrangements provide a site for imaginative renderings of relationality, causality, and ideal endings. Such configurations are able to rally diverse actors within an organization around a social cause. Thus, narrative assembly focuses not only on the beliefs around technologies (how technologies should be), but on how narratives are a specific cultural form where “best case scenarios” are articulated through ideal outcomes (like “increased productivity” and “more social”) and the role of one's work positioned vis-à-vis such idealistic goals (e.g., how the task at hand contributes to a goal like “increased productivity”). Such a focus helps to uncover how technologies and technological work are imagined as causally connected to contemporary social and moral orders.

Understanding this interplay – how everyday work is “connected up” with grand societal narratives – is consequential for technological framing in that it helps us understand the nexus between technological meaning making, underlying moral orders, and notions of personal meaningfulness and moral commitment within high-tech work. As I discussed in chapter five, engagement at work involves the notion of the “preferred self” (Kahn, 1990). An attention to narrative making helps us gain analytical traction in understanding such preferred and imagined selves – and preferred and imagined organizations. In doing so, we are able to examine how technological framing makes organizational meaning around not only the technologies a company develops and sells, but also the kinds of worlds it seeks to cultivate.

Imaginariness help make a shared social reality possible (Anderson, 1998; Taylor, 2003) but imaginaries can also be sites of conflict as different value regimes are activated and reinforced (Levy & Spicer, 2013). My empirical focus here (on data analytics) has shown how the technological imaginaries articulated and reinforced through narrative making enable workers to experience a sense of felt consistency and moral worthiness to their endeavors, in the face of analytics' contentious public face as both the “future of work” as well as the “end of work.”

Open questions remain, however, on how moral visions are maintained, particularly in light of contestation or other ideological threats. Recall in chapter five that I discussed how the end goals articulated in narrative making have the potential to both unify, but also fragment and

displace alternative points-of-view and moral propositions they do not reflect (for example, in Alix's questioning of the assumption that corporate life ought to be "more social"). Further inquiry is needed to more fully understand the repercussions of these types of displacement in technological framing and the dangers to meaningfulness and engagement they present.

In further refining the narrative assembly approach, attention should also be paid to better understand the circulative relationship between broader cultural life and technological framing. How are moral visions maintained and adapted over time, particularly in light of negative outcomes or other events that challenge the tenability of underlying moral worldviews? Insightful in directing such a focus is Harrison and Corley (2011), which pays particular attention to the flow of cultural resources across organizational boundaries. Employing the gardening metaphors of cultural "cultivation" and "seeding" to conceptualize how cultural resources are brought into and sent out of the organization (respectively), Harrison and Corley (2011) uses this to demonstrate that organizational cultures are "open systems," describing the dialectical relationship between a firm and the market it seeks to both serve and shape. Their overarching focus was on how an organization maintains a sense of authenticity and connection with their customers, a somewhat different focus than narrative assembly's on how individuals assemble compelling accounts of meaningfulness and value around emergent technologies. Harrison and Corley (2011) does, however, offer insight helpful in thinking about cultural flows within and across organizational boundaries. Their metaphor of gardening offers inspiration in driving forward narrative assembly's attention to the role of moral visions in technological framing. What do we gain from thinking of these visions as entities to be tended to or nourished? Protected against the elements or pruned? Doing so connotes moral visions as vital energies within an organization, energies that must be nurtured and renewed. Such metaphorical conceptualizations offer new avenues for technological framing to explore.

7.6 Beyond Congruency and Consistency – Perceived Coherence in Technological Framing

What does it mean to say technological framing is "contingent and situated in specific narrative-making occasions"? In taking narrative-making practices as its unit of analysis, a narrative assembly approach extends our understanding of technological framing by revealing its *plural* and *contingent* constitution. By plural, I mean that multiple narratives are ongoing at once; by

contingent, I mean that narratives (and individuals' relationships to those narratives) can change rapidly. In recognizing these dimensions, narrative assembly creates a provocation for future technological framing inquiries to more fully understand how perceived coherence is experienced in complex meaning systems.

So far, in this discussion I have laid out how conceptualizing technological framing as narrative assembly grants access to a broader analytical toolkit for conceptualizing framing as a strategic, yet improvised practice (e.g., Barry & Elmes, 1997; Cohen et al., 1972) that takes place in relation to broader cultural imaginaries (e.g., Levy & Spicer, 2013). By turning a focus on narrative making, I have shown in this dissertation how emergent technologies like “data analytics” come to be understood by some as advancing not only corporate campaigns, R&D projects, and individual careers, but also morally right social goods, “common sense” interventions, and even “business as usual.” Conceptualizing technological framing as a narrative-making process illuminates the *plural* nature of technological meaning making – there are many narratives going on at once. Recognizing this plurality creates a challenge and provocation for future technological framing development; I discuss below how a narrative assembly approach can benefit from conceptualizing technological framing as a polyphonic meaning system.

The concept of “polyphony” has gained purchase among a number of organizational studies scholars (Belova, 2010; Boje, 2008; Hazen, 1993; Kornberger, Clegg, & Carter, 2006; Shotter, 2008).¹² Although a term that originates in medieval musicology, its association with narrative analysis is attributed to the work of literary scholar Mikhail Bakhtin. Bakhtin analyzed Fyodor Dostoyevsky's peculiar narrative style, noting how it allowed for each character to seemingly occupy their own unique narrative world; each character possessed their “own voice,” a rare quality in a novel (which typically write about their characters from a singular, often omnipresent perspective). Thus, Bakhtin described Dostoyevsky's novels as *polyphonic*, in that they feature *many voices*. The challenge for analyzing polyphonic prose, then, becomes how to account for the multiple perspectives it presents and wrestle with if and how they might be cohered.

¹² There is some contention in this literature, particularly with Boje's (2008) assertion that a polyphonic organizational story is “very rare” (p. 99). Without engaging in that debate, I find conceptual inspiration in the metaphor of polyphony to provoke an attention to organizational plurality, as other scholars have done.

Bakhtin's analysis of this style has inspired scholars to see what it offers conceptually to our understanding of organizational life – what might we gain if we understand organization life as comprised of many voices? How does recognition of each individual's own unique narrative world challenge and extend the way we think about organizing and organizations? Drawing on this work, a conceptualization of technological framing as polyphonic similarly challenges our understanding of framing, pointing to its complexity and plurality.

Others have suggested the value of applying a narrative analytical approach to understanding complexity within organizations – that is, that when understood as narrative, the concept of “complexity” as it operates within organizations becomes more tractable and coherent (Tsoukas & Hatch, 2001). My claim here is somewhat different – that understanding framing as a narrative-making practice, as I have done in this dissertation, requires us to acknowledge and confront the complexity of its polyphonic potential. A narrative assembly approach to technological framing must account for the polyphonic potential of framing within an organization – the meanings that emerge from framing may not be uniform within groups, or even within projects. The dynamism I have described in this dissertation even demonstrates that framings can change from narrative to narrative. A polyphonic perspective asks us to examine this dynamism and its consequences on technological framing. Rather than a focus on congruence (as is typical of a technological framing perspective) a narrative assembly approach asks: given the multiplicity of framings, how does technological meaning making produce a perceived coherence?

Recent work has pointed to the role of inconsistency in technological framing, articulating how it is related to though distinct from incongruency (Young et al., 2016). A narrative assembly perspective extends this work; by offering an alternative unit of analysis (narrative making), narrative assembly helps to explain how what may appear to be inconsistent can, from a certain vantage, be experienced as consistent. In this dissertation, I have demonstrated how narrative-making practices implicate different kinds of positions – “narrators,” their “audiences,” and the people, things, ideas, and values that are “narrated.” These are emergent positions, ongoingly articulated and arranged in practice. Such a view moves technological framing beyond its focus on organizational and occupation groups (change agents and their others) and instead focuses on the relational and contingent nature of technological framing as it unfolds within a specific narrative-making encounter.

7.7 Conclusion

This work has answered many questions, but raised even more and further work is needed to more fully flush out how narrative assembly (and the questions of improvisation, cultural flows, polyphony, and complexity it raises) impacts our understanding of technological framing. By introducing the concept of narrative assembly, I have demonstrated how the strategic, yet opportunistic character of technological narrative making is shaped by the specific organizational arrangements from which they emerge. It is within these arrangements – that are strategic, yet improvised and that defy formal boundaries, instead flowing through the messiness of everyday, organizational life as they are continuously re-arranged and re-written – that technological meaning making takes place, as narratives of sense, value, and novelty are grasped at. Such fluidity presents challenges for researchers seeking to more fully understand these framing dynamics, but at the same time poses new opportunities through the generativity and reflection it provokes.

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