Location Independent Organizations: Designing Work across Space and Time

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Abstract

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The design of organizations (an interdependent assembly of multiple elements) and their work systems has been extensively explored in organizational theory and design research (Barley, 1996; Fayol, 1949; Puranam, 2018; Srikanth & Puranam, 2014; Tushman & Nadler, 1978). Multiple streams of research on distributed work, including that of virtual teams, online communities and technology-mediated communication suggests geographical distributing employees and teams creates more challenges; such as limited trust and familiarity, communication rife with misunderstandings, and difficulty in establishing a shared social context (Hinds & Bailey, 2003; Gibson & Gibbs, 2006; O'Leary & Mortensen, 2010; Olson & Olson,

2000). With such negative implications for operating in a distributed manner it is surprising to observe that some organizations have chosen to be fully distributed with no physical location. An inductive multiple-case study exploring the interdependent collaboration of six location-independent organizations – organizations with no physical location – was conducted (Eisenhardt & Graebner, 2007; Siggelkow, 2007; Yin, 2009). The initial insight of this dissertation is that there are two emergent organizational design patterns within the sample, namely an asynchronous orientation and a real-time orientation. The primary finding is the element of *adaptive on-demand collaboration*, which is enabled by the three practices of maintaining an *open single source of truth*, *utilizing rich public decision trails*, and *action first iteration*. The first two practices set a foundation, or infrastructure, of both breadth and depth while the third practice captures the authority granting behavior of organizations. The findings contribute to current theory in multiple ways; first to the organizational design literature, the identification and elaboration of the adaptive on-demand collaboration element with its three enabling practices that facilitates asynchronous work. In doing so physical and temporal distance are explicitly separated, an important step in recognizing the tradeoffs for particular organizational designs. The next contribution is to the literature on technology-mediated communication, it is the shift to behavioral principles enabled by and yet not dependent on specific tools. Finally, through the exploration of location-independent organizations this dissertation increases the understanding of the distributed work phenomenon highlighting the potential for related future research focused on other theoretical areas.

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Chapter 1. INTRODUCTION

The future of work includes an increase in the amount of distribution that organizations embrace. As such, the design of effective distributed work systems is an area critical to build knowledge. Work systems in general have been extensively explored in organizational theory and design research (Barley, 1996; Barley, Bechky, & Milliken, 2017; Fayol, 1949; Hinds & Kiesler, 2002; Puranam, 2018; Srikanth & Puranam, 2014; Taylor, 1919; Tushman & Nadler, 1978; Valentine, Retelny, To, Rahmati, Doshi, & Bernstein, 2017). An organizational design is made up of an interdependent assembly of multiple design elements (Miller, Friesen, & Mintzberg, 1984; Rivkin & Siggelkow, 2003; Tushman & Nadler, 1978) where an element is a structure, practice, policy, or behavior (Cohen, Bingham, & Hallen, 2018; Rivkin & Siggelkow, 2003). As organizations continue to evolve and leverage technology in the operation of systems of work, the implicit assumptions about physical proximity and collocation are being questioned; specifically, distribution is increasing. One particular challenge is understanding how distributed organizations collaborate on interdependent work.

The literature on distributed work, including that of virtual teams, online communities and technology-mediated communication, examines work being done over a distance. Much of the virtual teams research focuses on the downsides of this arrangement; for instance, how a lack of face-to-face interaction limits trust (Jarvenpaa, Knoll, & Leidner, 1998), shared social context (Olson & Olson, 2000), and familiarity (Hinds & Bailey, 2003). Furthermore, the distance between members of these teams reduces team cohesion and creates conflict through the development of sub-groups (Gibson & Gibbs, 2006; O'Leary & Mortensen, 2010). With such negative implications for teams operating in a distributed manner it is somewhat surprising to

observe organizations that have chosen to be fully distributed, and yet appear to effectively collaborate organizations with hundreds of employees doing complex and interdependent work. This suggests that current theoretical understanding of distributed work is incomplete.

Other relevant literature related to distributed organizations is research on online communities. These groups are typically made up of volunteers who participate on a part-time basis driven by their own interests. This stream of literature focuses on remote collaboration outside of traditional organizational boundaries, in settings such as Wikipedia or Linux (Lee & Cole, 2003). While studies show that online communities facilitate knowledge sharing (Faraj & Johnson, 2011; Jeppesen & Lakhani, 2010) and the development of innovative products (Autio, Dahlander, & Frederiksen, 2013; Franke & Shah, 2003; Franzoni & Sauermann, 2014; Lee & Cole, 2003), these groups struggle in cohesion and the ability to develop a common understanding sufficient to effectively interact with external parties (O'Mahony & Bechky, 2008). Broadly, the literature examining online communities demonstrates that large groups of individuals are able to share information and create innovative outcomes while being fully distributed but leaves questions of boundary conditions related to the challenges of efficiency needed in for-profit firms. Furthermore, studies have examined specifically the use of technology-mediated communication, showing it is an incomplete substitution for in-person interactions, therefore restricting the levels of complexity and ambiguity that can be undertaken (Daft & Lengel, 1986; Daft, Lengel, & Trevino, 1987). Overall, while various streams of research have explored aspects of distributed work, there remains uncertainty as to how effective interdependent collaboration is being achieved.

This dissertation asks the question, *how do distributed organizations collaborate on interdependent work*? A study is conducted examining six location-independent organizations

and how they collaborate on interdependent work. Location-independent organizations are organizations without any physical location and were selected due to their extreme placement within the distributed work phenomenon (Eisenhardt & Graebner, 2007; Siggelkow, 2007). Given the lack of prior empirical and theoretical work on the subject, the design of this study is an inductive multiple-case design (Eisenhardt, 1989b; Yin, 2009). Six case studies of location-independent organizations in the Software as a Service (SaaS) industry were constructed. The SaaS industry is a useful setting as the work is multidisciplinary, interdependent, and scalable. Furthermore, the location-independent organizations in this industry have a significant history of operation; in the sample used, the average organizational age is over 10 years. This study is designed to establish a deep understanding of how collaboration occurs within location-independent organizations in support of elaborating novel theoretical constructs as well as identifying relationships to enhance current theory (Eisenhardt, 1989b; Eisenhardt & Graebner, 2007).

The initial insight of this dissertation is that there are two emergent organizational design patterns within the sample, namely an asynchronous orientation and a real-time orientation. These two ways of collaboration were distinct within the data. Focusing on the asynchronous oriented organizations the primary finding of this dissertation is the element of *adaptive on-demand collaboration*, which supports the interdependent collaboration of distributed organizations. Adaptive on-demand collaboration is enabled by the three practices of maintaining an *open single source of truth*, *utilizing rich public decision trails*, and *action first iteration*. The first two practices set a foundation, or infrastructure, of both breadth (open single source of truth) and depth (rich public decision trails) while the third practice captures the authority granting behavior of organizations and how employees leverage the constructed information space

foundation. Based on these findings the main contribution is to the organizational design literature, first by demonstrating how asynchronous collaboration is facilitated. These practices allow organizations to actively separate individuals from the information they possess, through the creation of an information infrastructure. However, when considering the implications, the tradeoffs for both the organization and individuals are recognized. The secondary contribution is to the literature on technology-mediated communication. The practices identified in this dissertation abstract away from any specific tool or medium of communication (e.g., text, audio, video) and highlights the use of principles, namely an organizational wide up-to-date open access system and providing the contextual history of decisions within the organization. A final contribution is aimed at the discussion on the future of work by way of increasing the understanding and visibility of the distributed work phenomenon and specifically location-independent organizations. First through the identification of temporal distribution as the key factor differentiating distinct patterns of how distributed organizations collaborate this research provides empirical support for the novel concept of adaptive on-demand collaboration, which then demonstrates a way organizations can operate asynchronously, while mitigating many of the concerns described in current distributed work literature.

This dissertation contains six additional chapters. Chapter 2 is an explanation of the distributed work phenomenon, followed in chapter 3 by a brief literature review focused on the areas of organizational design and distributed work. Chapter 4 then details the research methodology, and chapter 5 presents the empirical findings of this dissertation as well as a discussion of the contributions. Then chapter 6 considers three potential extensions and finally chapter 7 is a conclusion and it is followed by references and an appendix.

Chapter 2. THE DISTRIBUTED (REMOTE) WORK PHENOMENON

> "We are designers, engineers, and communicators united by a common goal, not a common location."
>
> - Amir Salihefendic, CEO/Founder of Doist

In this dissertation I specifically have avoided the use of the term "remote work" or "remote organization" wherever possible. This is in part motivated by Matt Mullenweg, the CEO and Founder of Automattic (a fully distributed/remote organization). He explains: "I don't use the word remote because it sets up the expectation that there are some people who are essential and some aren't. I use the word distributed to describe what we do, where everyone is on an equal playing field." While, the term "distributed" also comes with complications, I find it useful for the general phenomenon being discussed. With respect to my specific empirical context I use the term "location-independent organization" (see chapter 5 for explanation).

2.1 A GROWING TREND

Over the last few decades, how people view the appropriateness of where work can be done is shifting. Many individuals and organizations are questioning the restrictions of clock-based work schedules and office-based desks. This has led to an increase in flexible work programs (such as work-from-home), a massive expansion in the freelance (or gig) economy, and the idealization of digital nomads in the media. Specifically, from 2005 to 2017, the number of remote workers (non self-employed, working more than half time out of the office) in the U.S.

increased by 159% to 4.7 million employees.[1] Furthermore, a 2016 study reported that 43% of all employees engage in some amount of remote work[2]. Despite a few highly publicized cases (e.g. Yahoo!), many individuals have some flexibility in their work schedules currently. A demonstration of this growth is the success of multiple remote-only job websites (such as remoteok.io and remote.co). Based on these sites, it is not difficult to produce a list of many hundreds of companies – including large well-known organizations such as JP Morgan Chase – posting multiple positions that are listed as fully remote. As more and more individual embrace remote work within their organizations it becomes essential to understand the phenomenon, both in breadth as a context, but also in depth.

2.1.1 *Enabled by Advancing Technology*

The use of digital tools has enabled the remote work trend to flourish. Decades ago, the popularization of email allowed for the distribution of employees, however, collaborative work has not been realistic, leading to a significant amount of work travel. Yet, with the increase in cloud-based information tools such as Dropbox (with Paper) and GitHub, multiple individuals are able to view and edit the same file at the same time, making distributed collaboration viable. Furthermore, recent improvements in team communication tools (e.g. Slack, Zoom) support conversations in large groups. This generation of tools significantly reduces the reliability issues with the first popular set of video conferencing tools (i.e. Skype, GoToMeeting). The cheap and

[1] Flexjobs. 2017 State of Telecommuting in the U.S. Employee Workforce Report. Retrieved from: https://www.flexjobs.com/2017-State-of-Telecommuting-US/

[2] Gallup Report, 2017. State of the American Workplace. Retrieved from: https://www.gallup.com/workplace/238085/state-american-workplace-report-2017.aspx

reliable scaling of the current cloud-based tools along with the increasing access to stable high-quality internet is essential in enabling large-scale remote work.

2.1.2 *Motivated by Labor Market Access and Individual Flexibility*

Most conversations with the founders of remote organizations contain an attitude of obviousness that distributed work systems are viable and will continue to gain momentum. Yet, each individual story has at the core some early need for distribution (i.e., founders in different locations, labor market shortage, requirement of flexible schedule). The most common motivation expressed by founders (in their blog posts, podcast interviews, and on social media) for why they are opting to build distributed organizations is based on labor market economics. Despite what many may assume, (most) companies (and those focused on for this dissertation) are not actively exploiting a location arbitrage situation where they seek to save money by hiring individuals in locations with lower average wages. Instead, when companies talk about labor market advantages, they are referring to the idea of being able to find employees that are interested in the organization, a strong fit, and who they can afford. Small and/or young tech companies are disadvantaged when competing with organizations like Apple or Google when trying to attract talent. Therefore, by expanding the search location to nationwide or global, the probability of finding a great employee is increased. In addition to this primary incentive of increasing the talent pool as a way to fill positions, it also provides organizations with greater opportunity to diversify the perspectives of their employees, and operate continuously (24 hours/day) without forcing people into night shifts. The other reason founders share as a motivation for building distributed work systems is to provide individual flexibility for their employees and themselves. The benefits of eliminating work commutes along with the ability of

individuals to determine the hours they work, taking breaks as needed, splitting or shifting time throughout the day, seems obvious to many of those who are outspoken in the remote work community. Limitations of course exist based on specific situations (i.e., customer centric roles) but the premise that work and life can (and should) be better balanced at the individual level is often part of the rationale. Once these distributed work systems are in place, founders and organizations rarely find compelling reasons to transition into offices full time; yet it is becoming more common (not accounting for effects of the Covid-19 pandemic) for companies with offices to question the value of requiring individuals to collocate.

2.1.3 *An Expanding Ecosystem*

Along with the number of distributed organizations expanding, the support ecosystem around them is also growing. This includes professional service providers (e.g., accountants, consultants, lawyers) with expertise in distributed corporate structures, investment funds focusing specifically on distributed organizations (e.g., Remote First Capital), complimentary organizations such as coworking spaces, curated travel services (e.g., Remote year, Selena), and international currency converting payroll services (e.g., TransferWise) thriving, as well as the proliferation of events to build community (e.g., the Running Remote conference). The creation and growth of a distributed work focused ecosystem suggests a positive feedback loop that will continue to accelerate the expansion of this trend.

2.2 DIMENSIONS OF DISTRIBUTED WORK

Remote work is a broad term used in practice to describe a variety of different work configurations, it is also frequently used interchangeably with the terms virtual or distributed

work. In an attempt at clarity and construct precision, I have opted to use the term distributed work (over the more popular term “remote”), to name this phenomenon and then define four factors which vary somewhat independently. These four factors are: level of work group, physical distribution, temporal distribution, and ideological approach. I will describe each separated then use examples from actual companies to show how they come together as a *distributed work configuration*.

2.2.1 *Level of Work Group*

The term distributed work is often thought of in reference to a company. However, organizations vary internally with their adoption of distributed structures. It is therefore important to clarify the level of work group being discussed; for instance, whether it is relevant to the entire organization, a specific division, or a (set of) team. Specifying a work group level is the first of the dimensions in distinguishing a particular distributed work configuration.

2.2.2 *Physical Distribution*

Remote work is often synonymous with a physically distributed organization, yet this is a dimension with considerable variation in how companies choose to operate. There are two primary subfactors of physical distribution within a group, namely how many individuals work outside of an office in the group and for any given individual how much time they spend working out of the office. Considering those subfactors, and typical patterns seen in practice, I have specified four general categories of physical distribution, namely: location-independent, collocated flexibility, hybrid-location, and multi-office. These categories are broadly representative of patterns seen in practice but are not intended to be firm boundaries.

At one extreme are location-independent groups, made up of individuals who all work remotely all the time. At the organizational level this means that no physical office would exist, as discussed in chapter 1 this is the focus of this dissertation. Historically, this has been common for physically dispersed sales teams, or customer service teams that work from home. However, if individuals are traveling to a company office their work group would likely not be considered part of the location-independent category. The second common pattern is the collocated flexibility category. This groups is made up of organizations with employees who work from an office part of the time. Each member likely has a permanent desk or established office space, but are allowed to work from home (or out of the office) one or two days a week. This is increasingly common among organizations and treated as a perk for employees. Significant variation exists in how this is done, ranging from needing approval for each day to an open policy allowing employees to manage their own time. Next, the hybrid category captures work groups that allow some people to be working from home all the time while others are in an office. This is common for organizations that have a trusted employee who has worked in the office and for some reason now needs to move but it is mutually beneficial for them to maintain their job. Alternatively, this occurs for some roles (i.e., web designer), where from day one they may be hired as "remote". Finally, multi-office groups are extremely prevalent in today's workforce. The work groups in this category consistent of individuals who all work from company offices, just not the same ones. This includes both global distribution as well as physical separation within a city or corporate campus. Therefore, while there is a physical distribution between members of the work group, each member is located in the company culture. While these are common patterns, they are not the only ones being practiced. How any

single organization chooses to physically distribute their employees may work, but that decision will interact with other dimensions of their distribution.

2.2.3 *Temporal Distribution*

When thinking about the distribution of individuals working remotely, physical location is the primary aspect that comes to mind. However, temporal distribution is a key factor on its' own. Physical and temporal distance between people may be related but they are not the same. Consider three broad categories of how an organization may be temporally distributed. The first is *local*, these organizations may be located in one metropolitan area or expanding across two to three time zones. While in person meetings may not be feasible, with local temporal distribution the constraint of time differences is not significant. The second category is *regional*, these organizations generally span three to six time zones; as such time differences are considered when working together but it is still possible for the entire organization to be active at the same time each day. Finally, organizations that have a global temporal distribution have individuals across most time zones, so that the option of having everyone be active simultaneously is not feasible. Each of these categories has a different impact on how work systems and personal interactions may occur.

2.2.4 *Ideological Approach*

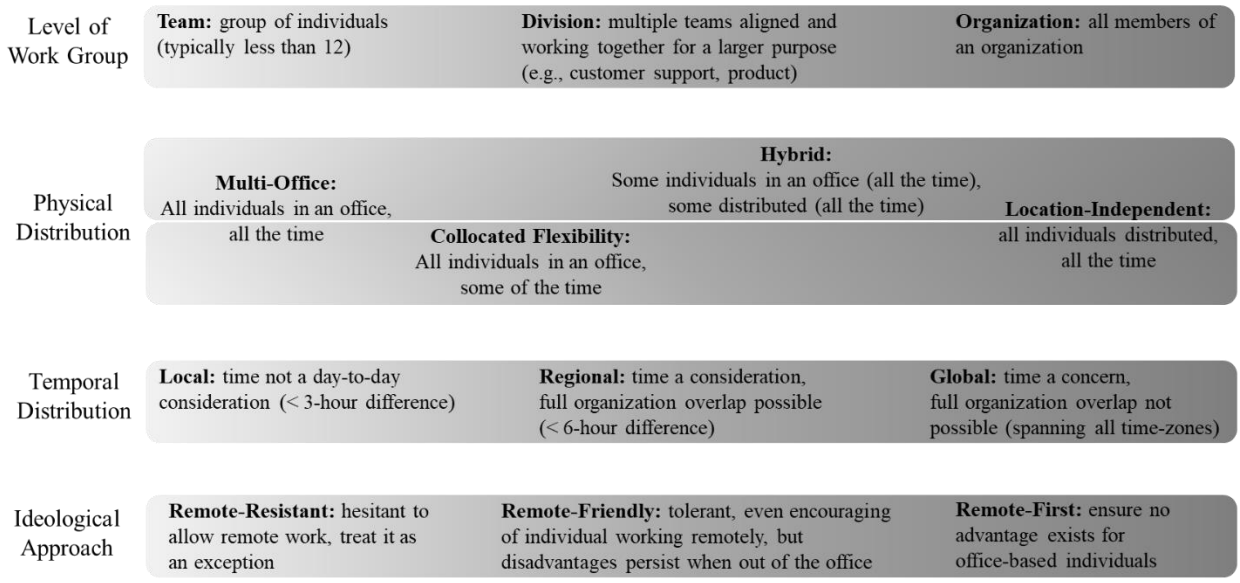
Within remote work there are numerous ideological approaches that organizations may take. Highlighted here are three broad categories, but there is significantly more variance in practice. Furthermore, while an organization ought to have a cohesive perspective, this is a factor that may vary between managers as well as over time. *Remote-first* is a frequently used term to

refer to organizations that have a significant number of remote workers. However, the distinguishing aspect of remote-first is that it is a philosophy more than a structure. Remote-first organizations strive to eliminate any difference in employee experience based on physical location. In contrast to remote-first organizations, there are also remote-friendly and remote-resistant organizations. *Remote-friendly* companies generally support remote work structures but do not explicitly build a culture of equity between in-office and remote worker and there may be an effort to simulate the in-office experience for those who are not physically present. At the extreme, individuals are required to be online for a specified 8+ hours a day. Often this setup includes monitoring software of some kind. In these organizations, individuals can work from home but are held to a strict schedule and location (their desk) so flexibility is limited. Finally, *remote-resistant* workplaces typically do not allow individuals to work outside of an office or if they do, it is strictly limited by person and/or amount of time allowed. Understanding the ideological approach of an organization to remote work provides insight on the type of employee experience being created.

2.2.5 *Example Combinations*

The four dimensions of work group level, physical distribution, temporal distribution, and ideological approach range independently (see Figure 1) and can be combined in a variety of ways to describe a company's specific distributed work configuration.

Figure 1: Spectrum of Distributed Work Dimensions



Here are four examples of real companies highlighting each dimension and how various configurations are implemented. The first example is Ponapto. Ponapto is representative of a very common pattern today. They have four offices across the global along with a few select individuals that are permitted to work remotely most of the time. Yet, their core functions are focused in two offices within the United States; furthermore, one office is considered a headquarters, and the primary location of the organization. Therefore, as an organization they primarily have a multi-office physical distribution, a global temporal distribution yet core operations are limited to a regional temporal distribution, and finally while they allow for some remote work to be done, ideologically they are remote-resistant based on claims related to the importance of social interactions and white-board centric meetings. The next example is Shopify. They are a large organization with multiple corporate offices that house most functions (categorized as hybrid), yet their 1500+ person customer-happiness team (division) has been specifically designed as location-independent. This work group has also been designed to be global such that customer support is available 24 hours a day while individuals are able to work

during their daytime. Ideologically, Shopify is remote-friendly. The next example is an exemplar of what a remote-first ideological approach means. Atlassian strives to not create any advantage by working in one of their offices. An example of this is that whenever corporate swag is distributed it is sent to individuals' homes, not distributed in an office. As an organization, Atlassian would be considered both a hybrid-location and collocated flexible company. However, they specify "home office" as one of their nine locations, which would be considered location-independent. Temporally their distribution is global. The final example is Zapier. Zapier is a location-independent organization that has no physical office. Temporally, they are distributed globally and have a remote first ideological approach. This configuration is consistent for all work group levels within Zapier. Just from these four examples it is clear there is a significant amount of variation in how companies are distributed, therefore, the use of multiple dimensions each with general categories is useful to add specificity in understanding a specific configuration of distributed work.

2.3 "Location-Independent Organizations"

Location-independent organizations (LIOs) are an extreme instance within the phenomenon of distributed work. These companies have no physical location and, as such each individual works from wherever they choose and generally whenever they choose, yet individuals are employees (as opposed to temporary contractors). Location-independent organizations are not novel by themselves, in fact back in 2013 two popular press books[3, 4] were released by location-independent organizations discussing the experience, yet as an extreme

[3] Fried, J., & Hansson, D. H. (2013). *Remote: office not required*. Random House.

[4] Berkun, S. (2013). *The year without pants: WordPress.com and the future of work*. John Wiley & Sons.

organizational design in the distributed work phenomenon there are still relatively few operating. At the end of 2019, there were a few hundred organizations that could be categorized as location-independent organizations, listed in an open database[5] these "FROGS" or "fully remote organizations" span several industries including professional services (e.g., marketing, HR, legal, financial), education, and e-commerce, and software; several have over 1,000 employees (although about 80% have less than 200 employees as of late 2019). One example already mentioned is Zapier, a software services company that automates work between applications. It was founded in 2011 and currently has over 150 employees in 17 countries and 15 time zones – but no physical offices. Another example is Tortuga Backpacks, a bootstrapped business founded in 2009 providing bags for travelers; they have nine employees dispersed globally in different – and often changing – locations. While location-independent organizations appear to be especially prevalent in online-dominated industries, surveys of the remote work landscape show an increase in the industries participating (including finance, transportation, and healthcare)[6]. My dissertation explores the phenomenon of distributed work, location-independent organizations – organizations that have no office and with individuals working from their location of choice. I am interested in organizations that have successfully released products and are growing to employ hundreds of individuals worldwide. Through the use of an extreme context (Siggelkow, 2007), this research aims to contribute to both a renewed understanding of the role that physical proximity plays in organizational design and to explain any potential novel coordination or management activities in such organizations. Although, to my knowledge, there is no academic

[5] Caplan, G. (2020). FROGS Fully Remote Organizations - google sheet. Retrieved from: https://docs.google.com/spreadsheets/d/1WJremySzeXVzXSRekVNUEm6RzENjY0Gjb24ixkBqExs/edit#gid=0

[6] Gallup Report, 2017. State of the American Workplace. Retrieved from: https://www.gallup.com/workplace/238085/state-american-workplace-report-2017.aspx

research directly addressing the phenomenon of location-independent organizations, there are a number of relevant scholarly conversations that both inform our understanding of location-independent organizations and to which this dissertation may contribute[7].

[7] A note of the the COVID-19 pandemic – it spread globally in early 2020, many organizations suddenly found themselves with their employees all working from home. While this is an interesting empirical opportunity (see chapter 7), this dissertation does not consider work systems during the COVID-19 pandemic. It is worth noting that on top of the other dimensions already considered, this current environment introduced at least two more. The first is the mental stress of a global crisis and the local impact of a troubled economy, lack of support in the care for dependents, and managing any disruption to their health or the health of those around them. Secondly, the fact that work systems for many organizations went from being primarily in-office based to distributed with nearly everyone working from home almost overnight. There was very little, if any, preparation for this change done by companies or individuals. This could mean a lack of digital tools or missing resources at home to effectively setup a workspace (i.e., ergonomic desk, robust internet). While there will likely be long lasting effects of this pandemic on the world and in particular how companies relate to distributed work, it is future work and not a part of this dissertation.

Chapter 3. THEORETICAL BACKGROUND

In this chapter, I briefly review the organizational design and distributed work literatures. With respect to organizational design I start with an overview of what is organizational design (Burton, Colombo, Rossi-Lamastra, & Wasserman, 2019; Nadler & Tushman; 1988; Puranam, 2018; Rivkin & Siggelkow, 2003), how collaboration is achieved (Okhuysen and Bechky 2009; Srikanth and Puranam, 2014), and then discuss work division and reintegration. Within the distributed work literature I consider the role of technology-mediated communication (i.e. (Daft & Lengel, 1986; Kraut, Fussell, Brennan, & Siegel, 2002; Sproull & Kiesler, 1986) and then focus on two distinct streams of research; specifically, online communities (i.e. (Faraj, Jarvenpaa, & Majchrzak, 2011; Faraj & Johnson, 2011; Lee & Cole, 2003; Majchrzak & Malhotra, 2016) and virtual teams (i.e. (Cramton, 2001; Hinds & Mortensen, 2005; Maznevski & Chudoba, 2000; O'Leary & Mortensen, 2010). Overall, this chapter will review the literature from which an investigation of location-independent organizations draws while highlighting the opportunities for contribution.

In conducting this review, the journals utilized focused on organizational theory, strategy, organizational behavior, and information systems. The journals searched in the initial review included *Administrative Science Quarterly*, *Academy of Management Journal*, *Academy of Management Review*, *Strategic Management Journal*, *Organization Science*, *Management Science*, *Management Information Systems Quarterly*, and *American Sociological Review*. This initial pool of articles was then expanded to include relevant papers that either cited or were cited by this first set. To bound the scope of the review, I excluded articles that focused on geographic clusters and agglomeration (e.g. (Sorenson & Audia, 2000; Stuart & Sorenson, 2003)), inter-organizational networks (e.g. (Ahuja, 2000; Haunschild & Beckman, 1998)), or those based on

primarily on simulation methodologies (e.g. (Ceaszar, 2012; Ethiraj & Leventhal, 2004; Nan, 2011; Rivkin & Siggelkow, 2007)). The result is a collection of literature relevant to how distributed organizations are designed to collaborate.

3.1 Organization Design

Organizations are designed social systems with multiple agents who establish a boundary and within that intentionally work towards collective goals (Aldrich, 1979; Daft, 2006; Puranam, Alexy, & Reitzig, 2014; Stinchcombe, 1965). However, there are multiple perspectives on what is specifically meant by an organizational design; for instance, Nadler and Tushman (1988: 41) state that it is the "decisions about the nature, shape, content, and features of the design elements," while others focus more on the operational aspects such as establishing an organizational structure, defining a decision system, and enacting authority with managerial practices (Burton, Colombo, Rossi-Lamastra, & Wasserman, 2019). Similarly, Puranam (2018) emphasized that the purpose of an organizational design is the division of labor, integration of effort, distribution of authority, and setting boundaries. Yet, despite the variance in description, scholars agree that an organizational design is constructed, has the intention of improving the organization (Colombo & Delmastro, 2008; Doty, Glick, & Huber, 1993), and consists of multiple elements.

This dissertation aligns with the perspective that a specific design is a set of multiple complementary design elements, where an element is a basic building block such as a structure, practice, or policy, for example: vertical hierarchy or incentives (Cohen, Bingham, & Hallen, 2018; Rivkin & Siggelkow, 2003). These various elements can work in isolation but are typically implemented together to ensure that the overall organizational design enables the organization to

achieve its goal (Pugh, Hickson, Hinings, & Turner, 1968). As such, much of the fundamental research in the domain of organizational design was done via in-depth studies of a single organizational form or process, this includes the work of Fayol (1949), Burns and Stalker (1961), Chandler (1962), Woodward (1970), Lawrence and Lorsch (1986), Thompson (1967), Galbraith (1973), Allen (1977), and Mintzberg (1979). However, this groundbreaking work was followed by a fallow period in organizational design research. Today there is a resurgence in this domain (Burton et. al., 2019; Okhuysen and Bechky, 2009; Srikanth & Puranam, 2011; 2014; Zhou, Valentine, & Bernstein, 2018) inspired in part by the Future of Work movement as well as the continued development of enabling technologies. In addition, the design elements framework has allowed for a renewed examination of the classics specifically focusing on boundary conditions – often based on challenging prior assumptions (e.g., the presence of physical proximity) and the exploration of novel combinations of elements within an organizational design.

3.1.1 *Achieving Collaboration*

Collaboration is a result of both coordination and control (or cooperation). Coordination is defined as "the process of interaction that integrates a collective set of interdependent tasks" (Okhuysen and Bechky, 2009: 463). As such, significant research focus has been given to the coordination mechanisms that organizations may utilize. One perspective on understanding what is required for coordination is to mirror the interdependence of the task. This approach is seen in Thompson's (1967) articulation of three distinct coordination mechanisms: standardization, planning, and mutual adjustment, each of which is suited to coordinate a particular form of interdependence, namely: pooled, sequential, and reciprocal. Recent work has continued to categorize elements based on the type of coordination being done. For example, the separation of

elements into those that achieve modularization, ongoing communication, and tacit coordination done by Srikanth and Puranam (2011; 2014). Another example, based on a review of prior literature, is the categorization that Okhuysen and Bechky (2009) developed. They establish the groups of: plans and rules, objects and representations, roles, routines, and proximity. By categorizing collaboration elements, the focus is on how they enable coordination and/control within an organizational work system.

However, they take this a step further, asserting that in order to achieve coordination a potential mechanism must meet certain conditions specifically proposing the necessity of three criteria: accountability, predictability, and common understanding. Accountability defines which interdependent actors are responsible for specific parts of a task, predictability provides interdependent actors with knowledge of a task's component parts and understanding about their relation to one another, and common understanding ensures that interdependent actors possess a shared perspective of a task in its entirety and how each component part contributes to its accomplishment (Okhuysen & Bechky, 2009). These criteria make explicit what an element (or set of elements) needs to achieve for the collaboration to occur. The conditions for coordination may be met by a variety of elements. For instance, accountability can be generated on assembly lines through emergent dialogue between parties (Bechky 2003), and in settings where work progress is otherwise concealed through the use of "display practices" to share pertinent work information across groups (Kellogg et al. 2006). Predictability can be facilitated through plans and routines that guide activities and provide interdependent actors with the assurance that other actors will perform tasks to facilitate their own task achievement (Feldman, 2000). Common understanding can be fostered through top-down plans (Fayol 1949) and also emerge from bottom-up interactions among workers (Bechky and Okhuysen 2011).

The second aspect for collaboration is maintaining control (or the cooperation) of individuals; this relies on an alignment of motivations. While, there is robust literature on the principle-agent challenge and ways to mitigate it (e.g. (Eisenhardt, 1989a; Jensen & Meckling, 1976), in terms of design elements cooperation is generally a result of monitoring, incentives, and establishing norms (Barker, 1993; Ouchi, 1977; 1979). Collaboration is achieved once an organizational design is able both coordinate and controlling the work being done.

While scholars have elaborated on various collaboration elements with important nuance, the various elements that are combined to establish the design of an organization are interdependent (Miller, Friesen, & Mintzberg, 1984; Rivkin & Siggelkow, 2003). Therefore, isolating individual elements provides little insight into an overall design. It is the combination of multiple behaviors, practices, policies, norms, and structures interacting with each other continuously that allows for an organization to achieve their goals and deliver on their purpose (Cohen, Bingham, and Hallen 2018; Rivkin and Siggelkow 2003). Therefore, in taking on the challenge of collaboration with the simultaneous division and integration of people and tasks. this dissertation will continue with a discussion of elements that divide work (i.e., roles, specializations, modularization, formalization) followed by a review of elements that integrate work (i.e., hierarchy, centralization, incentives, social ties), in an effort to shift the conversation towards a system of collaboration elements. Furthermore, this dissertation does not emphasize the distinction between the division and reintegration of tasks versus that of people, but instead focuses on the integrated concept of work.

3.1.2 *Division of Work*

The division of work is critical for large, and especially for complex, organizations. Since, in an effort to achieve the goals of an organization, more work is required than a single individual can do, work needs to be divided, but how this is done will impact the efficiency of the organization. While not the only way to do this, four common elements organizations use are specialization, formalization, roles, and modularization. The degree to which each of these elements is leveraged depends on the overall goals of the organization and the other elements being implemented.

The specialization element was classically described by Adam Smith (1776) and his tale of a pin factory. Work was formally divided with increasing specificity (i.e. one individual makes pin sticks while another makes pin heads) and then combined in order to increase overall efficiency. This ability to narrow the responsibilities of an individual increases the value of expertise and is critical for organizations to achieve outcomes greater than an individual alone can produce. An example of this is the separation of work by functions (i.e. engineering versus sales). Specialization generally increases as an organization grows and adds more specific roles (Galbraith, 1982; Tsouderos, 1955). Specialization has a two-sided impact on interdependence. First, increasing specialization may decrease the interdependence required of someone in doing a specific task, meaning they can complete their task without others. However, at the level of a project or product, increasing the specialization of each individual will generally increase the amount of integration needed for that task to be incorporated into an overall output. Despite this ability of work to be narrowed in scope and divided in multiple units, the tasks remain interdependent as the task of any one unit often requires the output of others (Thompson, 1967).

Formalization captures the concept that explicit instructions, such as rules and routines, dictate actions (Burns & Stalker, 1961). Scientific management is commonly cited as the original systematic approach to efficiency for modern human-based operations. Taylor (1916) used time-motion studies to study how work was done, resulting in a division of labor with a formalized workflow to optimize individual work and increase an organizational system's overall productivity.

Rules allow for efforts to be integrated over time and space utilizing standard practices, they center around the idea of guidelines which bring work together and providing clear and specific direction (Thompson, 1967). For example, Faraj and Xiao (2006) find that protocols are used in hospitals to establish how patients are to be cared for, by whom, and when. Similarly, routines act as a guide for actions that are repeated over time and provide a consistent way to connect multiple units. One demonstration of this is the specific set of activities a marketing agency used for managing the exchanging of files and presentations to clients removing any flexibility in the process (Kellogg, Orlikowski, & Yates, 2006). The use of formalization of behavior creates a predictability and shared understanding that increases the efficiency in which information (or process) is spread within an organization (Bechky & Okhuysen, 2011; Haas & Hansen, 2007). The use of formalization in an organizational design establishes guidelines that individuals (or units) can use to move work forward without the need for further information or interaction.

The design element of roles provides clear boundaries for who does what work and where accountability resides (Bechky, 2006; Hughes, 1958). The roles that are assigned and how they fit together (what is generally captured in an org. chart) is a primary way that organizational members are able to coordinate work and reintegrate their efforts as assigned roles dictate who to

interact with. Furthermore, roles assist in ensuring continuity of understanding between groups by facilitating awareness for the need of common language (Barley, 1996; Barley & Bechky, 1994). In contrast to the vertical hierarchy, this element of roles is not about authority but rather focuses on the division of tasks. For example, if a customer service person has a question about a prior marketing campaign, they are able to search for the required information to complete their task based on targeting the marketing role.

Modularization is also prevalent as organizations grow and become more complex. To do this, work is divided by the intentional reduction of interdependencies between units leading to nearly decomposable systems, or modularization (Sanchez & Mahoney, 1996; Schilling, 2000; Simon, 1962). Modularization is an important design element for task decomposition as it allows work to be separated and contained in separate units, limiting the need for expensive cross-department coordination (Weick, 1976), flexibility (Brown & Eisenhardt, 1998), and increased scope (Helfat & Eisenhardt, 2004). This deliberate reduction of interdependence opens up opportunities for even further separating units through actions like outsourcing. For instance, when a back-end engineering team is established in one location (e.g. Vietnam) and the remainder of the organization is in a US-based headquarters, best practices would encourage reducing the interdependence and interaction across this boundary (independent of if the outsourced unit is within or outside of the organization) (Srikanth & Puranam, 2014). Another example of this is the multidivisional organization, by dividing an organization according to product or geographic region, then pushing fiscal responsibility down to each division, organizations effectively remove the interdependence between divisions (Chandler, 1977). While modularization leads to increasing coordination efficiencies within unrelated divisions (Hill & Hoskisson, 1987; Hoskisson, 1987), it limits the innovation at the corporate level by reducing the

opportunity for cross division recombination (Kleinbaum & Tushman, 2007). Modularization is achieved by transforming an organization such that it is made up of a nearly decomposable set of tasks providing for efficient within unit work but limiting organization wide insights.

The division of work allows organizations to take on more than what on individual can achieve. A design is implemented in order to effectively divide labor and tasks, this may rely on a single element or a combination of design elements, but the result is multiple individuals are doing their work which will later be reintegrated into a larger whole.

3.1.3 *Integration of Work*

Once work has been divided it must be completed and come back together. The integration of work can be quite a difficult challenge. The primary elements that support this include structural elements such as vertical hierarchies, horizontal links, and centralization, control focused elements such as monitoring and incentives, as well as more informal elements like social connections, norms, and physical proximity. The informal organization, or emergent activities, is made up of the patterns of behavior, social interactions, and the underlying norms within an organization (Gulati & Puranam, 2009). Furthermore, while influenced and influencing by the formal organization, the informal aspects cannot be dictated by a planned design (Blau & Scott, 1962; Burns & Stalker, 1961). Yet, the formal elements are specified by those with authority in an organization. The effective integration of work relies both on formal and informal elements within an organization's design.

Vertical hierarchy establishes the flow of responsibility and determines a span of control for each position (Olchi, 1978; Williamson, 1973). This explicit structure also helps to focus where individuals direct their attention (Simon, 1947), allowing for a clear path forward

expected in the reintegration of work. The hierarchical specification also defines relationships between individuals (Fayol, 1949) and is able to mitigate ambiguity and uncertainty in order to achieve complex, multifaceted work (Galbraith, 1973). This holds from steep hierarchies as well as more flat structure; by having a mapping of how organizational responsibilities are divided it provides a blueprint for how to reassemble the work once completed.

A second structural element is horizontal links, which is the use of direct connections across an organization; this includes the use of a task force, liaisons, committee structures, or meetings to integrate work. Horizontal links can be formal (such as the use of committees) where a bridge between groups is established, or informal (such as the social conversations during a coffee break) which are frequently the result of physical proximity. An example of horizontal links, which specifically leverages physical proximity, is the use of "war rooms", or bringing members of a team together in one space so that they can more easily track each other's progress and quickly share information (Jarvenpaa, Rao, & Huber, 1988; Mark, 2002). The benefit of horizontal links is demonstrated by Tsai (2002) in his empirical study showing that centralized hierarchies restrict information flow while lateral ties support information transfer.

The element of centralization is related to where authority is located (Barnard, 1938; Hage, 1965; Pugh et al., 1968). The more centralized an organization is, the more authority rests at the top, utilizing the logic of individuals being subordinate to the organization. An organization with high centralization is one where the CEO (and in general the hierarchy) makes or approves all decisions. The authority an individual has to make a decision ideally coincides with the distribution of relevant information, but this is a challenge for highly centralized organizations where front-line workers are discovering issues but decisions come from above. This is in contrast to self-managing organizations (i.e. holacracy) that shift the decision making

to a collective consensus process. While the intention of decentralization may be to empower those with direct knowledge of an issue, it can potentially lead to divergent, or multiple, goals. Furthermore, if a consensus method is utilized, this may cause delays to the decision-making process, potentially counteracting the benefit of speed by not relying on the bureaucratic transmission of information up a hierarchy and a decision back down. The level of centralization dictates who (what role) is making decisions; the farther down the hierarchy this sits, the greater the opportunity for diverging goals.

The design element of monitoring refers to the observation of others or their work and is used to achieve compliance with work expectations (Barker, 1993; Bernstein, 2017; Loughry & Tosi, 2008). This occurs both from supervisors monitoring subordinates as well as peer-to-peer monitoring (Kellogg et al., 2006; Reagans et al., 2005). This can be formal (as annual reviews) but is often informal, like when a manager walks through a work area. Physical proximity is generally assumed in monitoring activities, such as a boss stopping by an employee's desk or sitting in an open area with coworkers noticing their daily activities. In one study of doctors and residents, proximity is used to provide visibility when the doctors watch the work of residents and interrupt to correct and adjust processes as needed (Klein, Ziegert, Knight, & Xiao, 2006). The cooperation of employees is an ongoing agreement between employees and the organization; monitoring is an important design element that focuses on the observation of activities overtime to ensure cooperation is maintained.

Incentives are an element used to align employees with the goals of an organization through benefits (Prendergast, 1999). They are used in both a repeated manner (i.e. paychecks) and on an as-needed basis (e.g. post-product launch retreat). Furthermore, they can be positive, like financial bonus and awards, or they can be negative, like being highlighted as having the

lowest tier sales performance or an expected bonus being withheld. This mechanism for establishing employee cooperation is well established as a means to reduce the agency problem in organizations (Holmstrom & Milgrom, 1991). The use of incentives is easily transferable to situations without physical proximity. Therefore, the use of incentives, both financial and non-financial, is expected to be utilized in unifying activities as the distribution of individuals increases.

The element of social ties, or social connections, emerges from the interactions between individuals and the creation of an informal aspect in a relationship. They are an important aspect of organizational design, since individuals act as conduits for sharing knowledge (Blau, 1955), particularly when individuals are physically nearby as that proximity supports informal tie creation due to increased probability of interactions (Festinger, Schachter, and Back, 1950; Reagans, 2011). Furthermore, social connections enhance information transfer, increase innovation, and enhance performance (Tsai, 2002; Reagans and McEvily, 2003; Hansen, 1999; Nelson and Winter, 1982; Levitt and March, 1988; Tsai, 2001). This occurs due to increases of social cohesion within groups, as well as increases in tie strength, and adding multiplexity to formal ties (creating social and formal connections between the same individuals) which enhances the willingness of individuals to share information (Reagans & McEvily, 2003). Furthermore, by establishing strong ties, the effectiveness of sharing complex information increases, and the development of weak ties throughout an organization enhances the ability to quickly search for information (Hansen, 1999). Overall, social ties serve as conduits for information sharing, which is distinct from, complimentary to, and influenced by the formal structure of an organization.

The behavioral norms element is quite broad and has been widely examined (Barley & Kunda, 1992; Cialdini, 2007; Hughes, 1958; Kalberg, 1980; Loughry & Tosi, 2008). Norms are understood to emerge from the interactions of individuals and are non-explicit (for the categorization used in this dissertation an explicit norm is considered a rule and classified within the formalization element). Over time social norms become standards held by a group (e.g. team, unit or organization) and they act to guide the behavior of experience and new members. Overall, norms are an important element due to the patterns that emerge based on how people interact and how they are reinforced over time, propagated by the observation and mimicking of others.

Another element of the informal organizational is physical proximity, which is tied to the idea of ad hoc or spontaneous interactions between individuals. Sociology scholars use the dorm-based friendships of new college students to demonstrate how physical proximity created ties between people based on increasing the frequency of interactions (Festinger, Schachter, & Back, 1950). Later work using emails between university students supported the mechanism of increased interaction, driving the link between proximity and friendship (Marmaros & Sacerdote, 2006). Furthermore, the recent micro-geography literature has continued to explore the issue of physical proximity, specifically looking at the layout of space within organizations. In his study, Reagans (2011), examines the tie strength between teachers in elementary and middle schools as a function of geographic proximity (same floor) as well as opportunity for spontaneous interaction (same break periods) to capture proximity; he demonstrates that proximity increases tie strength. Similarly, using a rich data set of emails, Kleinbaum, Stuart, and Tushman (2013) find there is a significant effect on the volume of communication from being in the same office, independent and in addition to the effect based on the number of miles separating individual. However, a recent study by Bernstein and Turban (2018) uses novel data from within an

organization from wearable devices along with their electronic communication data to demonstrate that contrary to the intention, open office spaces actually decreased face-to-face interactions while increasing digital communication between collocated individuals. This calls into the idea that it is spontaneous interaction caused by physical proximity driving interaction and suggests a more complex relationship between face-to-face conversations and digital communication. Yet, studies have demonstrated that the physical proximity of individuals encourages transfer of norms due to the increased opportunity for observing others and potential for exposure if acting against norms (Barua, Lee, & Whinston, 1995). These observations and hesitations can also occur in the context of digital tools, yet a purely digital environment may not fully capture all behaviors. As such, the element of proximity is tied to the concept of the proverbial "water cooler conversations" leveraging in-person communication to enhance coordination by increasing familiarity, providing regular visibility, and transferring significant amounts of information through multiple mechanisms including tone and pacing of verbal language, as well as body language and other non-verbal cues. (Reagans, Argote, & Brooks, 2005).

The reintegration of work is a significant challenge in organizations. There are a multitude of elements which aim to achieve this purpose, and organizations generally employ multiple of them. However, as organizations determining the particular properties of the various element used to divide and reintegrate work the effectiveness of that system will typically be determined by how the elements interact, not the efficiency of any single element.

3.2 DISTRIBUTED WORK

Distributed work has the potential to eliminate the limitations of an in-office environment. Already widely adopted in a variety of forms, a distributed workforce allows for individuals to be dispersed geographically as discussed in chapter 2. This supports organizations with multiple offices, teams spanning a variety of different physical locations, and remote employees who work from a private location (i.e., their home or a coworking space). In its extreme, distributed work includes entire organizations without offices, and as this phenomenon develops it is continuously progressing in this direction, with increasingly common articles making claims such as: "the future of work is distributed" (Fatemi, 2019).

Distributed work is a general concept that has been previously explored in prior research in contexts such as online communities and virtual teams as well as the spanning the use of technology-mediated communication. Scholars focusing on the use of technology-mediated communication examine how interactions occur through the use of digital technology – specifically, the differential effects of various technology types (i.e., text, audio, video) and their limitation to transmit rich interpersonal and contextual information (Cramton, 2001; Daft & Lengel, 1986). One relevant literature is that of online communities, which focuses on a project execution carried out in a "distributed system," as opposed to a physical setting in traditional organizations (Lee & Cole, 2003). Studies often leverage the open-source Linux kernel development project, suggesting that online communities' project execution and knowledge creation are effectively managed. Furthermore, compared to the traditional, firm-based models, which are considered rigid and slow due to the involvement of authority and organizational hierarchical structure, project development processes in online communities produce higher quality output, as they allow for an ongoing process of learning (Lee & Cole, 2003). Another

interesting literature stream focused on virtual teams. It is an expansive area of research, yet overall is interested in the impact of physical, and social distribution on teams and the individuals in them. This literature provides some notion of what removing physical proximity does at the team level, namely decreasing trust, increasing conflict and misunderstandings, and lowering effectiveness (Lipnack & Stamps, 2008; Maznevski & Chudoba, 2000). Virtual teams are common when an organization has multiple offices and a team is established across locations. Generally, the individuals are embedded into an office, but the majority of their interactions are with physically distributed coworkers. Overall, these contexts of online communities and virtual teams do not fully coincide with the concept of location-independent organizations but can provide insight on the role of proximity and why the viability of the location-independent organizational form may be unexpected.

3.2.1 *Technology Mediated Communication*

Technology-mediated communication, in contrast to face-to-face communication, is communication that occurs through the use of a technical interface; examples include email, phone, and video calls. This is a critical enabler of distributed work and grew as an area of study in the 1980s and 1990s with the adoption of email into corporations (Hollingshead, 1996; Sproull & Kiesler, 1986). An early stream of research was focused on the richness of media used to communicate. The findings were that collocated individuals maintained more effective ongoing communication, since it facilitates face-to-face conversations in a shared social context (De Meyer, 1991; Kraut et al., 1988; (Kraut, Fussell, Brennan, & Siegel, 2002; McGuire et al. 1987; Olson and Olson 2000). Specifically, the degree of richness for the various technologies was ranked beginning with the most: face-to-face and moving down through telephone, personal

letters or memos, impersonal letters or memos, impersonal reference materials and concluding with the least rich of numerical documents, this theoretical evaluation done by Daft and Lengel (1986) was based on the ability to engage in rapid feedback and to leverage multiple cues at once, such as body language, tone, and gestures. Later empirical work supported this, including a study in a large petrochemical company which concluded that managers use higher richness media for ambiguous conversations, and for straight-forward interactions, technologies of low media richness (such as text) were selected (Daft et al., 1987). Even as the technologies advance, they are viewed as lesser substitutes for in-person interactions, especially when uncertain or complex information is being shared. There is a consensus that technology-mediated communication, even videoconferencing, remains limited in terms of the bandwidth for social context and are relatively ineffective in coordinating complex, ill-defined tasks with high interdependence (Kraut, Fussell, Brennan, & Siegel, 2002, Olson et al. 2002).

The impact of communication with limited richness is seen as teams engage in distributed work, they often struggle to create shared context and sufficient familiarity due to their reliance on technology mediation in communication (Hinds & Bailey, 2003). For example, in her study of distributed graduate student teams, Cramton (2001) shows that the challenges from technology-mediated communication decrease the quantity and quality of information shared among team members. Specifically, members struggled to gather and retain information about the context of those not collocation while also not sharing sufficient information about their own situations. Furthermore, information was often distributed unevenly among the various locations, creating disconnections in what members knew and shaping diverse perspectives on their project. The challenges individuals faced in this study were primarily a result of interactions occurring through technology without explicit realization that the technology led to a decrease in media

richness which was not accounted for (Cramton, 2001). Another stream of research, often conducted in laboratory settings, found that team tasks take longer to complete when communication is mediated by technology (e.g. (Hollingshead, 1996). Much of the literature on technology-mediated communication is largely focused on the social interactions that are occurring through technology without explicit realization that the technology leads to a decrease in media richness that was not accounted for (Cramton, 2001).

Yet, the use of technology-mediated communication does support information sharing in global organizations and despite the downsides, enables some level of connection to occur across physical distance. Recent research has looked at social media platforms within organizations and their successful ability to create and effectively utilize social ties between individuals (Leonardi, 2015). This includes the ability to establish transactive memory systems gradually and informally via social technology (Ren and Argote, 2011; Neeley and Leonardi, 2018). Additionally, technology-mediated communication within organizations can establish passible trust between individuals (Mortensen and Hinds, 2001; Neeley and Leonardi, 2018). Despite the capability of connecting individuals virtually, physical proximity is viewed as the solution, or mitigating factor, for the use of technology-mediated communication since proximity between individuals improves coordination via familiarity, visibility, trust, information sharing, and transactive memory systems.

3.2.2 *Online Communities*

Online communities are virtual communities of people that come together to work on a project and achieve a goal. These communities are an interesting organizational category to study because workers within these groups use technology to create virtual relationships and

coordinate the work of numerous collaborators (Lee & Cole, 2003). Online communities are made up of many individuals participating as volunteers who are geographically distributed while being connected by a common interest or goal. Formally, they are defined as, "collective spaces of knowledge flows characterized by continuous morphing and are mutually constituted by digital technologies and participants" (Faraj, von Krogh, Monteiro, & Lakhani, 2016: 669). From this definition, two key factors are highlighted, the first being the use of a collective virtual space, and the second a reliance on technology. While being members of a community, individuals remain physically in their local environment—office space or a living room—and communicate with each other through the help of digital communication tools. The creation of an online community is not constrained by geography or physical location; it is driven by the primary objectives of working together to achieve a project objective. In her study of crowdsourced projects at NASA, Lifshitz-Assaf (2017) finds that these communities create innovative new products and services without becoming employees. While organizations do leverage communities via public calls, the focus of this section is independent communities who facilitate knowledge sharing (Faraj et al., 2011; Faraj & Johnson, 2011; Jeppesen & Lakhani, 2010) and the development of innovative products (Autio et al., 2013; Franke & Shah, 2003; Franzoni & Sauermann, 2014; Lee & Cole, 2003). Examples of online communities include projects like Open Maps, Wikipedia, and Linux.

Members of online communities are volunteers typically driven by passion and a personal desire to contribute. Since these motives are not monetary, online communities have a limited ability to exert authority or control over individuals. Membership is not based on any formal criteria, anyone with related interests can join: as such, individuals typically share similar beliefs, values, and identities (Bagozzi & Dholakia, 2006). People from different backgrounds,

experience levels, and geographical location are able to contribute. For example, individuals willingly add their knowledge to Wikipedia, the free online encyclopedia, and work voluntarily to keep it updated and accurate. Despite their large size, online communities demonstrate that a group of individuals can come together and fulfill project goals in innovative and creative ways.

The mere existence of an online community is not sufficient to achieve a common goal. However, the use of classic organizational design elements, such as hierarchy and monitoring, is not visible in online communities; these communities are managed coordination through lateral positions of authority (Dahlander & O'Mahony, 2011). Furthermore, the use of narrative development and observation to spread work norms is shown as an effective means to generate cooperation (Majchrzak, Jarvenpaa, & Hollingshead, 2007). Information sharing is an important part of online communities' activities as it enhances the performance of community members. It allows them to achieve their goals of exchanging knowledge and product development, the specific goals of which are centered on member (not market) interests.

For online communities the availability of digital technology is critical. It serves as the infrastructure with which connections are built and information is shared. However, while individual members are connected to each other through their similar ideological or social identities, and desire for the project to be successful, the implication of all communication being technology-mediated is that these communities often struggle to establish the cohesiveness and sufficient familiarity to support the level of common social understanding necessary to interact with external parties (O'Mahony and Bechky, 2008). Thus, while the members of online communities have a common identity, its strength is diminished by the nature of a volunteer role and the lack of organizational authority.

While online communities may be geographically clustered or distributed globally, they function as a digital (or virtual) community. As such they have significant similarities with the concept of location-independent organizations. They are made up of a large number of distributed individuals, that share common goals, are working to achieve common objectives, and lack any physical proximity. However, they also differ from location-independent organizations in multiple aspects, namely, the use of volunteers versus employees; location-independent organizations formally employ individuals. This makes a significant difference in that while the employees receive wages (and other incentives), they also are subjected to supervision or monitoring of some kind in order to verify the efficiency of their work. Additionally, location-independent organizations are selling a product or service with the aim of profitability. This fiscal challenge is not salient in online communities but is essential for the operational success of location-independent organizations. The online community literature is a useful reference for the study of location-independent organizations as there are many similarities, yet the few differences are potentially significant and make the transferability of insights unclear.

3.2.3 *Virtual Teams*

When discussing virtual teams, management scholars tend to focus on the activities and general performance of team members. In other words, the literature on the subject explores how teams operate while being physically separated, with a team level of analysis. Though there is no standard or unanimous definition of virtual teams, generally, management scholars explain virtual teams as groups of individuals doing interdependent work who span multiple physical locations (often different countries), leverage technology to communicate, and do so without

significant in-person interactions (Jarvenpaa & Leidner, 1999; Lipnack & Stamps, 2008; Maznevski & Chudoba, 2000). They are in part defined by the physical separation between members spanning a variety of countries, cultures, and time zones; yet, the bounds of this distance are not specified, so while some teams are globally dispersed others may be split among various buildings in the same city. However, it is important to note that generally for studies done on virtual teams, individuals are embedded within an organizational location.

Overall, literature on virtual teams examines the benefits and drawbacks of distributed work within teams. Advantages such as diversifying a team's perspective and increasing the time the team is active are presented. Spanning the world entices organizations with the promise for 24/7 productivity while digital communication reduces the cost of travel and the need for relocation (Dulebohn & Hoch, 2017), a primary strength of virtual teams. Additionally, by creating teams with diverse locations, and therefore multiple perspectives, teams have the potential for high performance, but limited empirical work has been done to demonstrate this expected benefit (Maznevski & Chudoba, 2000).

Numerous disadvantages including cultural challenges and misunderstandings (Cramton, 2001; Neeley, 2013), limited familiarity (Cramton, 2001; Hinds & Kiesler, 2002), fragile trust (Lipnack & Stamps, 2008; Mortensen & Neeley, 2012; Neeley and Leonardi, 2018), and increased conflict (Gibson and Gibbs, 2006; Hinds and Bailey 2003; O'Leary & Mortensen, 2010) are presented as inherent within virtual teams. This is attributed to the inability to establish a shared context and strong connection based on the physical distribution of individuals. One study compared collocated and distributed teams within an organization. The study found out that technology-mediated communication limits the sharing of contextual information which increases misunderstandings, leading to more task conflict (Hinds &

Mortensen, 2005). In general, virtual teams have increased levels of conflict due to the difficulty of establishing a shared context and familiarity between individuals. This is a result of their distributed nature and reliance on technology-mediated communication. One stream of inquiry, often conducted in laboratory settings, found that team tasks take longer to complete when communication is mediated by technology (e.g. (Hollingshead, 1996). In generally, research shows that virtual teams face a significant challenge in collaborating.

Virtual teams may be necessary in today's global economy but according to the current literature are far from an ideal solution for collaborative work. Therefore, if location-independent organizations are an extreme version of virtual teams, it is expected that a fundamental difference exists between what is found in the virtual-teams literature and what will emerge in the exploration of location-independent organizations. Otherwise, they would suffer from magnified versions of these challenges which hardly seems viable.

Distributed work is a phenomenon that is increasing in relevance, it is supported by the continuous development of technology-mediated communication practices. Specific illustrations of distributed work, including online communities and virtual teams and are established in literature. However, they are limited in their ability to understand the development and operation of location-independent organizations, leaving the opportunity for further research on how interdependent work is achieved effectively via distributed systems.

The research reviewed in this chapter suggests that while distributed work is a viable option it comes with numerous disadvantages, calling into question why organizations would make this choice. At the same time the research on organizational design suggests that the development of novel elements as will as novel combination of elements leads to an equifinality in how organizations accomplish their goals. As such, the rising prevalence and seeming

efficiency of many location-independent organizations suggests they may be utilizing novel collaboration practices not previously identified or examined in scholarly research.

Chapter 4. RESEARCH METHODOLOGY

This dissertation is empirically based on a study examining six location-independent organizations in the Software as a Service (SaaS) industry and how they collaborate on interdependent work. Given the lack of prior empirical and theoretical work on the subject, the design of this study is an inductive multiple-case design (Eisenhardt, 1989b; Yin, 2009). This study is designed to enhance the current theoretical understanding of how collaboration occurs by elaborating novel theoretical constructs as well as identifying relationships to enhance current theory (Eisenhardt, 1989b; Eisenhardt & Graebner, 2007).

4.1 Context: Location Independent Organizations

Within the phenomenon of distributed work, location-independent organizations are one extreme. These companies have no physical location at all and as such each employee works from wherever they choose and generally whenever they choose. While this increases the opportunity for flexibility, the complete lack of physical proximity necessitates organizations to establish norms around communication, information sharing, and social practices in order to work effectively. Location-independent organizations are not novel by themselves, yet as an extreme organizational design in the distributed work phenomenon there are still relatively few operating. At the end of 2019, there were a few hundred organizations that could be categorized as location-independent organizations. This move towards flexibility and increasingly remote forms of organizing is not new and is unlikely to fade away any time soon. That combined with its extreme nature make it a suitable context to examine how collaboration is done in within distributed organizations.

4.2 Research Design

In order to explore how location-independent organizations are able to collaborate on interdependent work, this dissertation utilizes an inductive a multi-case design (Eisenhardt, 1989b; Eisenhardt & Graebner, 2007; Yin, 2009). An inductive design is fitting due to the lack of explanation in current literature for how effective collaboration is achieved without any physical collocation of individuals. Furthermore, the nuance contained within the distributed work phenomenon is under-explored, providing an opportunity for theory building based on a rich exploration of collaboration practices (Eisenhardt, 1989b; Graebner, Martin, & Roundy, 2012). As such, the use of a multi-case inductive design is an choice that will allow for the elaboration of novel theoretical constructs to enhance current theory through new boundary conditions or providing an extension of current theoretical understanding (Eisenhardt, 1989b; Eisenhardt & Graebner, 2007).

Location-independent organizations are an extreme instance of the distributed work phenomenon; by leveraging this sample, this dissertation is able to identify key practices (Eisenhardt & Graebner, 2007; Siggelkow, 2007). In general, case studies allow for a rich description while the use of multiple cases was selected to leverage a replication logic (Yin, 2009). Similar to the idea of multiple laboratory experiments, replication logic treats each case as an "experiment" to confirm patterns as they emerge and eliminate idiosyncrasies (Yin, 2009; Eisenhardt & Graebner, 2007). As such, the use of multiple cases allows for the development of more robust and generalizable insights (Eisenhardt & Graebner, 2007). This study is designed to build a deep understanding of collaboration practices within location-independent organizations. In order to do this, an iterative process involving grounding results in prior theory, identifying

patterns within each of the cases, and comparing the patterns across cases is conducted (Eisenhardt, 1989; Eisenhardt & Graebner, 2007).

4.3 SAMPLE

The theoretically selected sample for the multiple case study (Eisenhardt, 1989b) consists of six location-independent organizations within the SaaS industry of similar age and varying size (employee count). These cases were specifically chosen for being on the extreme end of the remote work spectrum (Siggelkow, 2007). SaaS organizations are ideal for these questions of coordination due to the interdependent, multidisciplinary, and scalable nature of their work. These organizations have a high reliance on human capital with very little need for physical resources, meaning the design of work structures and processes are key to the organizations' success (more so that the need for or use of material resources). Furthermore, SaaS organizations are capable of scaling their operations without needing large amounts of capital. Finally, SaaS organizations make a good sample because they were one of the first groups to adopt distributed work and as such have numerous organizations with a long history of location independent operations. Selecting the sample within SaaS organizations began with building a deep familiarity with the SaaS and distributed work ecosystems, including reading books, participating in forums, and watching archival interviews with founders, coworking space owners, and freelancers. I then attended the 2018 Running Remote conference where I began recruiting study participants.

A primary criterion for selecting specific participants was the organization being sufficiently stable in development both in terms of product and organizational process. Generally this meant companies who were over eight years old. In the final sample of seven organizations,

the average age is 11 years old (ranging from nine to 15 years). This level of development (as well as interpreting archival information) also led to the assumption that each organization could be profitable (a couple are scaling rapidly and therefore may not show profitability on paper). A secondary criterion in selecting organizations is that their primary/initial customer base is in the United States, and the language of operation is English. However, there were no limits put on the location of the founder either at founding or currently. Finally, within the sample the size (employee count) of the organizations has been purposely varied. The amount of capital raised was not utilized as criteria in the sample selection, but it is varied in the final sample. See Table 2 for an overview of the sample used in this study. The six location-independent organizations are the sample for this dissertation study; they will be referred to by the pseudonyms (remote islands) listed for their privacy.

Table 1: Sample of location-independent organizations (August 1st 2019)

Organization (pseudonyms)	Founding Year	Product Description	Approximate Employee Count	Capital Raised
Tromelin	2005	Publishing tools for individuals and SME	870	$300 + million
Raoul	2011	Enterprise software development	550	$10 – 50 million
Niue	2007	Individual and SME task organization	45	< $50,000
Macquarie	2011	Enterprise ticketing	85	$10 – 50 million
Pitcairn	2011	Personal and enterprise design	850	$300 + million
Keeling	2009	Personal and enterprise design portfolio	50	Private Equity

4.4 DATA COLLECTION

The data analyzed for this dissertation consists of semi-structured interviews. For each organization, interviews were conducted with founders, executives, and multiple employee informants throughout the organization. I utilized purposeful sampling to capture a variety of levels and functions within each organization as well taking care to achieve variance in physical location and individual demographics. Informants were identified a variety of ways, including through the identification of targeted roles via the website About page, recommendations from founders/executives, and recommendations from other informants. Table 3 shows the final interview counts broken down by organization, as well as within each organization by level and function. The semi-structured interviews ranged from 28 to 112 min and were on average 65 minutes long. The majority of interviews took place via Zoom video calls (4 were done in person); the audio of each interview was recorded and then transcribed.

Table 2: Summary of Data Collection Interviews by Organization

Organization	**Total Count**	**Functional Area**			**Level**		
		Business	Product	Customer Support	Executive	Lead/ Manager	Individual Contributors
Tromelin	16	5	7	4	1	9	6
Raoul	25	9	15	1	6	12	7
Niue	11	7	2	2	4	4	3
Macquarie	13	7	4	2	5	1	7
Pitcairn	13	8	4	1	5	5	3
Keeling	9	6	3	0	3	3	3

4.5 ANALYSIS

The analysis for a multiple case design is an iterative process. As the interviews were completed, they were transcribed. Those transcripts were then open coded; this process generated a way to organize the descriptive cases. An extensive case was written for each organization (between 40 and 70 single spaced pages) containing extensive direct quotes. Once each case was detailed, a cyclic process exploring constructs within cases, emerging patterns between cases, and current theory, was undertaken. The overall process progressed through numerous rounds of coding and reevaluation while examining various themes and patterns at multiple levels. While multiple potential insights were observed, the data related to collaboration, and specifically how asynchronous organizations collaborate, was identified as promising and focused on. Once focused on collaboration, I began identifying specific actions compared across cases focusing on the way information was transferred and the means by which it occurred. The following findings presented for this dissertation represent a version after many iterations of analysis. First, the emergence of two distinct patterns is discussed, then the set of practices related to the enabling of asynchronous collaboration (as well as what the other organizations did in contrast). The result of this is a construct proposed that will support distributed organizations who are seeking to collaborate interdependent work asynchronously.

Chapter 5. FINDINGS

Collaboration concerns are common for organizations, this is not unique to distributed organizations. However, distributed work is particularly challenging (e.g., Cramton, 2001; Dulebohn & Hoch, 2017; Hinds & Bailey, 2003; O'Leary & Mortensen, 2010). Based on opting into being a location-independent organization, this study explores the question: *how do distributed organizations collaborate on interdependent work?* The findings reported in this chapter show there are multiple designs which can accomplish that (two patterns identified in this specific sample), and that each pattern has a unique set of practices which enable collaboration. The findings specifically focus on the practices for asynchronous collaboration as it is unexpected based on prior theoretical understanding.

5.1 TWO DISTINCT PATTERNS

The first insight of this dissertation is that two distinct patterns of collaboration emerged from within the sampled location-independent organizations. The first of these is a “real-time” orientation and the second is an “asynchronous” orientation. Neither pattern is considered to be better, they are simply distinct. The focus of this research is explicating the differences followed by a consideration of the tradeoffs, leaving to the future more quantitative work that empirically examines the performance implications of this distinction.

Despite the two emergent patterns, these organizations also have a significant amount of similarity. In line with the sampling criteria, all of these organizations are interdependent and work in teams to produce software products. As a designer from Raoul summarized, “I think we're all kind of dependent on each other… PMs, front-end, backend, and UX are all ... It's not a

waterfall approach, It's not where UX comes with a solution, passes it off to engineering… It's really all of us working together, we're all dependent on each other in some form" [Product/IC, Raoul][8]. In terms of structure, all six organizations leverage traditional hierarchies, with the number of layers correlated to their size. None of these organizations were interested in novel structures or authority schemes (e.g., holacracy). Aligned with best practices in the software field all six organizations use a version of agile principles (each adapted to their own organization). They work in projects cycles with a length of mostly four weeks on stable multi-disciplinary teams. The level of secondary connection within their specific discipline (e.g., all the designers meeting together) varied some by organization, and by function. Finally, in terms of retreats all organizations utilize regular all-company retreats, typically annually. Recently the larger organizations began to experiment with team retreats[9] as well. These similarities demonstrate the sample constraints have indeed identified a comparable set of organizations.

The difference within this sample are related to how employees interact. First is the frequency of meetings that employees participate in each week, the expected response to unscheduled communication from coworkers, and the constraints on their scheduled work time. As seen in Table 3, the asynchronous oriented organizations (Tromelin, Raoul, and Niue), had significantly fewer meetings each week, responses to coworkers are left to the receiving employees discretion, and no restrictions are placed on which hours of the day an individual chooses to work. In contrast, the real-time oriented organizations (Macquarie, Pitcairn, and Keeling), maintained suggested work hours, held the expectation that during those work hours individuals should be available for back and forth communication, and if not that messages

[8] The notation for quote sources follow the descriptive categories in Table 2 and the format of ["Function"/"level", "organization pseudonym"]

[9] When collecting data, this team retreat idea was a very new undertaking and while some initial tests were promising there was no sense of if it would become a regular occurrence or at what frequency.

should be responded as quickly as possible, and finally two of the three companies (Macquarie being the exception) also reported a high frequency of weekly meetings (with many individuals in managerial roles having 4+ meetings per day). These are two significantly different patterns of collaboration. These similarities and differences are summarized in Table 3, where the first three organizations fall into the asynchronous orientation in the last three organizations are categorized as real-time orientation.

A *real-time orientation* is the first pattern of collaboration that emerged. Real-time oriented location-independent organizations use person-to-person meetings along with back and forth text conversations to enable information to flow between individuals. These organizations use technology-mediated communication as a substitute for face-to-face interactions. They have a clear recognition that the use of real-time meetings and interactions are a central part of their workflow. Explicitly a member of one real-time oriented organization stated, “we're not asynchronous, everyone needs an overlap during the day so they can talk” [Customer/lead, Keeling]. This reliance on social interactions to build information sharing ties is consistent with prior literature on information transfer. For example, complex and ambiguous information is more efficiently shared between people with a social bond (Hansen, 1999). Having tacit information about the source of information supports collaboration even over a physical distance (Srikanth & Puranam, 2014). The use of technology-mediated interactions to do this is plausible, for example through the use of an internal social media platform supports the development of transactive memory systems (Leonardi, 2015). Therefore, it is not surprising for one of the emergent patterns to rely on the collaboration mechanisms organizations have leverage for years (e.g., hierarchy and meetings), with the use of technology-mediated communication to substitute for physical proximity. One significant difference between the real-time oriented organizations

and virtual teams is their extreme distribution. The shift to a location-independent organization acts as an equalizer, where all employees are now operating with the same position (in terms of being in a location of one). This along with intentionality in hiring practices allows a viable collaboration pattern of distributed interdependent work.

The second pattern of collaboration behavior is considered an *asynchronous orientation.* Asynchronous oriented location-independent organizations operate with limited real-time interactions, meaning they prioritize asynchronous communication, but it is not 100% of what they do, person-to-person interaction still occur; however, these interactions typically have a social focus. In terms of work systems they are committed to shifting the way that time is leveraged in order to make distributed work more effective. This is captured by a team lead at Nine, who expressed, "[Real time chat] wasn't working for us … we needed something more asynchronous. Especially with the time zone situations" [Product/lead, Niue]. However, there was not a pattern that these organizations could turn to so they were taking on the ambiguity of figuring out this novel collaboration pattern. An effective solution and the ability to collaborate without complete disruption from distribution is a significant incentive. The CEO of Tromelin explains his thinking: "If you're able to figure out an effective means of asynchronous communication, it can allow participation from a lot more people and not require -- you know, give it a lot more flexibility and autonomy to people in terms of schedules" [Business/exec, Tromelin]. As these organizations evolve a pattern appeared highlighting an effective way for asynchronous oriented organizations to collaborate. The asynchronous oriented pattern is meaningful in numerous ways; these organizations explicitly recognize temporal distribution as the primary issue. This allowed them to design a work system as independent from time constraints as possible, therefore realizing the promised employee flexibility. As such, this

design provides potential solution for individual with significant time restriction in their life such as a chronic illness or a role as a caregiver. Interestingly this focus on designing for asynchronistity of work does not preclude physical proximity. Therefore, it would serve a globally distributed organization just as well as an organization spread across many floors of the same building. As the world increasingly questions the need for frequent physical proximity these distinct patterns and their specific tradeoffs become more interesting.

Table 3: Collaborations Patterns within Location-Independent Organization Sample

Organization	Layers of Hierarchy	Project Team Structure	Project Cycle Time	Retreats (org)	Retreats (team)	Weekly Meeting Count*	Expected Response to Ad Hoc Comm.	Schedule Expectations
Tromelin	5	Multi-disciplinary product teams and functional departments	2 weeks	Annual	No	3	At convenience (within a few hours)	None
Raoul	5	Multi-disciplinary product teams and functional departments	~ 4 weeks	Every 9 months	Yes (trial)	2^	At convenience	None
Niue	3	Multi-disciplinary squad and discipline team	4 weeks	Every 9 months	Yes (trial)	1	At convenience	None
Macquarie	3	Multi-disciplinary product teams and functional departments	~ 4 weeks	Annual	Yes	3	ASAP and available for real time chat	Status updated during work hours
Pitcairn	5	Multi-disciplinary teams in product zones	2 weeks; 4 weeks	Annual	Yes (trial)	8	ASAP and available for real time chat	Suggested work hours
Keeling	3	Multi-disciplinary product focused teams	4 weeks	Every 6 months	No	8	ASAP and available for real time chat	Expected work hours

* estimated average for individual contributor ^ if no all-hands meetings are attended

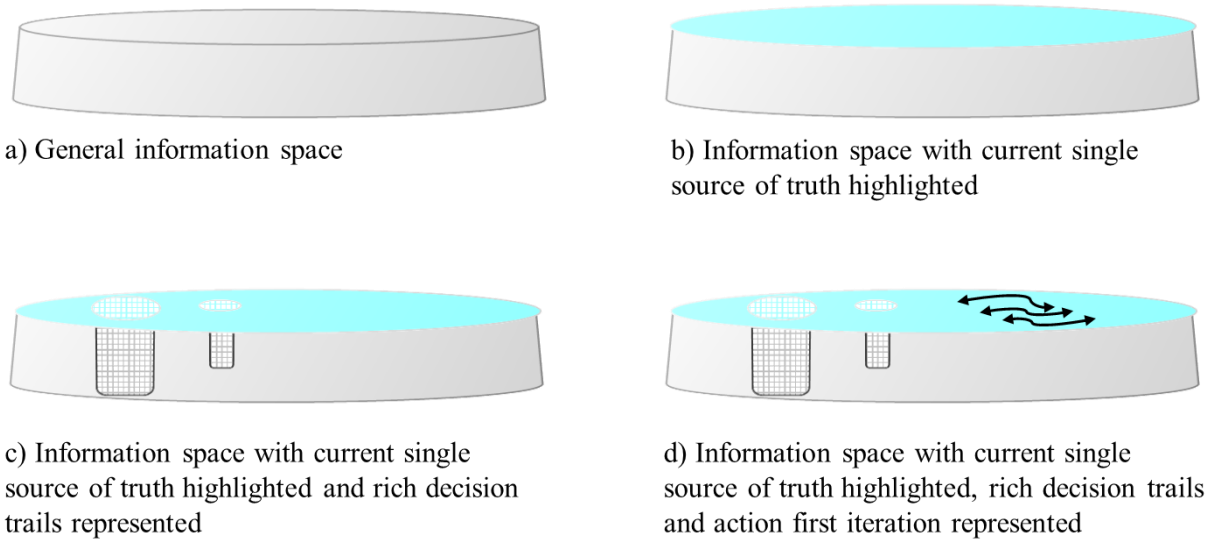
5.2 Adaptive On-Demand Collaboration

The primary finding of this dissertation is that a pattern that enables asynchronous oriented organizations to collaborate on interdependent work exists, it is centered around a novel element called *adaptive on-demand collaboration*. This element works by decoupling (or separating) individuals from information through a set of three interrelated practices. The specific practices identified in this research are 1) the maintenance of an *"open single source of truth"*, 2) the production of *"rich public decision trails"*, and 3) establishing a culture of *"action first iteration"*. The first two practices set a foundation, or infrastructure, of both breadth (open single source of truth) and depth (rich public decision trails) while the third practice captures the authority granting behavior of organizations and how employees leverage the constructed information space foundation. While individually the practices are identifiable, they can not be fully disentangled and as such they function jointly to support the adaptive on-demand collaboration element.

Each practice enables the adaptive on-demand collaboration of asynchronous oriented organizations in distinct ways which can be associated with various aspects of a general information space. Consider a glacier representing a generalized information space, by looking at the surface of the glacier this gives a broad perspective of what is happening currently, this is the open single source of truth, an overarching look at the status now. Then imagine you come and take a core sample of the glacier, collecting multiple layers of ice in a single spot. This is similar to a public rich decision trail, where the detailed history of one topic is revealed. Finally, consider the flow of the glacier itself. This movement, which begins on its own but can be adjusted by external forces, is analogous to action first iteration in which employee activity is

ongoing but not free from oversight. This representation of the adaptive on-demand collaboration element as well as its three practices is shown in Figure 2.

Figure 2: Representation of Adaptive On-Demand Collaboration Element



a) General information space

b) Information space with current single source of truth highlighted

c) Information space with current single source of truth highlighted and rich decision trails represented

d) Information space with current single source of truth highlighted, rich decision trails and action first iteration represented

5.2.1 *"Open Single Source of Truth"*

The first enabling practice of adaptive on-demand collaboration is maintaining an open single source of truth. This practice provides a current, up-to-date view of the entire organization. This eliminates the need for individuals to interact with someone else in real-time in order to obtain the information required for their own work. There are four factors which define this practice, they are 1) that observed information is the same to everyone, 2) leveraging this information source as the up-to-date organizational knowledge repository, 3) a place to hold in-progress work products, and 4) the existence of commonly understood norms. Table 4 demonstrates how each of the asynchronous oriented organizations integrate these factors, while Table 5 reveals the contrasting behavior exhibited by the real-time oriented organizations.

Specifically the real-time oriented organizations 1) often silo information to specific groups (not including the need for maintaining the privacy of individuals in human resource or finance roles), 2) have pervasive uncertainty about the location or structure of information, and 3) use formal regular updates. Overall, by utilizing the open single source of truth practice the asynchronous oriented organizations move communication from being person-to-person (either 1-to-1 or 1-to-many) to an accessible collection of in-progress updates and work products.

Table 4: Asynchronous Open Single Source of Truth

	Tromelin	Raoul	Niue
Observed information same for everyone	At first I subscribed to everything that everybody recommended. I started skimming and I'm like, oh, this is interesting… I would spend four hours reading, which is good in a way because you get this mental model of how all the different products work and how they interact together [Product/IC]	[The information source is a] source of truth, knowledge sharing, everyone can access it. I'm not limiting it to me and you. I'm making sure my entire team has access to it… there's a lot of information. So we need to iterate on [it] often, especially with the way we hire in certain locations and contracts and that's a constant iteration to make sure it's updated and current. [Business/lead]	We try to keep it almost everything public. Because otherwise again, like if you have things in private channels and stuff, I mean it gets -- people start to feel left out really quickly and things get stuck in silos. [Support/lead]
Up-to-date knowledge repository	Our [information source] is kind of like an internal handbook. It's also like a Wiki, so anyone can edit it and it's where we keep all of our kind of company policies, guidelines, onboarding, the glossary, everything like that. [Business/exec]	We use Slack for real time communication, but every decision that is made in Slack should be then be copy-pasted into the [information source]. so [it] should be the single source of truth for discussions, for decisions. [Part of the information source] is a huge document that is public that describes everything. It's a one huge repository about how we run this company, it has processes, policies, team structure, everything. [Business/exec]	[Our information source] is a source of team knowledge that builds itself [because all the work] stay[s] completely intact and just there forever. [Business/IC]
In-progress work products	As a designer, each date I work on a project, I post screenshots and I'll little comments of like, here's what I worked on. And the goal there is to design in the open. So anybody that wants to follow along, can at any point… it's a Dropbox paper is the tool. And it's just a good format for like popping some texts it and some pictures in and being able to have people leave comments on the side. It's similar to Google docs, but just a little bit friendlier to use. [Product/IC]	Work on this project, give updates, and then when the project is completed or decided upon, then you create a merger request to document it in our handbook. Which is publicly viewable, and everyone can take a look at it… It's just a work in progress, and so that's the workflow for everyone. [Business/IC]	We usually create the specs there. So it has lots of images and it has also links to prototypes and stuff like that, all the designers go in and just start commenting on stuff [for example] 'I don't like this, try this solution instead?'… So the feedback can really be presented. Then we have a small discussion in place around that subject where one or two or everyone in the team goes in and comments. [Product/IC]
Commonly understood norms	When they write a [post], allow for at least 36 hours to get reactions. Like you cannot put up a [post[and three hours afterwards, make a decision based on that [post] because that's half the world hadn't seen it yet. [Customer/lead]	Everyone can contribute to the handbook. And we have given certain rules that if you ask a question about process, about policy, that is not in the handbook, you must document it, and you must put a link to the original place where you asked about it, with a link to the handbook." [Business/exec]	For each [work cycle] we create a channel. So in the end of the [work cycle], the channel is archived and all the information and all the thing is still there… We have all the specs of all the features and things that we created… So if someone is on vacations or something and we need to fix something, we can always find everything. [Product/lead]

Table 5: Real-Time Contrast to Open Single Source of Truth

	Pitcairn	**Macquarie**	**Keeling**
Access to group specific information	Part of working effectively in collaborating effectively is being present. And if you're not present, there's only so much we can get done… you have to be able to present it, you have to be able to engage with people and have a discourse about the decisions you made, why you made them what you're hoping to do next. So, sort of, you know, why you're sending us this thing. [Product/lead]	So when it comes to anything, webinar talk, I have a specific Slack channel just for us three. But when it comes to anything on a broader scale, support driven growth as a whole, we do a meeting every three weeks that I host just to get input and give updates and things like that. [Customer/IC]	I think is really great. It kind of outlines, facts that are important to know about working here…It's knowledge base for us… And so I wanted to update it because up until recently it was kind of, more bare bones [Business/lead]
Information not clearly organized	I would say [the biggest challenges are] transparency and communication. Not transparencies like people are hiding stuff, but just it's hard to see. … [When searching for information, I would] probably start by going to a few key individuals that I've just got relationships with to kind of refine the search. Part of that is that we've grown so quickly that there isn't necessarily a ton of systematized and organized knowledge basis around the company. So we just start with people first. [Customer/lead]	I do a lot of Slack searches. Like I think of [specific coworker] mentioned this maybe before I started or months ago and maybe she's mentioned it, so I'll go and look for messages from her on a topic. Then you can actually search in Dropbox or Dropbox Paper for examples of other ways people have gone about a project in the past. That's a lot of searching, if someone's not around or you just don't want to bother them right away, lots of searching in that internal Wiki, it's called Slab, or Slack even. And then Dropbox Paper are the go tos for me. [Business/IC]	That's the problem I have with Slack some people [use it for] continuing conversation in a thread and then if it's in the engineering channel and like a sub conversation ends up in a thread that I should have, exposure to that knowledge, I can completely lose it. Unless somebody says come in here and see what is going on, then I'm unaware… [that is] part of the anxiety that ends up making its way to me, I have to click through every single thread that I see pop up in the main conversation. Because there might be something that I'd missed inside that conversation [Product/IC]
Regular formal updates	We have currently newsletters that go out from all the different departments to other departments to try to keep people in the loop, which is helpful. But there's so many different departments now that it can be tough to keep up on the emails while we're all doing our jobs too. I think that's one way that coordination could be better, honestly; Just finding a way to communicate companywide without overwhelming people with information. [Business/lead]	Because everything is so documented at our company, if somebody gives you an update on a project, they're giving you the full update. It's almost like too much information at that point. So I do think we're going to have to figure out how do we keep all the teams across the company aware of what's happening, but also aware of the details that are relevant or important to them and not the whole history. [Customer/exec]	The product managers generate reports that we share with the other product managers… they're just kind of kept apprised of all the goings on. As we're building new features and planning things out, we try very hard to maintain this one team, one product mentality…. we share that internally first, we usually do that every Friday. And then once we have that, we post it out for the entire team to see if they want to. The format is usually a KPI, that were tracking, followed by our chart or kind of a link to a chart of where we're getting that data from. [Product/lead]

In support of establishing an open single source of truth a key factor is that all members of the organization must be able to see the same information. The contrast to this seen in the real-time oriented organization is the use of meetings to share information. Therefore, even when the asynchronous oriented organizations do engage in real-time communication their priority is the asynchronous dissemination; for example, Tromelin has developed a tool to make sure recorded videos are broadly available. Their CEO shares how,

> *We tried to take our synchronous things and make them asynchronous. Like for example, I do a town hall every month, which is a live broadcast. People will ask questions live and I answer them live and it's not like scheduled or preplanned or anything. But we record it and we write up a transcript of it. So that way if you want to consume it later via video, you can. Or, if you want to consume it later and read just the transcript again. Actually, one of the tools I'm really excited about is we have an internal video player called [video tool]. I guess something else we built. I'm really excited about that having a speed up feature. Kind of like Youtube where you can actually speed up videos or podcasts. So maybe I can catch up with the hour long meeting in 30 minutes. So again, you're time shifting and that gives a lot of flexibility. [Business/exec, Tromelin]*

Enforcing the idea that all individuals have access to the same information they remove the dependency on the opportunity to attend meetings. This is important in mitigating the issues virtual team has with communication inequality based on with distribution (Cramton, 2001; Hinds & Bailey, 2003; Hinds & Mortensen, 2005; O'Leary & Mortensen; 2010). However, the ability of anyone to observe any information can be overwhelming; for example, a manager at Tromelin shares, "I think the challenge is how do you keep tabs on [all of the information available]. There is a lot. Everything is out there. It just a matter of how are you going to make sure that you are involved in a lot of it" [Product/lead, Tromelin]. She goes on to mention that attention is often pulled to a post via the accountable person tagging (sending notifications to) specific individuals.

The second feature of the open single source of truth is it serves as the knowledge repository for the organization, meaning that anything an employee would want to know is both available and up-to-date. This is exemplified by the catchy phrase that multiple informants of Tromelin said during interviews, "[information source] or it didn't happen. [10]" This captures the idea that this open single source of truth is a repository of information that exists independent of any individual person. Furthermore, by the open single source of truth being where work is recorded, by default, it will be the current version. One employees explains that, "this memorialization of decisions is really hard to get when you're in an office all day long because it's like extra work, but when you're at a distributed company one of the nice side effects is that they get memorialization of decisions for free, because if you're not writing something down, you're really not doing any work" [Product/exec, Raoul].

While the real-time oriented organizations use regular formal updates to share the current state of work, the asynchronous oriented organizations have access to continuously updated in-progress work products as a feature of the open single source of truth. An example of this choice to make unfinished work available within the information source; for instance, an employee explains he "share[s] lots of iterations so that we are all on the same page. And this happens during the [work cycle]" [Engineer/IC, Niue]. This extends to the decision making process work as well, as expressed by the people operations manager of Niue, "there's that level of transparency within the company where you know, there's no effort to kind of hide those things or try to make decisions, kind of in the shadows and then kind of bring them to the public at a later time. You can really see those conversations take place and participate actively in them" [Business/IC, Niue].

[10] By anonymizing the saying the memorability of it was ruined

For the open single source of truth to be effective it is more than the selection of a communication tool or two with open access, the fourth feature is the development of commonly understood norms. For instance, the recognition of time delays, every member accepting a level of responsibility for updating, and known procedures for the new projects as shown in Table 4. Furthermore, all of the asynchronously oriented organizations have well established understanding of what type of information belongs where. For instance, a member of Niue shares,

> *So basically most of what we do on [code tool] is to track our issues. So when we have like this bug we open an issue on [code tool], track the occurrences of that bug, and how do I reproduce it and so on, then we use it for a code reviews, which can be considered a discussion. Basically, one of us sends the code and the other person reviews and we exchange ideas. If there's something, if it's a deep discussion we revert back to [our information source] to have like a more meaningful conversation. If it's just like fix these, or fix that, or you are missing a dot here or a space there, then we rely on [code tool]. [Engineer/lead, Niue]*

This is in contrast to the uncertainty expressed by individuals in the real-time oriented organizations.

The practice of an open single source of truth supports asynchronously oriented organizations to collaborate interdependently by actively disconnecting the knowledge an individual possesses from them. This allows interactions to take place between individuals seeking information and the organizational information sources. Based on what is known from prior research the breadth of knowledge an organization has, or the information landscape, represents where individuals search for information (Leventhal, 1997). Search is considered to be myopic (Cyert & March, 1963; Leventhal & March, 1993), a function of organizational hierarchy and/or network ties (Hansen, 1999; Reagans & McEvily, 2003; Tsai, 2002). These search method rely on an individual having an active transactive memory system such that they know who knows what and who knows who and are able to connect with them (e.g., Leonardi, 2015). Yet, in prior literature it is people who still maintain possession of their information,

whereas an open single source of truth shifts that knowledge into the search landscape itself. When considering information transfer there is another stream of research focused on the use of artifacts as a coordination mechanism (Bechky, 2003; Mark, 2002); however, I assert that the open single source of truth practice is not an artifact due to its complexity. It is not a reasonably managed unit of information (e.g., a map or report) that access to would imply sufficient knowledge transfer. Therefore, by utilizing an open single source of truth, asynchronously oriented organizations are facilitating the knowledge search and transfer aspects of collaboration in a novel way. In contrast, the real-time oriented organizations rely on person-to-person interactions which restricts the availability of information and does not force the development of a robust up-to-date, in-progress, organization-wide information system. The result is that information is often in unknown locations and formal updates continue, making individuals rely on others instead of on the information system itself.

5.2.2 *"Rich Public Decision Trails"*

Rich public decision trails directly supports the creation of a shared context via an organizational information tool. It relies on three features, first is a public discussion for decision making, including all of the discussion (as opposed to broadcasting a final decision). The public nature of the decision-making process allows for the second feature which is the preservation of a shared context through the use of documentation which is maintained via the third feature of only permitting additive content. The practice of rich public decision trails enacted by asynchronous oriented organizations is contrasted with the behavior of the real-time oriented organizations who rely on 1) the reporting of final decision, 2) person-to-person discussions,

typically formal meetings, to make decisions which 3) limits the availability of information to others at the time of the decision making as well as going forward.

Table 6: Asynchronous Rich Public Decision Trails

	Tromelin	**Raoul**	**Niue**
Organizational history and shared context preserved	The head of product and the head of operations, they get together for I think monthly calls and they post notes and you know, people can respond to the notes and ask questions. And I do like, I followed the [information source] where those notes are posted and try to you know, try to at least just skim through them to see what's going on. [Business/lead]	If you have an example of backend for the developer and the UX designer collaborating on a certain issue, you want them to be able to see exactly know how a certain additional decision came to be. And that's actually why slack is so terrible for these kinds of discussions because slack in everything, any conversation that takes place in slack it's just gone with forgotten from the institutional memory within 30 minutes because of the number of messages that are sent there and in any timeframe. [Product/lead]	I can find any discussion that we've ever had … see conversations that have taken place like four years ago and be able to access those conversations and benefit from the progression of how those decisions were made and what has already been discussed and maybe what hasn't been. And you're able to get a full picture of what's been done, even if you haven't seen the full picture or been with the company through that whole part. [Business/IC]
Public discussion of decision	Every conversation that we started having that turned into a discussion of strategy or future planning or tactics, like things that we needed to do in order to accomplish our goals and any conversations that had that sort of thing happening. I as the deputy at that – in that moment we would say, hey, is this something that we need to have in a public space? And if it was a thing that we can have in a public space, we took it out in the public spaces and have those conversations there [in the open source community] so everybody knows what we're talking about. [Customer/lead]	If you're making a decision, we want that to happen out in the open, in an issue. Everyone can see and everyone can give their input. [Business/exec]	As each team head or team lead will come up with a list of a handful of projects that they want to work on and we'll kind of all compile it into one document. Amir will kind of revise stuff and say like, yes or no. Or like these resources are too limited… then we all just collaborate in [the information source] Like having -- like in a thread saying like, this is why I want to do this. Like why we need to prioritize it. [Business/IC]
Additive content	Each team has their own [information source] and like each project can have its own [information source] and anybody can create a new [information source]. And so it's a way to just have threaded conversations that are usually a little bit meatier, a little bit longer than what you'll find in Slack and it allows everybody to participate. [Product/IC]	Information source is based on version control principles, by its nature only additive content is permitted.	[If conversation reemerges in a new thread] I can, I'll link the previous thread. 'Hey, we had a discussion on this thread before so you can restart it or you can see how he got to this conclusion and see if it's still worth it to, to continue with it.' So there's definitely references between threads. [Product/IC]

Table 7: Real-Time Contrast to Rich Public Decision Trails

	Pitcairn	Macquarie	Keeling
Reporting final decisions	[Knowledge base is] in my head right now… there's a lot of like free and loose go in and then doing little retros afterwards. Also now a biweekly normally, I'll send out an email to the team, my small team on what I've been working on, where it's at, status updates and stuff. I've gotten away from that a little bit just as I've been a little busy before travel and things. [Customer/IC]	Each team also does like monthly updates. So each team leads marketing, sales, engineering does a monthly update to the entire company. Again, I think those are incredibly effective. But when I asked my team, do you read everyone? And they're like, "No, not anymore." Because now they're so long. It's like each one feels this like book. What's challenging is our CEO loves those monthly posts. You want to include everything because he wants context and everything and it's a really great way. But I've learned that as we've grown, the teams don't get the same value that a leadership team gets from those updates. [Customer/lead]	The PMs take, the projects and write up a brief on that. The brief gets approved by everyone. Usually the brief will go through, around with an internal team so that the engineers and designers will have a chance to contribute ideas, contribute a solutions or you know, suggest methodologies for doing something. Once we've mailed the brief, we send that to our VPs and our CEO for kind of a leadership sign off. Once I get signed off, we're ready to go on it. We start production, which usually involves some level of ideation or wireframing etc., just depending on the scope of the project itself. [Product/lead]
Decision in meetings	One of our tendencies is that if we have to make a really big decision, we tend to want to meet in person. I would have to say that most of the times that we meet in person; we're really dealing with more long term, bigger impact things. We tend to push those off until the next time we know people are going to be in person… To some extent we've kind of offloaded a lot of important decisions of, let's just talk about that at [the next in-person meeting] when everyone's together. [Product/IC]	The thing that I really miss out on [since] the bulk of my engineering team is in US or Europe. Quite often they will have just a regular meeting to talk about, what's going on this week, any kind of problems. And that typically tends to be less scheduled… Typically I spend my mornings on calls, because of the time zone, I talk to people, I make sure that decisions get made. I make sure that we have all the updates and stuff we need to. [Product/IC]	For the most part I kind of walked into a meeting and will make decisions there and then I'll run with the changes or like I'll run with that direction and then I'll come back next week and I'll say, what do you think of this? [Business/lead]
Discussion accessibility limited	You just have to be really intentional with your communication and because… And not to say that there aren't times when you end up meeting, you're like, oh shit, so and so wasn't here. But for the most part because everyone's in the same situation, we're very good at making sure that we have the correct guest list, that you know, if you're having a conversation, you know what, this should be taken to a wider audience. [Product/lead]	I think half the teams [have their own kind of locked channel]. Definitely the engineers have a secret channel that they're all in but we're not, so some of that stuff. [Customer/IC]	Slack is great but… it is allowing a bit of a siloed, sharing of information. So private communication is appropriate and good, but oftentimes some people will err on the side of private, and it's a cultural thing, I think, but Slack will facilitate or allow a cultural norm to sort of continue. [Product/IC].

The preservation of organizations history is the first feature of the rich public decision trail practice. A Niue employee explained this idea well when she stated:

> *I can go back even to the beginning days when we were 'dog fooding' the app and we have threads from like 2015, 2016 and you can see the whole conversation, it's just still there. Kind of like Jurassic Park when the bug is in the amber, it's just perfectly conserved still. So that has been a great source for us to document ideas and when a new person gets onboarded to the team, they can have access to essentially any [information source] channel. I think we only have like three or four that are private, and they can go in and browse everything for as long as they want and see why a particular decision was made, what was the thought process behind it… Like when we were developing the logo and branding for [a new product] you can see literally the whole thing and it's super cool in some instances to see the whole iterative process, for example, of a logo. [Business/IC, Niue]*

This preserved record provides a depth to each decision and is contrasted with the decision making in meetings and via person-to-person interactions. When Keeling employees discussed iterating on a new product development, they shared how they often resorted to video calls. These interactions were unrecorded and left no process trail. Sharing how the team would, "get on just ad hoc calls all the time… Especially these days because we are building the new product and there's a lot of questions being asked… when everybody is typing and you just know that the answer is going to be more than like two sentences… it's just easier to get on a [Zoom] call" [Business/IC, Keeling]. This method of collaboration (often unintentionally) results in an incomplete and sporadic history of the how and why behind organizational activities and decision making.

The second feature of the rich public decision trail practice is a public discussion of decisions, this builds on the concept of organizational transparency. Each of the asynchronous oriented organizations strongly expressed that anyone should have access to not only the decisions being made within the organization but also the how and why behind it. An employee

at Raoul stated, “everything that goes on our [information source] is open to everyone at the organization on purpose because transparency is one of our core values and we want to make sure that if they're curious how we move from doing X and Y for comp to doing A and B they can see who made the decision, what conversations were had around it and ultimately how it was implemented” [Business/IC, Raoul]. Similarly, this expectation was expressed by an employee at Niue. “We believe in transparent communication. So that means there should not be hidden secret that you don't know if you are inside of the organization. Everything that happened, happened for a reason and you should be in the know, why this happened” [Product/IC, Niue]. This is critical not just for the sake of transparency but because the how and why of decision making is what creates a contextual understanding around a topic. This pattern contrasts to how the decision making of real-time oriented organizations is shared, where the emphasis is on the final outcome. While additional context may be available when requested, it often requires an individual to seek it out and engage another person directly. This is explained by a Keeling employee who says, “I think there are a lot of conversations that are higher level out of sight, out of mind kind of conversations, and I think if I wanted to know more about it, I would have to ask somebody directly. On occasion there would be some decisions that I don't understand why” [Product/IC, Keeling].

The final feature of the rich public decision trail practice is the concept that content is additive only. This feature is primarily a result of the technology being used. The asynchronous oriented organizations generally leverage version control tools which saves new iteration without eliminating prior versions. This fits with the desire to maintain historical records; therefore, norms developed such that any revisions are only permitted to be additive and all prior versions are maintained. Note that while the real-time oriented organizations also leverage version control

tools their normative utilization of them does not include the systematic recording of the contextual knowledge surrounding the focal work product.

The practice of rich public decision trails provides much of the depth of knowledge that is typically lost when communication is technology mediated. A primary challenge discussed in the virtual teams literature is the lack of, or limited, shared context (Hinds & Mortenson, 2005; Olson & Olson, 2000). A rich public decision trail will not necessarily increase the familiarity individuals have with each other, which is typically based on insight into personal preferences and behavioral tendencies, and generally as a result of face-to-face interactions. The ability to understand the how and why behind a decision including all the debates and questions that were a part of the process will provide insight into the mental model of individuals as performed the prior work. This concept of leveraging mental models versus just decisions provides individuals with a baseline cognitive strategy (Hargadon & Sutton, 1997; Kiss & Barr, 2015), which is specifically related to that area of the organization. The practice of rich public decision trails allows the asynchronously oriented organizations to develop a shared context independent of engaging another person. In contrast, the real-time oriented organizations use person-to-person interactions to transfer rich information requiring a significant amount of back and forth communication.

5.2.3 *"Action First Iteration"*

The third practice of the adaptive on-demand collaboration element is action first iteration. This practice includes, the features of 1) making decisions without waiting for permission knowing that they will be reviewed in time, 2) individuals developing a cross organizational awareness and acting in alignment with that, as well as 3) encouragement for

employees to explore broadly and contribute. This practice utilizes the organizational infrastructure developed by the first two practices of adaptive on-demand collaboration which established the breadth and depth of an organizational knowledge source. The contrasting activity done by the real-time oriented organizations is waiting to pitch an idea, or make a decision, until discussing with a team leader.

Table 8: Asynchronous Action First Iteration

	Tromelin	**Raoul**	**Niue**
Acting expecting review but without waiting for permission	Whoever gets asked [to make a decision] or whoever realizes that this decision needs to be made, kind of makes the decision, writes up a document about why they think this is the right decision and runs it by the other leads. And if no one screamed, “That's a bad idea,” it gets done… if I know that this decision will be relatively uncontested… I'll just go ahead and make the decision. [Customer/lead]	We have a very heavy mindset of iteration, so even if something is wrong, do it and then we'll learn from it, and then we'll fix it later. We'll make another iteration and change it. For me, I may ask questions of the designers, but in the end, I'm going to make a decision, and I'm going to move forward because we have to get something rolling, and it can't just wait, especially for all the different time zones. I can't just wait for somebody to answer. I just need to make a decision and move on. [Product/IC]	I just submitted one [project pitch] today about live chat, there's been seven or eight of us that have been discussing this publicly for a while. That we need about five or six people to do it… I had four filled for sure. And then the other two were kind of like question marks kind of to be determined. And that would happen in the last week of the month in kind of be like a public discussion. [Business/lead]
Cross organization awareness and alignment	I keep pretty close tabs on everything that is related to projects that we directly work on and anything that might in the near future affect the things that we have to manage it as well. But most people in the division don't, most people in the division rely on me to get that information as like a, hey, this thing is happening in the company, we should be aware of it. And so I keep pretty close track of it. It's hard to do, but it's also really important. [Customer/lead]	As long as I'm providing that clear vision to my boss, and constantly feeding him that clear roadmap, then he doesn't have he doesn't care. [Product/lead]	Everybody has a ton of flexibility in terms of like pretty much everything as long as they're achieving the ultimate goal, which like for a developer might be like, you know, bug reporting one week and as long as they knock out all their bugs, then however you want to do that, you know, is your prerogative. [Business/lead]
Exploration and contribution encouraged	You're also strongly encouraged to do other stuff, which has nothing to do with the regular work. And I think that's really good because it allows people to kind of explore what they're interested in and express themselves that way. People do stuff, which I think that keeps them happy. [Product/IC]	The idea that they contribute to our handbook then they contribute in issues is all positive to us. It's not just our product that's open source, it's our company that's open source. [Business/exec]	The newest person on the team is welcome, is very much encouraged to like, speak up and speak loudly about their opinions and it's okay to be shot down… we really try to encourage people to like, you know, speak up, feel comfortable, it's okay if we say no. So even like the biggest of decisions around the company, the CEO will generally share those with everybody, and say, hey, we're thinking about doing this. It's going to cost us XYZ, what do you guys think? And everybody can chime in. [Business/lead]

Table 9: Real-Time Contrast to Adaptive Individual Action

	Pitcairn	**Macquarie**	**Keeling**
Waiting for a discussion	Most of the internal communication happens over Slack for written stuff and just quick messages and thoughts. If we need to jump on a call, we use Zoom pretty heavily, so I spend most of my day on Zoom calls actually at this point. [Service/lead]	A lot of [the prioritizing] just comes out in the weekly meeting where we all talk about it. One of the founders who's a big engineering lead in the company is attached to the operations team and he makes most of our dev meetings. [He]'s great and been around since the start and he knows everything about everything going on in the company. [Product/IC]	Now it's mostly video calls and pitches that way. Rather than elaborate pitches, it's talking to people, taking everything back to basics and making sure that everyone has been told what's going on. That works best." [Business/exec]
Confirm with team leader	There's a high degree of autonomy given to those individual teams and those leaders; that's one of the values here. That's why having a super linear structure is very helpful because there's no ambiguity in a linear structure... for us, what we're able to do is when we have a more rigid like tear down structure, the autonomy is given to each of those leaders within those areas. [Business/exec]	I work most closely with Becca because she's my coach, my manager. We meet regularly and I can bounce ideas off of her. We can just get alignment on projects. She can help me prioritize work. So just because of the nature of that coach player relationship, I work with her the closest. [Business/IC]	For most major product decisions we have our leadership team, which is three people sign off. Just to make sure that we've got kind of the business angle, the product angle and the CEO's perspective okayed with the major stuff. The small stuff, can get signed off in Slack. Design changes, small product decisions. Those aren't, aren't quite as as important. And then for the big, for the big decisions, they're usually made on a video call with either the media team that's working on it or the the leadership team. But it varies from project to project.... If it's changed in the color of a button that can be done in Slack. [Business/exec]

The first feature asynchronous oriented organizations use to leverage the practice of action first iteration is acting without waiting for permission. This is done while still knowing that the work will be reviewed in time; for instance, an employee at Raoul shared that, “I made a decision the other day to change a rule and I [submitted the work] and my boss is now going to review it. I didn't ask anybody else's opinion because I think I do have that ability… that echoes back to the everybody can contribute… I think in our [information source] somewhere it says it's better to ask for forgiveness than permission” [Business/lead, Raoul]. This lack of need for permission is prevalent as another Raoul employee stated, “everybody can contribute, you say, ‘I wanna work on this’ and five people say it’s a good idea, and then you just run with it and you make it, you don’t ask for permission, there's no strict process” [Product/lead, Raoul]. The contrast for real-time oriented organizations is to rely on the team lead for permission to go ahead with work or set team priorities. A sales manager at Pitcairn shared an example about how he keeps his team aligned on the work they are being assigned.

> I often share things that I need input on or that I'd want them to be thinking about and I didn't know when they were reading it... So we actually put a rule in place, like an emoji [reaction] if you get something and it's not an immediate to do, but it's on your list you need to put some type of reaction there. Because if not I post something and then there's no [reaction and] like two days later I'm like, “Hey, just a reminder.” I said to them all, “this is frustrating for me.” I'm frustrated, I have to keep reminding you. But what I learned was they were like, ‘Oh no, I got the message, it's on my to-do list’ but I didn't know… [the emoji reaction] works great… [it is] explicit like if they don't do it [I can say] ‘you got it and you just didn't do it.’” [Business/lead, Pitcairn]

Overall, this first feature highlights the unique approach of asynchronous oriented organizations where each individual employees has a bias for action before getting managerial approval, embrace the concept of iteration, and that individuals are accountable. The real-time oriented organizations may encourage action, but it is driven through the vision of the hierarchy with the discretion of individual employees being limited to the “how” aspects of the work.

The second feature of the action first iteration practice is awareness across the organization and the subsequent alignment of activities. This is an active process engaged in by individuals, as one employee at Tromelin explains her daily process.

> I read over [the daily digest highlighting five conversations] every morning and then I can click on it and see like, oh, is this a discussion that I'm interested in or not? If it's a discussion that I'm interested in, there's a follow button on the post and then I get notified of any new comments. And let's say I'd probably click follow on like maybe one or two [information source] threads that I'm not directly involved in on a weekly basis, just because I'm interested in it or think it may have an impact on our team." [Business/lead, Tromelin]

Similarly, an employee at Niue stated that, "anybody with some level of proactivity can go in and lurk around in different channels, even in the channel of all of the executives" [Business/IC, Niue]. This type of activity is expected and impacts the outlook of managers, as one lead at Tromelin shares, "we kind of expect core work to require about 30 to 35 hours a week because you also need to keep up with [information source] posts, know what is happening, at least in your own [area]" [Customer/lead, Tromelin]. However, this awareness is intended to be interactive and meaningful for each individual, an example of this is given by an engineer, "we were supposed to read all these recaps for different divisions. I read that, but I read that with [the prospective of] why should I care about it? What does it have to do with my division" [Product/IC, Tromelin].

Encouraging individuals to explore what is happening within the organization and contribute is the third feature of the action first iteration practice. This feature encompasses both exploratory activities as described by an employee a Niue, "especially when I started, I definitely did a lot of just exploration, you know, reading and looking through threads that maybe have nothing to do with what I'm actually doing. So yeah, that was incredibly helpful. I think that helped me learn a lot about the company [relatively quickly]" [Business/IC, Niue]. Additionally,

this feature captures the sense of encouragement for employees to contribute both in their specific domain but also across the organization. An executive at Raoul explains her general process, “if I'm thinking about doing something differently, I would open up [a thread in the information source tool]. I would talk about what I am planning to do and then the whole company can see it and comment on it and complain about it or contribute to it. Then I kind of run off and make my decision” [Business/exec, Raoul]. A new account manager shares a specific example:

> The best part about [Raoul] is that there's always this encouragement that you can go out and make the change yourself. You can always contribute… just go do it. One example I have is for the customer’s [channel] on Slack, you have channels and they’re alphabetically named, we start creating those shared customer channels. When you just call a customer channel by their organization name, they're all over the place. And you don't know which customers have channels that have already been created. Slack doesn't really have a great way to organize a group or create those channels, but you can prefix… So I just created the [work process and] rallied a few people together, we made a decision and then implement it… without even asking. [Business/IC, Raoul]

However, this attitude can result in work being done that perhaps is not a top priority, as an engineering manager explains, “I have definitely seen [people] that they stumbled on a problem and they really want to fix it and they will invest days in fixing this thing… and it really doesn't matter… I guess I see it is inefficient” [Product/lead, Raoul]. The contrast to this, used by the real-time oriented organizations is the use of frequent meetings and person-to-person communication to verify prioritization and workflow throughout a process.

The practice of action first iteration captures a unique sequence of behavior that rests between hierarchical decision making and decision making via simple rules (Davis, Eisenhardt, & Bingham, 2009). This combination of the two is an iterative dynamic that reduces the potential for delay due to time-zone distribution yet introduces the potential for limited progress on work that is contrary to organizational goals. The practice of action first iteration used by

asynchronous oriented organization is contrasted with the continued use of hierarchical authority and reliance on ongoing communication utilized by the real-time oriented organizations.

5.3 DISCUSSION

This dissertation finds that adaptive on-demand collaboration is an element capable of supporting distributed interdependent work. This along with the identification of the three distinct enabling practices of an open single source of truth, rich public decision trails, and action first iteration answers the question of how distributed organizations are able to collaborate on interdependent work asynchronously. As such the primary contribution of this dissertation is to the organizational design literature. The secondary contribution is to the literature on technology-mediated communication; and a final contribution is aimed at the discussion on the future of work by way of increasing the understanding and visibility of the distributed work phenomenon and specifically location-independent organizations.

The first contribution of this dissertation is to the organizational design literature. The foremost aspect of this is the facilitation of asynchronous distributed collaboration via the design element of adaptive on-demand collaboration. This explicit recognition of the minimal time overlap and focus on temporal distribution (as opposed to physical separation) lead to the identification of the novel set of practices described in this dissertation. The decoupling of individuals, who are only available limited portions of the day, from their in-progress work and contextual knowledge allows for a knowledge system that is continuously accessible. While physical and temporal distribution are correlated, they are two different dimensions (as discussed in chapter 2) and being explicit about it adds important nuance to the process of work system design.

When embarking on the design of a work system, physical distribution is readily considered. However, research shows that increasing the distance of physical proximity has a significant impact on the frequency of interactions and likely of forming a connection (Bernstein & Turban, 2018; Festinger, Schachter, & Back, 1950; Marmaros & Sacerdote, 2006) and that even spreading individuals across multiple floors of the same building will dramatically change (reduce) the connections they make (Reagans, 2011). Therefore, organizations ought to be considering the physical distribution of employees even when they are separated within a large building, or contained within a organizational campus. This physical distribution that occurs within a single city or even a state is important to consider but does not immediately suggest a temporal variance. Therefore, as a separate (yet related) concern to physical distance organizations ought to consider if there will be a temporal distance between employees. This could be due to global distribution or a relaxation of constraints on what time of the day work occurs. Depending on the organizations and their goals this may lead to the need for an asynchronous work system.

However, design choices come with tradeoffs; related to the asynchronous collaboration this is an area primed for future research. Specifically, for the element of action first iteration a major consideration is when to incur the investment of employee effort into information search. One potential future direction is to better understand to what degree organizations will accept the exchange of time up front for employees to create and maintain an open single source of truth and rich public decision trail for the expectation that the payoff of less time needed for search (including time-zone delays). While it is more complex than this simple shift of time, considering the high-level tradeoff can still be meaningful to assist an organization align their energies. Each option has benefits. The use of action first iteration and investing the effort early

to develop an asynchronous work system allows for the accommodation of life constraints and increases workplace inclusion. By not constraining when work is done individuals are able to craft their days as needed. However, the time and effort required is not trivial and it may appear as a production of documents as opposed to "actual work" being done. The time it takes to search and the interruption of others is often minimized or included as work while documentation is often discounted as an extra task. Moreover, if strong norms are not established such that the behavior of updating is taken on by every member of the organization there is a risk of some individuals investing time both up front and later on in the search process. To realize the true value of action first iteration it requires full participation organization wide.

Other tradeoffs worth consideration in future research relate to the employee directly. Asynchronous collaboration generally supports a more balanced perspective between work activities and other life responsibilities. This may include a variety of challenges such as being a caregiver or managing a chronic illness. An avenue for future work could explore the benefits and concerns of a more flexible employment relationship. Furthermore, by moving to an asynchronous work system, employees are likely to be able to engage in "deep work" due to the removal of the frequent interruptions individuals deal with when coworkers are seeking information. While some conversations may still need to occur, those can be scheduled and the pressure to respond quickly so as to not be a blocker for a coworker disappears. With the recognition that organizations have many choices in the design of their work systems, and (many) are equifinal, meaning multiple options will satisfy the organizational goals, examining the tradeoffs with respect to variations in employee well-being is an area of interest for future research.

An additional contribution to the organizational design literature based on the findings of this dissertation is the recognition of how important synchronous interactions are for hierarchical based collaboration. The scrutiny of temporal distribution as a unique dimension highlights the implicit assumptions present in prior work as well as the interactions between design elements, for example, the use of meetings and temporal synchronicity. Overall, this dissertation speaks to the literature on organizational design by enhancing the current understanding of how asynchronous collaboration is done, the impact this has, and suggests future research directions.

The secondary contribution of this dissertation is to the literature on technology-mediated communication. The element of adaptive on-demand collaboration includes the development of a knowledge source infrastructure (open single source of truth and rich public decision trails) as well as a way of acting (action first iteration) which leverages that infrastructure. An easy simplification that could be misleading is that this design element is tool specific. While the ability to collaborate effectively as a distributed organization does rely on a suite of digital tools, and in particular on the ever-advancing tools which enable technology-mediated communication, the findings of this study are agnostic to any specific tool. In fact, even the medium of communication (i.e., text, audio, video) is not critical. What is important are the principles, or organizational rules and norms, driving how the tools are used.

Each practice of adaptive on-demand collaboration can be developed without the need for any specific tool. The constraint of a tool, whether it be Slack, Zoom, Skype, Hangouts, Confluence, Jira, Trello, Github, GSuite, Dropbox, or some internally developed program, it is not preventative to the application of the adaptive on-demand collaboration element. It is not the what used but the how and why that matter. This is important because often the development of new technologies can drive research to see what is different, but by focusing on the principles,

namely an organizational wide and up-to-date open access system and the availability of a contextual history, organizations can develop behavioral norms supported by a technology setup that can be independently modernized as needed. Moreover, this shifts the discussion of culpability (referenced in distributed work literature) from the technology itself to the utilization of it.

The exploration of the distributed work phenomenon and specifically location-independent organization is the third contribution of this dissertation. This is a phenomenon that is underexplored and with particularly limited prior field data, the lack of rich data allows for broad generalizations to persist. In addition, much of the prior work done in this area was conducted when email, and to some extent internal social media platforms, dominated the workplace. This early era of distributed work focused on the ability to conduct work at a distance by directly substituting technology-mediated practices for what was done in-person. However, the current state of this phenomenon is full of organizations that were born distributed and have developed practices, structures, and behaviors specific to location-independent work. Through an examination of these novel designs, insight into the future of work was developed. This dissertation in its investigation into asynchronous collaboration leaves open many other areas of research related to the development of work and organizations; for example, future research related to this phenomenon could focus on labor markets, workplace inclusion, network formation, product development, or field level ecosystems. By elaborating on the phenomenon of distributed work this dissertation hopes to provide a foundation for future studies to build upon. Overall, the findings of this dissertation contributes to current theory in multiple ways; ultimately providing an empirical foundation for the novel concept of adaptive on-demand collaboration

and the subsequent implications, as one response to the question: how do distributed organizations collaborate on interdependent work?

Chapter 6. EXTENSION OPPORTUNITIES

6.1 REMOTE-FIRST CULTURE: VARIANCE WITHIN AN ECOSYSTEM

The first extension of this dissertation is to explore the landscape of remote possibilities within organizations. The concept is to build out a list of factors and code a large sample of organizations. The factors will start with basic organizational demographics (age, size, location if applicable, funding status, etc.), as well as the intuitive dimensions of distributed work laid out in chapter 2, namely the two types of physical distribution, temporal distribution, and ideological perspective, all coded at the organizational level. Additional factors about the way collaborative work is performed, based on the findings of this dissertation will also be added. These factors will be individually coded for each organization based on publicly available information. If sufficient information is not available, then the organization will be contacted to answer a set of structured questions for the missing details. The specific sampling is somewhat problematic as there is no complete list of remote organizations. However, over the past year AngelList has added a "remote culture" key word to their database and while this will over sample on younger, smaller, and technology focused organizations, within the population of AngelList select selection into "remote" will be clear. Therefore, this the intent is to partner with AngelList to randomly select a stratified (based on self-indicated level of remote culture) sample of organizations (around 100-150) from their database.

Once the data is collected then a Qualitative Comparative Analysis (fsQCA) will be run to identify configurations of the coded factors that indicate the level of remote culture. This extension primary purpose is to establish an empirically sound understanding of what constitutes being a remote organization. Past this based on the patterns inducted there is an opportunity to

develop a categorization of organizational designs that have emerged. This has the potential to guide other organizations looking to transition into a distributed structure as to what combinations of elements are prevalent and hang together versus what is not seen. While this extension may not provide extensive theoretical contributions, it is important for the phenomenon and would be a meaningful response to calls from outlets like *Academy of Management Discovery* or the Research Note avenue at *Organization Science*.

6.2 The Impact of a Global Pandemic on Distributed Work

Remote-first organizations, by definition, were operating without regard to the physical location of employees prior to the Covid-19 pandemic. As such, they offer an unique context to understand how the pandemic itself is effecting organizations distinct from any transition of being forced to work from home. This potential dissertation study asks, how have organizations adapted to a global pandemic? Due to the exceptionality of this pandemic phenomenon, prior research is unavailable to predict the impact on organizational operations. While some studies have explored how emergent groups address a crisis (Majchrzak, Jarvenpaa, & Hollingshead, 2007), there is a lack of research on the indirect effect of a global crisis on organizational activities not directed towards the crisis itself.

To explore this question a sample of approximately 12 SaaS organizations will be established; this is a somewhat unique industry since the companies are thriving as their products and services are in demand during stay-at-home orders. The first set of data being used for this study was previous collected via interviews in 2018 and early 2019, prior to any discussion of a pandemic. This includes data from both location-independent (up to eight organizations) as well as multi-office (two) organizations. The interviews will be combined with archival interviews

and blog posts written by these organizations. In addition, four (estimated) hybrid organizations will be added to the sample to establish a baseline understanding of how a range of distributed organizations operated prior to the Covid-19 pandemic. While primary interviews were not done previously with the hybrid organizations prior to the start of the pandemic they were active in promoting their company culture and a significant amount of pre-pandemic description can be collected from their media. The second phase of this study is to collect current data from all organizations via primary interviews. The intention is to do this both in early summer 2020 as well as winter/early spring 2021. Furthermore, archival interviews and blog posts written by organizational members during this period will be collected. The aim of this research design is to be able to see how each organization itself has adjusted to the pandemic, then to compare across organizations to investigate the role of prior remote experience.

As of mid-May 2020, three interviews have been conducted with organizations focused on their adjustment to the global pandemic. A very interesting potential insight is the shift of organizations from focusing on employees to accounting for the employee and their environment. An example of how organizations are doing this is by providing activities for children; for instance, one organizations has created “juice-box breaks” which mirror the concept of the a social coffee break for employees, which the children of employees are paired with each other for Zoom chats. The same organization also recently provided a free coding bootcamp experience for the children of employees who needed to attend a Zoom event. This paired activity was intended to reduce the distractions employees might face by sharing their “office” with their families. Similarly, another organization interviewed has built out a full after-school style program for the children of their employees in an effort to keep everyone in the family engaged in activities. This shift to actively accounting for family units instead of just the focal

employees is an adjustment based on pandemic restrictions and not merely the implementation of remote work. In contrast to this, the organizations that were in offices before are focused on direct happiness of employees and making sure they have the tools and support they need to complete their job.

This potential extension has the opportunity to contribute to the literature on disasters by first exploring the magnitude of indirect effects on organizations, even when they are not active in responding to the crisis. Additionally, this study allows for the separation of two different stages of adjustment, the initial shift to work from home as well as the cost of the stay-at-home mandate on the personal life of employees. This study also may contribute to the literature on distributed work by demonstrating that physical distribution must be accompanied by policies and practices that enable employees to engage with their work.

6.3 Developing Remote-First Social Candor

The third potential extension of this dissertation is focused on the idea of developing a culture of social candor, meaning that a level of openness is present throughout the organization and individuals have a sense of social intimacy (work/home blurring) with a subset of coworkers. This type of environment came across in the organizations that were interviewed for this dissertation; however, as mature remote-first organizations there was little variance between them, they all had developed a culture with aspects of social candor. As an extension, I am interested in understanding how this culture was developed. To do so, I intend to go deep within two of the organizations (Tromelin and Raoul), to look at how their cultures and internal social networks developed over time. These two organizations are particularly interesting since they use almost exclusively text-based communication, which is time-encoded and intact since their

organization's early days; this allows for an historic analysis over time without the retrospective bias of an informant. The combination of this data with the interviews already done, and archival interviews from company leaders, provides an empirical basis for defining each organizations network structure and social cohesion over time, the foundations for demonstrating the emergence of socially candid culture.

In addition to being able to track the development of organizational culture, both selected organizations have available data on key metrics of interest. First, they both have robust digital records that reveal whom works with who on specific projects, they also both utilize Slack as a more social/informal platform which allows an easy separation between formal work ties and informal conversations. Additionally, this use of Slack reveals a categorization based on a self-selection into interest groups independent of assigned work group. Both of these organizations also utilize all-company in-person retreats regularly (one annual, one every nine months), with event dates and attendees known. Furthermore, as relatively large organizations, having over 1,000 employees each, they have both grown dramatically over time, with all turnover captured in the communication data. Interestingly, they have experienced drastically different rates of scaling, a potentially insightful variable. Together these factors of separating formal/informal conversations, use of regular but limited in-person events, organizational size, and growth rate allow for the investigation of each factor's influence on the development of culture.

This potential extension may contribute to the literatures on distributed work by demonstrating the importance of various organizational factors for the development of culture. Specifically, exploring the use of regular but limited in-person events has the potential to contribute to the work on physical proximity and examine the role of frequency on developing new ties and maintaining cohesion. Additionally, by examining two organizations in-depth over

time, there may be opportunities to highlight aspects that did not work well and were abandoned. This extension, which utilizes quantifiable communication data, is expected to be inductive (or abductive), meaning that as insights are revealed, data will be iterated through with eventually settling on theoretically interesting findings.

While there are dozens of potential extensions that may be possible in the space of distributed organizations, distributed work, and remote-first culture, these three seem empirically tractable, theoretically rich, and interesting to me. The insights this dissertation uncovered related to asynchronous collaboration utilize only a fraction of the data collected, leaving significant opportunity for further analyzing of the current data. As a final note about possible extensions, the Covid-19 crisis has been a global shock for all, but specifically impactful to the distributed work phenomenon; therefore, the use of general understanding and/or the specific data collected for this dissertation may yet find other ways to be leveraged depending on how the pandemic evolves and concludes.

Chapter 7. CONCLUSION

This dissertation explores how distributed organizations collaborate asynchronously on interdependent work. To do this the extreme case of location-independent organizations is leveraged, as is the emergent variation of real-time versus asynchronous orientation. Chapter 2 provides a short overview of the distributed work phenomenon to provide clarity around the broader context of this study. Noting that the current ongoing global pandemic and how the stay-at-home and WFH mandates resulting from Covid-19 are impacting organizations are distinct from the data that was collected for this research.

Chapter 3 briefly reviews the literature on organizational design and distributed work, specifically looking at how organizations use design elements to divide work then reintegrate it as well as the research streams of technology-mediated communication, online communities, and virtual teams. Overall, this review suggests that while distributed work is a viable option it comes with numerous disadvantages, calling into question why organizations would make this choice. At the same time the research on organizational design suggests that the development of novel elements as well as novel combination of elements leads to an equifinality in how organizations accomplish their goals. As such, the prevalence of location-independent organizations suggests that there is something occurring that current literature is not capturing.

In chapter 4, the methodology of the research is explained, and chapter 5 elaborated on the findings of this study. This first insight presented in chapter 5 is that the emergence of two patterns within the sample of location-independent organizations, namely real-time and asynchronously oriented. This chapter then details the central contribution of elaborating the element of *adaptive on-demand collaboration* and the three enabling practices of *open single*

source of truth, rich public decision trails, and action first iteration as well as how they interrelate.

Next in chapter 5 continues in a discussion of the findings specifically how distributed organizations collaborate asynchronous on interdependent work contributes to current theory in multiple way. First to the organizational design literature, this dissertation identifies and elaborates the adaptive on-demand collaboration element with its three enabling practices of an open single source of truth, rich public decision trails, and action first iteration. In doing so physical and temporal distance are explicitly separated, an important step in evaluating the tradeoffs for particular organizational designs. The next contribution is the focus on behavioral principles enabled by yet abstracted from specific tools or medium of communication. Finally, through the exploration of location-independent organizations this dissertation increased the understanding of the distributed work phenomenon opening up potential for related future research focused on other theoretical areas

Location-independent organizations provide a rich context and chapter 6 describes three possible extensions of this dissertation. The first uses the intuitive dimensions discussed in chapter 2 along with the findings discussed in chapter 5 and proposes a broader exploration of distributed organizations. Through the analysis of over 100 organizations, this first extension aims to highlight larger scale patterns of how distributed organizations are designed, which may lead to further propositions about specifically elemental configurations and their anticipated outcomes. The second extension examines the impact of the current global pandemic to understand how it has impacted organizations. By using organizations that vary in their degree of distribution prior to the pandemic, this study aims to capture the effect of the pandemic itself, and how organizations are addressing it. The third extension that is discussed in chapter 6 is an

investigation into the development of a socially candid culture. In order to understand how this evolved, this third extension will examine the longitudinal communication data of two organizations such that a time history of their work network, social network, and social cohesion can be traced. While other extensions are possible, these three stand out as interesting questions and empirically tractable.

Distributed organizations offer a way for individuals to find more flexibility in work and for organizations to access talent globally, yet they pose the challenge of adding physical and temporal distance between individuals. In creating the design of an organization, a series of tradeoffs are considered; by better understanding how asynchronous collaboration can be achieved, organizations are given the option to incorporate distributed interdependent work. This is becoming increasingly important as much of the world remains under a stay-at-home mandate and organizations are realizing that offices may not be as critical as they once thought. However, without a clear understanding of the practices that enable collaboration, organizations transitioning into distributed work will struggle to realize the benefits or potentially even fail to operate effectively.

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APPENDIX A: INTERVIEW GUIDE

INTERVIEW PROTOCOL - General
(Expected Duration: 60 minutes)

Company: _____ Date: _____

Respondent: _____ Title: _____

Researchers Present: _____

Intro: Thank you for taking the time to speak with me.
I have a set of questions prepared covering a range of topics, I hope that this can be an open conversation and my questions will act merely as a guide. I am interested in hearing about your experiences.
Thank you for your willingness to participate in this interview, your responses will be kept confidential. Do you mind if I tape our conversation for my own use?

Tell me about the you and joining [company]

- Was remote an important aspect for you?
- What is your background?
- When did you join?
- What was the size of the company when you started
- Any major shifts in your work since you started?

Tell me about your position

- Where is your role formally? (org chart)
  - How much collaboration is required between units?
  - How much collaboration is required your units?
  - What are some specific examples?
- Who do you collaborate with?
- Who are you dependent on? Who is dependent on you? For what?

How do you coordinate your work

- Tell me about the tools used to facilitate your work?
  - Company standards? Freedom to try any new tool?
  - Project management? (i.e. basecamp, jira, github)
  - Communication? (i.e. slack, skype)
  - Virtual office visualization? (i.e. sonoco)
- Are there differences in how you collaborate within your team versus across teams?
- Impromptu discussion (via phone, chat, skype, slack, or async thread tool)
- What is your weekly meeting schedule like?
- Is there anything that you tried and did not work out?

What are some of the ongoing coordination issues with which you are struggling?

- Tell me about a recent issue that arose that could have been handled with better collaboration.

Is there anything that surprised you?

Tell me about how decisions are made?

- Is the decision making process visible to you?

If there is information you do not know, how would you search for it?

- How do you know who knows what?

How much discretion do you have in your job?

- What are the constraints?

Tell me about how feedback is given

How do you measure productivity?

- Are there formal performance reviews
- Does work time play a role in evaluation?
- Do you have specific "office hours"?
- Do you use monitoring software?

Tell me about what type of conflict exists, and how it is resolved?

- Personality? Task?
- Consensus, manager steps in?

Tell me about how you establish and build trust

Tell me about your hiring process

- How do you attract applications? Where do you advertise?
- Do you have a trial? Paid? Full time?

Tell me about how people are onboarded

- Mentoring?

Tell me about the social aspect of [company]

- In person company meetups?
  - What types of things do you discuss/ do?
  - How often do these occur?
  - Do teams set up their own in person events?
- Are there things you do on a day to day (or weekly) basis to build social ties between people?
  - Coffee chats, social hours, social groups, social part of meetings

Tell me about the culture at [company]

- What does remote mean at your company?
- How is this different than other definitions of remote work that you see out there?
- Is there anything you do to establish your remote culture?
- Is there anything that you tried and did not work out?
- What have you learned about remote culture?

Is there anything about coordination I should have asked you?

- Any final thoughts?

I really appreciate your time - Thank you! If I have some follow up questions may we contact you via email?