AN EXPLORATION OF MENTORSHIP
AS A RESOURCE FOR KNOWLEDGE SHARING
IN THE BUILT ENVIRONMENT

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Many people have directly or indirectly contributed to the successful completion of this research, including the *participants* who gave me access to their innermost thoughts about the world we've inhabited for the last 20 to 30 years.

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Therefore, I dedicate this thesis to him; as Seamus Heaney wrote, "we may let the scaffolds fall, confident that we have built our wall."

DECLARATION

This is to certify that the work presented in this thesis is original, except as acknowledged in the text, and that the material has not been submitted previously for a degree at any other university.

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ABSTRACT

As a major source of employment – 7.523 million or 5.03% of the total employment of the United States – the built environment remains mired in challenges, foremost among them the loss of knowledge as experienced professionals age out of the industry. Mentorship is a potential response to these challenges. Yet there has been relatively little scholarship in this area, especially with respect to the built environment. When literature focusing on mentorship and knowledge management was reviewed, mentees were the focus of 70% of the studies. Even mentor-focused studies often focused on mentees; for example, studies that outline mentor characteristics that benefit mentees. Because knowledge sharing is critical to business continuity and competitiveness, and demographic trends point to plummeting levels of trust in the workplace, mentorship and knowledge sharing are becoming even more critical. Tacit knowledge, which predominates in the built environment, makes mentor-mentee relationships a nexus of interest for the researcher. As such, the constructionist / social constructionist view aligned with the researcher's beliefs and was most suitable to addressing the research question, "Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?" and the aim of the study: "...to explore how to improve mentorship programs as a resource for knowledge sharing in the built environment." By using a context-specific, detailed, and comprehensive process, this research garnered individual experiences from a series of one-on-one conversations. Analysis of this data led to a deep understanding of the mentorship process, pursued through iterative, inductive/abductive theory development. Open-ended, semi-structured interviews conducted in familiar settings facilitated a deep understanding of mentors' perspectives with respect to the research question and aims. What emerged was a holistic view of the mentoring experience and its relationship to knowledge sharing, providing a comprehensive and complex *answer* to the research question: *"Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced."* Strict adherence to ethical principles was in place throughout the study. Validation of the data occurred through a series of strategies focused on researcher, participant, and reviewer, and triangulation via multiple techniques of analyzing the semi-structured interview data was pursued. Additionally, a report was shared with participants to confirm the analysis of the aggregated data. Following these efforts, the study focused on several findings that confirmed mentorship as a means of knowledge sharing as expressed through an explicit and implicit linkage between the two best achieved through informal face-to-face, real time feedback

loops during *in between moments*. As these spontaneous, impromptu conversations are not proactively planned, they are not captured by knowledge management systems. When outside forces, i.e., exogenous shocks, occur, these *in between moments* lessen or completely disappear as mentors revert to *contractions of personal investments*. Afterwards, critical success factors to counteract these findings were developed, including instilling champions that support mentoring, educating employees and promoting organizational learning as an overall investment. By cultivating communications and encouraging relationships while pursuing agility in response to exogenous shocks, the study also provided recommendations for mentoring programs that will enhance knowledge sharing. These include generating board-level support and creating strategic plans that change business models and build supportive cultures to motivate correct behaviors in mentors and mentees. Thus, these findings contribute new knowledge valuable to both researchers and professionals in the built environment.

CHAPTER 1 — INTRODUCTION

1.1. Background of the Research

This research is about mentorship, which is generally considered one of the very few effective responses to the people and knowledge-related challenges the built environment currently faces, including loss of intellectual assets, irreplaceable human resources, and knowledge that is difficult, if not impossible, to regain once lost. Since two of these three issues arise due to the direct actions of well-established built environment professionals, i.e. those nearing the end of their careers who influence the flow of knowledge, it made sense to focus initially on the *mentor* as the protagonist in this study. Once the researcher found that there had been relatively little scholarship focused directly on mentorship, especially with respect to mentors as opposed to mentees, and even fewer focused on the built environment, the need for this study became even more clear.

For one to ascertain the relevance of any research, the context of the research must be fully documented; this research is no exception. The built environment, namely the man-made components of our environment that include buildings and infrastructure (Lemmens & Luebkeman, 2016; United States Environmental Protection Agency, 2018), is a major contributor to the economy of the United States. Construction's percentage of the economy rose to a high of 5.47 percent in 2005 and fell to a low of 3.64 percent in 2011 during the great recession. It rebounded to 4.51 percent in 2016 and remained relatively flat until the start of the COVID pandemic, (Bureau of Economic Analysis, 2018).

From the first quarter to the second quarter of 2020 the gross domestic product (GDP) from U.S. construction fell almost $50 billion (USD) due to COVID-19. However, by the end of the second quarter as many construction projects were declared "essential," it began to rebound, surpassing the pre-Covid number at the end of the first quarter of 2021, (Trade Economics, 2021) as shown in Figure 1.

Although only direct construction investment is reflected in GDP, there are many tangential costs associated with construction spending, including investments in new equipment, furniture, appliances, etc., which also support the economy. Likewise, the economy is stimulated when those employed in the built environment, such as architects, engineers, manufacturers, suppliers, and construction professionals circulate their income through increased spending; in 2017, the Associated Builders and Contractors (ABC) highlighted these, predicting a 2 to 3 percent increase in the GDP as a result, (Markstein, 2017).

Figure 1. Economic Activity July 2018-July 2021 Illustrating COVID Dip and Rebound
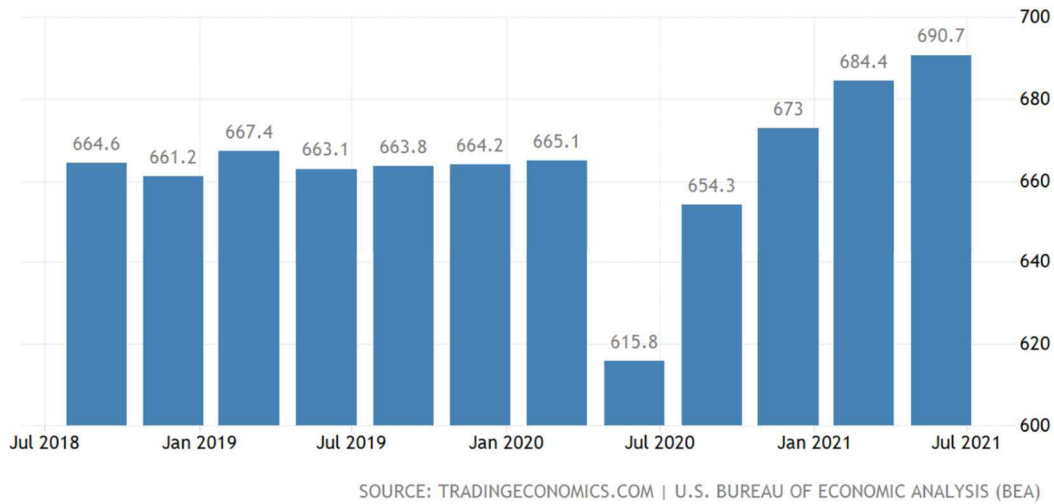
Thus, in addition to the typical focus on direct construction investment, built environment employment drives the economy as wages are plowed back in, creating virtuous cycles, known as the velocity of money, (Wang, Xu, & Liu, 2010; Federal Reserve Bank of St. Louis, 2022.)

As of March 2019, the United States Department of Labor's Bureau of Labor Statistics reported more than 2.56 million architects, engineers, and associated professionals, 5.96 million construction and extraction workers, and 278 thousand construction managers were actively employed in May, 2018 (Bureau of Labor Statistics, 2019). In January of 2022, 7.523 million or 5.03% of the total employment of the United States was employed in the built environment, (U.S. Bureau of Labor Statistics.)

In New York City, construction starts totaled more than $150 billion from 2013 to 2017, setting the stage for this research. At the start of this study, in 2017, spending on institutional projects exploded by 166 percent to $13.94 billion, up from just $5.23 billion in 2016 (New York Building Congress, 2018). The high levels of construction and associated professional services directly affected the participants' views and remained in place throughout the data collection process. As the analysis of the data began, and the industry floundered amongst ongoing confusion after the sudden crash that Covid produced in the spring of 2020, it became clear that the pandemic was so catastrophic to the industry and its professionals, that not addressing it in this study was impossible. There was simply no path forward that would isolate this study within the "pre-Covid" milieu.

Thus, another round of interviews, focusing on some participants' experiences and responses to the pandemic, was conducted in August 2021 (see Ch. 6). These interviews were concurrent with positive media reports. On July 30, 2021, the *Commercial Property Executive* published its own data and projections; they reported that the area's backlog or pipeline had reached $12.6 billion during the first six months of 2021, which outpaced all other U.S cities, (Lorincz, 2021). Nonetheless, when comparing 2021 to 2019, multifamily and commercial construction starts were down 18 percent, (Lorincz, 2021).

Table 1: 2021 New York City Commercial & Multifamily Construction Starts (in $M)
Source: Adapted from Commercial Property Executive 2021

	2018	2019	2020	2021	2019-2020	2020-2021
New York-Northern New Jersey-Long Island, NY-NJ-PA	16,552	15,262	11,656	12,582	-24%	8%

By then, the full effects of the pandemic were becoming clear, to the point that the New York Building Congress chose to downplay the city's huge loss in 2020 by highlighting a three-year average. They forecasted $168.5 billion in construction spending from 2020-2022, (New York Building Congress, 2021). The built environment equals big business, especially in New York City; many have a stake in its success, or at a minimum in the *perception* of success.

1.1.1. Performance Challenges

It is generally acknowledged that the built environment has been challenged for decades by rapidly changing technology, new business models, climate change, etc. Starting in the 1980s and 1990s, as computer technology swept through firms, project *fast-tracking*, the downsizing of firms, a wave of retirements, the rise of *flat* organizations, *brain drain*, sustainability requirements, and the rise of the global economy transformed the organizational culture of built environment enterprises (Egbu, 2000; Choi, Gad, Shane & Strong, 2015; Leonard, Swap, & Barton, 2014; Lemmens & Luebkeman, 2016). Coupled with the transient nature of this project-based industry, the ability to acquire, preserve, and integrate knowledge in systematic ways has long been a challenge (Egbu, 2000; Chen & Sherif, 2010; Ruan, Ochieng, Price & Egbu, 2012; Bashouri & Duncan, 2014, Saini, Arif, & Kulonda, 2018; Chen, Nunes, & Ragsdell, 2019).

Although both academics and professionals perceive managing knowledge as key to competitive advantage (Nonaka & Takeuchi, 1995; Holsapple & Singh, 2001; Egbu, 2004,

Saini, Arif, & Kulonda, 2018). Egbu (2004, p. 313) argued that knowledge was a key component of intellectual capital and innovation, especially "... against the new differentiators of success in competitive environments, namely accelerated innovation and dynamic core capabilities." While advances in knowledge-related research have been significant, academics are still exploring the relationship between knowledge and built environment performance (Walker, 2016, Saini, Arif, & Kulonda, 2018).

Likewise, professionals demonstrated concern regarding their firms' stances on knowledge management and emerging solutions. The Institute of Electrical and Electronics Engineers (IEEE) electronically published the results of their 2017 annual survey; a stratified sample of more than 423,000 members expressed concerns about the aging workforce, the continued movement of engineers from firm to firm, and the lack of knowledge management systems, yet many firms still have no systematic plan for updating employee skills. Respondents were not satisfied with their employers' knowledge management (KM) programs, rating them 5.6 out of 10, and indicated that less than half of their organizations had methods to share knowledge, "...whether by *mentoring*, training, or other tools for knowledge capture..." (Ordman, 2017).

The next year, a UK-based group, the Construction Knowledge Task Group (CKTG), conducted an industry-wide survey focusing on knowledge within the built environment. Their *2018 Call for Input* cited a previous study where three-quarters of respondents stated that they didn't have easy access to the knowledge required to be successful in their positions; ninety-three percent also responded that improving knowledge sharing strategies, and knowledge itself, was extremely or very important, (Constructing Excellence, 2019). The results of the 2018 survey found that 38.5% of the 299 practitioners who responded didn't have access to the knowledge needed to be successful in their jobs; they also indicated that they frequently use free, easily accessible, but less-trusted sources of knowledge, such as online resources, (Scottish Construction Now, 2019). Other significant findings concluded that practitioners were unaware of how much knowledge was available, they were overwhelmed by the enormous amounts of knowledge to sift through and were irritated by the fragmented nature of what they found. The knowledge they use most often is codified, i.e., it provided stable, practical, explicit guidance on individual subjects, (Designing Buildings: The Construction Wiki, 2020).

As a result of these studies, the Construction Knowledge Task Group produced a systemized *Standard* for knowledge in the built environment. The *Standard* was designed to help professionals find the knowledge they need, efficiently, and help them keep their

knowledge up-to-date. The *Smart Construction Knowledge: Delivery Plan*, which was organized in 2020, was also set up to provide a structured, easily adoptable way to share knowledge beyond the organization as well as within the organization, (Wilkinson, 2020).

Even though mentorship was seen as a response to these challenges, it has rarely been emphasized (Egbu, 2000; Egbu, 2004; Pathirage, 2007; Chen & Sherif, 2010; Bakar, Yusof, Tafail, Virgiyanti, 2016; Schröpfer, Tah, & Kurul, 2017). For example, mentorship is mentioned in passing in multiple chapters of *Knowledge Management in Construction* (2005), but it never rises to become an area of emphasis. Likewise, when mentorship is discussed in relation to the built environment or construction, knowledge management may be mentioned in passing or as a by-product of the research (Hoffmeister et al., 2011; McGettingan & O'Neill, 2009; Nkomo & Thwala, 2013; Nkomo, Thawala & Aigbayboa, 2018a; Nkomo, Thawala & Aigbayboa, 2018b; Aigbavboa, Oke & Mutshaeni, 2016). This is also true in conference settings. The 2019 Global Leadership Forum for Construction Engineering and Management Conference, 5-7 June, 2019, featured a session focusing on mentorship, "Leadership: Mentoring and Coaching," yet the panel discussion description mentions nothing directly about the intersection between mentoring and knowledge sharing. Its focus was on answering these questions: "How do we develop young staff and early career researchers in our sector? How can GLF play a role in this area? What do we need to do? What would companies and/or Universities need to do? How do we lead improvements? How can we learn from Global practice?" (Global Leadership Forum for Construction Engineering and Management, 2019). As a result, the focus was on mentoring as a means of supporting students in the built environment, with knowledge sharing as an implied byproduct of the mentoring effort.

This is also true in the professional literature. Several articles addressing the five generations now working specifically mention mentoring programs as a way to connect these perspectivally disparate groups but fail to elaborate on proposed programs (Meister & Willyerd, 2009; Moss, 2017). Likewise, Tom Friedman (2016, p. 490) saw mentorship as a solution to many of the challenges society faces, but failed to address *how…*

> *Finally, philosophically speaking, I have been struck by how many of the best solutions for helping people build resilience and propulsion in this age of accelerations are things you cannot download but have to upload the old-fashioned way – one human to another at a time. Looking back on all my interviews for this book, how many times, in how many different contexts, did I hear about the vital*

importance of having a caring adult or mentor in every young person's life? How many times did I hear about the value of having a coach?

Mentorship programs benefit both mentor and mentee. In project-based industries, mentors are indispensable; their massive stores of tacit knowledge allow them to analyze and resolve issues in real-time (Henriques & Curado, 2009, Gisbert-Trejo, et al., 2019). That withstanding, Allen and Eby's *Relationship Effectiveness for Mentors* was the first to delve into the mentor perspective (Allen & Eby, 2003). The skew toward mentees in research was predicted by Kram in 1988, discussed by Allen & Eby in 2003, and verified by Allen, Eby, O'Brien & Lentz (2008): of 207 academic studies only 64, or 30.9%, focused on the mentor. This one-sided and incomplete understanding of mentoring relationships (Raabe & Beehr, 2003, Janssen, van Vuuren, & de Jong, 2014) is surprising, given that mentors bolster overall employee commitment, productivity, and knowledge sharing, (Singh, Bains, & Vinnicombe, 2002; Gisbert-Trejo, et al., 2019).

Meanwhile, few built environment-based studies have focused on mentors (Hoffmeister, Cigularov, Sampson, Rosecrans, & Chen, 2011). Researchers explored what traits are associated with *good mentors*, but with *mentees* defining the criteria—not the researcher—and certainly not the mentors themselves. Given that the operable change businesses seek is assumed to reside in mentees, this less than comprehensive view of mentorship is not particularly surprising.

1.1.2. Justification of the Research

Only recently has mentorship in the built environment become an area of active research. To date, there are only a few studies on the topic and an extremely limited research community. Additionally, the literature to date is focused on mentees, mentees' thoughts about mentors, or a few mentorship dyads. None have focused on mentors in built environment professions. Also, none have focused on mentorship as a process for knowledge sharing in the built environment. Finally, none have focused on the New York City market, one of the largest and most influential design and construction centers in the U.S.

This research is therefore focused on mentors and mentorship as a process for knowledge sharing in the built environment. It will address prevailing gaps in the literature by engaging with mentors in New York City to determine whether they perceive mentorship as an effective process for knowledge sharing in the built environment. This is expressed in the aims and objectives below:

1.1.3. Aim and Objectives

1.1.3.1. Research Question

Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?

1.1.3.2. Aim

The aim of this study is to explore how to improve mentorship programs as a resource for knowledge sharing in the built environment.

1.1.3.3. Project Objectives

The following objectives guided achievement of the study's aim:

- To define current mentorship theories and practices, in general and specifically within the built environment
- To examine theoretical frameworks of knowledge sharing in the context of mentorship programs
- To identify the benefits and challenges of mentorship programs in the built environment
- To determine the critical success factors (CSF) for mentoring and knowledge sharing as identified by mentors
- To generate recommendations for mentorship programs to enhance knowledge sharing in the built environment

1.1.4. Research Methodology

To gain an understanding of the current state of research in this area, a comprehensive literature review focusing on mentoring and knowledge sharing was necessary, both in general and focused on the built environment. When little was revealed, it was clear that an exploratory study, to gain an initial understanding of an under-researched area was necessary, which informed the data collection process and sample set. Thus, twenty participants from the New York Building Congress membership were selected to participate in a series of semi-structured interviews to obtain contextually rich, complex data.

At first a mixed-methods approach was chosen, but after the procedure for content analysis induced bias, Braun and Clarke's thematic analysis process remained and the study evolved into a solely qualitative study. After the pilot and final study's analyses were complete, the results were condensed into an executive summary that was shared with ten of the study participants via another semi-structured phone interview; the results verified the study.

1.2. Thesis Structure

Several are discussed in detail in **Chapter One: Introduction**, including background, performance challenges, and the justification for this research, together with the aims and objectives, research methodology, and the overall structure for the thesis. In **Chapter Two: Literature Review**, the key research areas are identified, and relevant topics explored, including management theory, organizational behavior, and their relationship to mentorship. Mentorship, including mentoring programs and their relation to knowledge sharing generally and in the built environment, are investigated. After these three areas – mentoring, knowledge sharing and the current state of the built environment – are reviewed, the researcher unearths relatively few relevant studies, with none focusing specifically on the mentor's role. Therefore, the researcher pursues this novel and necessary area of built environment studies.

Once the study's aims and objectives are outlined, and the definition of mentorship established, a review of various research methodologies, their philosophical assumptions and associated theories are pursued in **Chapter Three: Methodology**. It also includes an extensive discussion of three suggested methodologies, Interpretative Phenomenological Analysis, Grounded Theory and Phenomenology. Afterwards, the interview process and question formation are considered, and various data collection methods are evaluated, including sampling processes. Next, the researcher's impact is discussed along with a review

of this study's interview themes and initial questions. The chapter concludes with a description of data analysis, including the coding processes and data analysis techniques, as well as a review of ethical issues and approaches and the validation process. After the evaluation process is complete, a phenomenological approach utilizing semi-structured interviews with experienced mentors is selected, keeping in mind ethical issues and incorporating validation strategies into the research plan. At that point, following IRB approval, the pilot study begins.

 Chapter Four: Pilot Study Findings is chronologically formatted to explain the actions and outcomes of the initial study. It begins with the pilot study participants sampling process as well as semi-structured interview procedures, interview questions and the interview guide. It then transitions into a detailed discussion of the summarized interviews and an explanation of the coding process. When issues arise during these processes they are noted as they appeared, i.e., issues with Content Analysis, which address these occurrences from the researcher's perspective. Transitioning from a mixed methods approach to a solely qualitative study, it segues into data analysis. Next, a detailed description of the 65+ codes discovered is explored, including their definitions and their alignment with numerous sub-themes, eight candidate themes, four final themes, and the summary statement. These findings provide the basis for the procedures and analyses that are followed in the final study, which are captured in **Chapter Five – Final Study**. As the pilot study is initially deemed successful, the same data collection process is used, including the sampling process, as well as the established coding process, Thematic Analysis. Once the final interviews are complete and analyzed in the same manner, four distinct categories emerge: High Frequency Codes Aligned with the Pilot Study, High Frequency Codes Not Aligned with Pilot Study, High Frequency Codes Aligned with Pilot Study: With a New Context and New Codes Emerged During Final Study. Each category is addressed, in turn. The findings conclude with four new codes that align with established sub-themes and candidate themes as well as a new candidate theme, Contraction of Personal Investment. Nonetheless, the final themes and summary statement remains intact. Afterwards, an executive summary is sent to half of the study participants, so the researcher can contact them and confirm the study results.

 These findings of the pilot and final studies in aggregate are explored in **Chapter Six: Findings and Discussion**, in specific and from a generalized perspective. After the conclusions are finalized, and an extensive discussion of the four final themes and the study summary statement occur, the study's findings from a holistic perspective are discussed including the mentors' perceptions of mentoring and knowledge sharing success and the key

attributes of mentoring programs that enhance knowledge sharing. While this process is underway, the Covid-19 pandemic hits, which necessitates another round of interviews with half of the study participants. These interviews provide additional confirmation of the study's findings and provided some new information, including an improved understanding of mentor behavior during exogenous shocks. This results in an additional summary statement: *contraction of personal investments*. The study concludes with the final chapter, **Chapter Seven: Conclusions and Recommendations**, which addresses the researcher's journey then transitions to address the study's research question, as well as its aims and key findings. It addresses the objectives of the study including current mentoring theories and practices, theoretical frameworks of knowledge sharing in the context of mentoring, the benefits and challenges of mentorship programs, the critical success factors as identified by mentors, and recommendations for mentoring programs that will enhance knowledge sharing in the built environment. One recommendation generated as a direct result of the Covid-19 crisis is to *plan for exogenous shocks*, which includes creating a generic, proactive and agile plan. The next section focuses on contributions to theory and practice via a direct correlation between mentoring and knowledge sharing within the built environment, especially from the mentor's perspective, including an anti-programmatic attitude toward formal mentoring practices and a strong preference for sharing knowledge through *in between moments*. The chapter concludes with the researcher's attempts to negate the study's limitations through stratification sampling, several validation strategies, and consistent use of reflexivity. Even so, limitations still exist, including the small sample size and potential for bias; thus, the researcher includes strategies to continue to negate those issues through proposed directions for future research.

1.3. Summary of Chapter

This chapter has outlined the basis for the development of the thesis including the background and motivation for the research, the research statement, and the research question including the aims and objectives. It also highlighted the scope of the research, the research methodology, and the structure of the thesis. The rationale for the research was also addressed including the prevailing gaps in previous research on knowledge sharing in the built environment, which includes the mentoring process. By interviewing experienced built environment professionals in New York City, i.e., mentors, this study assessed their perceptions of mentoring as a means of sharing knowledge.

The next chapter will review the existing research focused on mentoring, including its foundations in management theory and organizational behavior. It will also address knowledge – including its definition and evolution as a source of competitive advantage – both generally and within the built environment, providing a theoretical background for this research.

CHAPTER 2 — Literature Review

This section identifies key research areas via relevant literature to develop a thorough understanding of the topics at hand. It was developed through an iterative process based on cyclical feedback from the primary advisor as well as comments from other researchers throughout the PhD journey. Beginning with an exploration of management theory, specifically focused on organizational behavior, it transitions to organizational behavior in relation to mentorship. Since mentorship is the primary focus of this research, this section also concentrates on mentorship, including its history, definition, and the differences between mentorship and coaching, two consistently misunderstood developmental interactions. It then pivots to mentoring programs, issues in professional mentoring programs, and mentoring programs in relation to knowledge sharing.

Knowledge, another component of this research, is also considered in relation to management theory and organizational behavior. Thus, the differences between data, information, and knowledge are explained before moving to more discrete classifications such as explicit, implicit, and tacit knowledge. Knowledge management is defined and categorized further into knowledge transfer, knowledge sharing and knowledge integration. Once these delineations are clear, knowledge sharing becomes the focus, especially the key processes involved in creating and sustaining competitive advantage. After all three foci are reviewed, a section integrating them clarifies their connections within this study. Although much of the literature is from related fields and industries, the desire is to explore built environment-centered work whenever possible.

2.1. Management Theory and Organizational Behavior

Although not found in the initial literature review, it became clear over time that a thorough understanding of management theory's evolution was necessary to provide a foundation for the mentoring process as well as its role in knowledge sharing.

2.1.1. Management Theory in Historical Context

As a research subject, management theorists defined its foundation as beginning with the "…dawn of group effort…," (Koontz, 1980, p. 175). They pointed to projects such as the Great Wall, the Pyramids, and the Roman Aqueducts, which required a systematic approach to the building process and necessitated management skills and organization, as the first *management* projects, (Koontz, 1961). Even in ancient times, there were philosophers who

advocated for management principles; these include Sun Tzu's *The Art of War,* which recognized the importance of strategy, in *The Republic* Plato supported the division of labor, and Machiavelli's *The Prince*, which emphasized the importance of leadership. Even Adam Smith advocated management theories in his *An Inquiry into the Nature and Causes of the Wealth of Nations*. These included the division of labor to increase productivity and the free market to create competition and wealth, which demanded property rights, (Kwok, 2014).

Management and management theories have undergone numerous transitions over the last two hundred years. Although numerous theories and schools have emerged and diversified, three key paradigms create a framework that allows researchers to "advance the body of knowledge;" these are the classical, behavioral, and systems management theories (Lemak, 2004, p. 1313). When considering these paradigms, six key attributes create a framework that helps to analyze and categorize: unit of analysis, source of motivation, human nature, focus of managerial attention, ultimate objective, and role of manager.

Table 2. Lemak's underlying assumptions of the three management paradigms (2004)

	Classical	Behavioral	Systems
Prominent authors	Taylor, Fayol, Gantt, and the Gilbreths	Mayo, Follett, Roethlisberger, and McGregor	Katz and Kahn, Kast and Rosenzweig, Thompson
Unit of analysis	Individual	Work group	System/subsystem
Source of motivation	Economic needs	Social needs	Homeostasis survival
Human nature	Rational	Emotional	Natural law
Focus of managerial attention	Observable behavior	Cognition	Inter-relatedness
Ultimate objective	Efficiency	Social justice	Transformation of inputs to outputs
Role of the manager	Planner-trainer	Facilitator team builder	Synthesizer-integrator

2.1.2. Key Management Theories

2.1.2.1. Classical Management Theories

Classical management theories originated during the industrial revolution when engineers connected to production were driven to create formal relationships and efficient processes to increase productivity, (Koontz, 1961; Lemak, 2004; Koskela, 2017). The first one, Bureaucratic Management, was based on a rigid division of labor including defined rules and guidelines primarily focused on efficiency. Max Weber further outlined its key

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characteristics including authoritarian management, evaluations based on objective data, and a career-focused workforce. This style of management works best when the business is stable, customer needs are known, and information and technology are standardized.

In opposition, Administrative Management focused on an organization's managerial functions. Henri Fayol led this movement by defining new leadership and staffing management roles, outlining planning functions, and recognizing the employee's need for parity, camaraderie, and initiative. His seminal book, *General and Industrial Management* (1949) was the first to discuss a comprehensive theory of management, (Lemak, 2004). The third theory, Scientific Management, was heavily influenced by Frederick Winslow Taylor who emphasized scientific observation and analysis to increase productivity. He focused on creating a more efficient workplace based on specialization and increased efficiency to increase profits, (Koontz, 1961). Henry Gantt followed in Taylor's footsteps by developing the Gantt Chart, a visual graph that identifies work development stages, outlines target dates and deadlines, and captures worker accomplishments, which reap positive psychological benefits for the workers, (Kwok, 2014).

Likewise, Taylor noted in his writings the detrimental effects of workers' exhaustion and emphasized that managers should build in periods of rest. Although both made improvements to maximize efficiency, their efforts were the first time that the perspective of the worker was taken into consideration, (Lemak, 2004).

2.1.2.2. Behaviorists Movement

Although many equate the rise of the Behaviorists to the 1930s and 1940s, its roots were established in the 1800s with Robert Owen, who rebelled against many aspects of the industrial revolution, including child labor, (Claeys, 1982; Lemak, 2004). As many experienced industrial work for the first time, new leaders emerged who emphasized the needs of the employee from a social and economic perspective; in hindsight, they were deemed to be part of the *human relations* movement, (Kwok, 2014).

Those who emphasized *interpersonal relationships* in their writings about management included Elton Mayo who conducted the Hawthorne Plant studies from 1924 to 1933, (Brannigan & Zwerman, 2001). Over a period of nine years, he formulated his tenets of management focused on the *group*, which he saw as a separate entity independent of the organization that accentuated its own needs and influence. He believed that this necessitated management's need for planning and developing control measures in conjunction *with* the *group*. Similarly, Mary Parker Follett took these principles one step further by recognizing

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that *management* was a dynamic and amorphous process in constant flux. She also recognized *involvement* was important in healthy organizations, (Das & Gaurav, 2021). This became a hallmark of the behaviorist movement as many of the seminal authors realized that worker motivation was linked more with social needs than economic ones. Building on this, Maslow's "Hierarchy of Needs" outlined human behavior and the need for satisfaction, even in a worker's job, while Chester Barnard's "Functions of the Executive" focused on senior management's role both internally and externally, (Kwok, 2014; McNally, 2018). Rensis Likert also outlined four specific management styles, the Explosive and Benevolent Authoritative Systems, the Consultative Management, and the Participative Leadership Style, which is considered by some to be the most favorable solution as it encourages mutual trust and respect and all employees to be responsible for the organization's goals through teamwork and enhanced communication, (Kwok, 2014; Das & Gaurav, 2021). Additionally, as an outgrowth of the Depression in the United States, their results were seen in *social justice* as a necessary paradigm in management, from diversity and labor issues to corporate governance, (Lemak, 2004).

2.1.2.3. Systems Paradigm

As management science moved into the 1960s numerous theories were still in debate, but Chester Barnard again led its advancement when he coined the term "systems," or the conscious decisions and actions made by an organization's groups or team. This joined with Cybernetics, the concept that espouses adaptation through a continuous feedback loop that culminates in cyclical enhancements to the business environment, to formulate what became known as the Systems Paradigm (Lemak, 2004). Two additional theses soon joined the body of knowledge, Katz and Kahn's *The Social Psychology of Organizations* (1966) and *Organizations in Action* (1967) by Thompson, which outlined the concept that organizations need to be "open systems" that continuously interact with their external environment, (Lemak, 2004; Muscalu, Iancu & Halmaghi, 2016). As such, organizations were now viewed as holistic and inter-related entities with managers who are visionaries that excite subordinates with their strategic plans, "big picture thinking," and focus on the organization in relation to markets and the overall economy, (Muscalu, Iancu, & Halmaghi, 2016).

2.1.2.4. Koontz's Management Schools

It is important to note that although advancements occurred in management theory, its history had not been outlined fully until 1961 when Harold Koontz wrote his seminal article,

"The Management Theory Jungle." Even Lemak's assertion – that numerous management theories can be ordered under the three paradigms listed previously – is an outgrowth of Koontz's research. As such, his work must be considered. In the 1961 article, Koontz bemoaned the loss of practitioners' involvement in management research and the simultaneous rise in various *theories* by pure academics that focused less on pragmatism and reflection based on experience and observation to almost exclusively formulate their own version of management theory, (Lemak, 2004). In an effort to "cut through this jungle and bring light to some of the issues and problems involved in present management theory," Koontz began to group the numerous theories that had emerged into *schools* in hopes that this would provide clarification, (Koontz, 1961, p. 175). His assertions contributed to the descent of some theories and the rise of others.

The article included six points of view, or *schools*: the Management Process School, which emphasized the rise of the group while concentrating on the manager's perspective and focused on organizing *experience* to improve the organization, not specifically its workers. The second, The Empirical School, included theories based on experience, which involved case studies focusing on the successes and failures of managers to allow the worker to analyze, determine and apply novel solutions that will help them in the future. Koontz's third, the Human Behavior School, was dedicated to the understanding of *people* within their organizations. As such, he included research that focused on the manager's role in managing staff, with studies on group dynamics and interpersonal relationships, but warned that this emphasis was only *part* of management. The fourth, the Social System School, emphasized human interrelationships in organizations, which became extremely valuable to management theory. The fifth, Decision Theory, stressed the importance of rational decision-making by focusing on the best alternative, but applied this approach to make decision-making *the focus* of management theory. Finally, Koontz's sixth, the Mathematical School, whose theorists were united in their belief that management, as a logical process, should be expressed in quantitative measures. Once again, Koontz recognized this *school's* contributions, but stated that management research focused solely on mathematical analysis was of limited value, (Koontz, 1961).

In 1980, Koontz updated his thesis in "The Management Jungle Revisited," to review the current state of management theory. He determined that management theory had grown, evolved, and became more diverse, which resulted in an increase in the number of his *schools*, from six to eleven. This expanded list of schools included an enhanced focus on the

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behavioral approach, which resulted in Koontz splitting the definition into two distinct categories: interpersonal and group behavior. He also highlighted the Managerial Roles Approach, popularized by Mintzberg, whereby researchers studied and observed managers to determine their actual roles. Mintzberg's research extended the accepted managerial functions, i.e., planning, organizing, coordinating, and controlling, to include *interpersonal roles*, as figureheads, leaders, and liaisons. These individuals also served as i*nformation providers* that monitored and disseminated information, function as spokespeople for their organizations, and act as decision makers who allocate resources, manage disturbances, and negotiate for the organization (Koontz, 1980).

Through his research and experience, Koontz determined that the Operational Approach was a holistic theory that brought together management-focused "concepts, theory, and techniques that underpin the actual practice of managing," from a manager's perspective, which became "a central core of knowledge about management that exists *only* in management," (Koontz, 1980, p. 181).

2.1.2.5. Current Management Theories

In 1980, Koontz also noted that numerous researchers and intellectuals were designing their own management theories, often focused on one aspect, specialization, or a specific situation. As such, they built fiefdoms that isolated and protected their concepts with no intent to integrate them into a larger theory, (Koontz, 1980). Thus, began the rise of the management *guru*.

Over the last three decades these *gurus* have had a huge impact on both management and research, by building theories that predict actions, results, and reasoning. As a result, practitioners have often based their plans and actions "on some theory in the back of their minds that makes them expect the actions they contemplate will lead to the results they envision," (Christensen & Rayor, 2003, p.67). These gurus disseminate their theories through trade journals and books that become bestsellers focused on quick fixes and emphasize *how* problems should be solved, not the underlying reason *why* they work, (Lemak, 2004).

While working as a practitioner in the built environment, the researcher experienced this evolution; she often read trade articles and books that popularized the concept of knowledge management without tying it to more comprehensive management theories. These materials focused on brief summations of academic research without presenting the foundation of these studies, detailed accounts of their participants, their methodology, etc.,

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nor did they provide a comprehensive literature review of the topic. As she considered topics for this research, knowledge management was at the forefront, but it became clear that integration was necessary as knowledge management alone was not the answer to her research questions.

Koontz believed that many of the elements focused on over the last few decades, leadership, motivation, etc. were part of a larger whole, operational management theory, not separate, stand-alone entities. Operational Management Theory brings together many of the concepts, theories, and principles in the management field by approaching them from a manager's, or mentor's, perspective. This *central core* can only be found in management and is its foundation (Koontz, 1980). At its most basic, Koontz's Operational Management is closely related to a combination of Organizational Behavior and Organizational Theory, (Champoux, 2016).

2.1.2.6. Organizational Behavior and Organizational Theory

Organizational Theory (OT) focuses on the structural elements of an organization while Organizational Behavior (OB) concentrates on the behavior of people within those organizations. As such, OB draws from a wide variety of disciplines including psychology, sociology, and anthropology while OT incorporates many of those same elements, from an organizational perspective, such as the sociology of organizations, (Champoux, 2016). Therefore, OB has a causal relationship with OT, (Miner, 2007).

One of the earliest expressions of these studies was Douglas McGregor who focused his research in the 1960s on the manager's perspective on motivation. He developed two theories: Theory X, which assumed that workers dislike working and lack ambition, thus requiring directed, controlled supervision, and Theory Y that assumed that workers enjoy their work, are intrinsically motivated to fulfill their goals, and want to contribute to organizational goals. These theories, or assumptions about human behavior, heavily influenced management theory for 30 years and have a continuing influence on current management theories, (Orando, 2013, Kwok, 2014, Champoux, 2016).

During the same time period, Peter Drucker developed numerous management theories and observations focusing on organizational governance, strategic planning, and the character of managers, i.e., their integrity, passion, ethics, etc., (Champoux, 2016). In much the same way, Drucker wrote that company executives should receive diagnostic information

to assist them in determining the how, what, and why of certain situations, which would put information in context, in turn making their decisions more relevant, (Orando, 2013). Eventually, Drucker began discussing knowledge as a resource that creates competitive advantage, (Raisinghani et al., 2016). When this occurred, his research became a focus within management's popular culture, thus positioning him as a leader in management-focused, academically oriented, lay literature.

2.1.2.7 Organizational Theory and Organizational Learning

The study of organizational learning, i.e., "learning processes of and within organizations" incorporates organizational theory's focus on organizations as a structural element, seeing the organization as a separate entity, an idealized learning organization, (Easterby-Smith & Lyles, 2011, p. 11). First referenced by Richard Cyert and James March in *A Behavioral Theory of the Firm* in 1963 (Miller 2008), today there is a "culture that supports the learning process so that the organization can obtain, develop and transfer the knowledge easily," (Wahda, 2017, p.846). This evolution is based in large part on *The Fifth Discipline: The Art and Practice of the Learning Organization* (1990), Peter Senge's groundbreaking book that describes organizational learning as five disciplines: team learning, mental models, shared vision, systems thinking and personal mastery and David Garvin's *Building a Learning Organization*, a groundbreaking article that suggests analysis, reflection, and a supportive learning environment as a way to fortify learning abilities, (Chan, Cooper & Tzortzopoulos, 2005; Easterby-Smith and Lyles, 2011; Orando, 2013)

2.1.2.8. Organizational Learning and Knowledge Movement

In the early 20th century, John Dewey centered his work on the social aspects of learning, commonly referred to today as knowledge management. Beginning in the 50s and 60s, leaders in the organizational learning movement were building its foundation, particularly as it related to knowledge studies. Michael Polyani focused on tacit knowledge, which has informed numerous researchers including Nonaka and Takeuchi. Likewise, Edith Penrose' *The Theory of the Growth of the Firm* (1959) was groundbreaking for stressing organizational knowledge, while Frederick Hayek became known for his theory of markets and *situational* knowledge, (Spender, 1996, Roberts, 2001, Easterby-Smith & Lyles, 2011). Their contributions eventually led to a key advancement, the publication by Dierkes, Antal,

Child, & Nonaka of the *Handbook of Organizational Learning and Knowledge Management* in 2003, as well as a subsequent volume by Easterby-Smith & Lyles in 2011.

Throughout the 2000s knowledge management became an accepted source of competitive advantage in a rapidly changing world, (Drucker, 1992; Alavi & Leidner, 2001; Arif, Al-Zubi, & Gupta, 2015; Holsapple & Singh, 2001; Saini, Arif, & Kulonda, 2018; Dalal & Akdere, 2018; Chen et al., 2019; Weij-Peree, Appel-Meulenbroek, & Arentze, 2020). As a result of "discontinuous change," i.e. global and rapidly evolving *change* that transforms economies, industries, and institutions faster than responses can be developed, Chen et al. (2019) asserted that organizational learning and knowledge management should evolve into *knowledge sharing* that circulates and distributes knowledge throughout organizations, teams and employees to become a pathway for the externalization of tacit knowledge (Burmeister, Wang, & Hirschi, 2020). Their study, which focused on China's rapidly changing software industry during the relentless, extreme, and continuous changes of the late 2010s, found that participants preferred knowledge sharing over other forms of organizational learning. Knowledge sharing, or *learning from others*, was the preferred and "…most commonly used process for rapid learning, just-in-time problem solving and rich discussion," (Chen et al., 2019, p. 936). Karkoulian et al. echoed the importance of direct interactions, "…successful KM involves neither computers nor documents but rather interactions between people," (2008, p.411).

In *social learning* or *socialization*, the most intuitive aspect is knowledge sharing, especially tacit knowledge that is inculcated through daily, face-to-face, social interactions within knowledge networks, (Karkoulian, Halawi, & McCarthy, 2008; Tan et al., 2010; Tsouri, 2019). This is the oldest and most effective form of knowledge sharing; in project-based organizations, such as those found in the built environment, these face-to-face interactions are the primary path to issue resolution and idea generation and allow those involved to resolve misunderstandings instantly through multiple feedback loops in real-time, (Tan et al., 2010).

Knowledge networks are formed and strengthened when interactions between participants are frequent, ongoing and in close proximity. Proximity, often used interchangeably with familiarity and similarity in academic research, most often includes institutional, geographical, organizational, social, and cognitive dimensions established within Ron Bochma's classification system, (2005). When participants see themselves as part of a larger institution, they share common experiences and find stability, which leads to

stronger ties and mutual trust. Likewise, co-located participants can share knowledge effortlessly on an ongoing, continuing basis. Cognitive proximity, the degree to which participants share the same knowledge and have common experiences, can create stronger ties, but only to a point; if they are too similar it can limit their ability to acquire new knowledge. When organizations establish specific opportunities for participants, such as welcoming spaces for interaction – namely office kitchens, breakrooms, or pleasant outdoor areas – it can increase knowledge sharing, as can social proximity, i.e., communal experiences, kinship, friendship, etc., (Tsouri, 2019).

When these interactions are not possible due to physical distance or virtual work environments, it can negatively affect the ability to establish relationships, effectively communicate, and maintain personal connections, (Newfeld, Wan, & Fang, 2010; Tan et al., 2010; Moser & Axtell, 2013; Hollenberg, 2020). At times, Communities of Practice have been used to counteract the negatives of virtual work environments when virtual teams were otherwise unable to reach high levels of performance, (Kimble, Li, and Barlow, 2000).

Even so, there have been studies that counter these findings. Thoms et al. (2008) profiled a highly successful online learning community at Claremont Graduate University focused on second year doctoral students' conversational engagement to "…wrestle with complex problems from multiple perspectives." Purvanova (2014) cited 56 field and case studies of effective virtual teams within industry and argued that though experimental research on virtual teams generally indicated poorer team performance, those results could be called into question due to poor *ecological validity*, i.e. they didn't accurately simulate the conditions that allow real world virtual teams to find success.

Thoms et al. and Purvanoa notwithstanding, researchers have found that superficial knowledge networks occur more frequently in virtual environments as the social processes that are used to help workers develop relationships become harder to recognize, deduce, and apply, (Moser & Axtell, 2013). This was confirmed by Tsouri's *novel* study investigating the internal drivers that maintain strong knowledge networks before and after exogenous shocks. Realizing that most research on regionally-based knowledge networks was static, her study incorporated a temporal dimension, before and after an exogenous shock, i.e. the great recession of 2008. She found that when strong ties were formed between individuals within a knowledge network prior to the recession – during a period of low-uncertainty – those ties remained strong after the recession, during a period of high-uncertainty. Those who were closer geographically before the incident had the highest levels of trust compared to those who were organizationally or institutionally within close proximity. She also found that some

in her study were less cooperative within their knowledge networks during periods of uncertainty. This was also the case in 2020 when the Covid-19 global pandemic occurred, as many organizations were unprepared when they were forced to shut down their offices, (Urick, 2020).

2.1.2.9. Mentorship within an Organizational Learning Context

It is best to use multiple methods of support when creating a learning environment; these include individual learning and learning from others, i.e., consulting, coaching, direct supervision, and mentoring, (Tsui et al., 2017; Chen et al., 2019). Creating consistent opportunities for learning in an organization has proven to be challenging, but mentorship has been established as an effective way to accomplish this goal. Mentorship can be highly adaptive, while most of the time it is a one-on-one relationship, at times it can encompass group learning activities, (Wronka, 2013). Klinge was so supportive of mentorship as a significant path to knowledge that he even recommended adding a sixth discipline to Senge's seminal book. "Mentoring is an essential tool at this intersection of human resource development and adult learning," (Klinge, 2015, p. 162).

Mentorship demonstrates the prominence of ongoing learning in an organization. When leaders invest in mentorship, they are fostering a lifelong learning opportunity that rewards innovation and experimentation to create a culture that captures knowledge and leads to significant improvement, (Buck, 2004).

2.2. The Mentorship Process

Although not the initial focus of the researcher's academic interests, the mentoring process has become the foundation for her research for almost half a decade. As such, a thorough understanding of the mentoring process, from a historical perspective to its role in management and knowledge sharing, was imperative, particularly within the built environment – the *bedrock* of her professional interest and experience.

2.2.1. Mentorship in Historical Context

Most scholars agree that the concept of mentorship originates in Homer's *Odyssey*, specifically the relationship between Telemachus and Mentor. Mentor served as a tutor/guide to Odysseus' son Telemachus while Odysseus was fighting in the Trojan War (Allen & Eby,

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2007; Dougherty, Turban, & Haggard, 2007; Fleig-Palmer & Schoorman, 2011; Scandura & Pellegrini, 2007; Kram, 1988; Swap, Leonard, & Abrams, 2001, Garvey, Stokes, & Megginson, 2018; Sherbino, 2018; Gruber et al., 2020).

Although the concept of mentorship originated with Homer, knowledge sharing between a more experienced person and a less experienced person is as old as the human species. Academic research began in the mid-eighties when Kathy Kram produced her seminal study, *Mentoring at Work: Development Relationships in Organizational Life* (Dougherty, Turban, & Haggard, 2007; Raabe & Beehr, 2003; Ghosh & Reio, 2013; Scandura & Pellegrini, 2007; Eby, Rhodes, & Allen, 2007; Allen, Finkelstein, & Poteet, 2009; Gettman, 2008; Gruber et al., 2020). Kram outlined mentoring functions, the phases of mentorship, and the intricacies of cross-gender alliances. It is not hyperbole to state that "Kram's study created a flurry of research…" (Eby, Rhodes, & Allen, 2007, p.8).

2.2.2 Definition of Mentorship

Professional mentorship is primarily defined as a relationship between two individuals whereby the more senior is committed to providing guidance and support to the more junior for organizational socialization, career advancement, and professional development purposes (Kram, 1988; Levinson, Darrow, Klein, Levinson, & McKee, 1978; Rigsby, J.T., Siegel, P.H., Spiceland, J.D., (1998); Higgins & Kram, 2001; Raabe & Beeh, 2003; Ragins & Kram, 2007; Wanberg, Welsh & Hezlett, 2003; Megginson et al., 2006; Janssen et al., 2016; Garvey et al., 2018; Sherbino, 2018; Mohtady et al., 2019; Maynard-Patrick & Baugh, 2019; Gisbert-Terjo et al., 2019b; Greco & Kraimer, 2020, Bapat et al., 2021; Lin, Cai & Yin, 2021; Cai et al., 2021). The primary focus of mentorship is on career growth and development; this is not true of other developmental relationships, (Higgins & Kram, 2001; Rigsby, Siegel, & Spiceland, 1998; Megginson et al., 2006; Ragins & Kram, 2007; Maynard-Patrick & Baugh, 2019; Gisbert-Trejo et al., 2019a).

2.2.3 Forms of Mentoring

Mentoring occurs throughout society through a variety of social systems, from educational settings to community programs to professional situations. Within professional situations, mentoring can exist between a supervisor and subordinate, in cross mentoring relationships between divisions within an organization, and in inter-organizational communities of practice such as the American Institute of Architects, the Construction Management Association of America, etc., (Higgins & Kram, 2001; Gisbert-Trejo et al.,

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2019a; Gisbert-Trejo et al., 2019b). Even in those situations there are subgroups such as peer mentoring, network mentoring, and group mentoring with different processes or programs that can be inter-organizational or outsourced, or virtual such as "e-mentoring;" each stands apart from the traditional model of face-to-face mentoring, (Megginson et al., 2006). In each dimension, there are instances of formal and informal mentoring.

2.2.3.1. Formal Mentoring

Businesses facilitate communication channels to address the need for knowledge sharing, (Yang et al., 2020). Due to the positive impact that mentoring has shown in making employees more valuable to an organization, some firms have established formal mentoring programs, which vary greatly in structure and acknowledgment within an organization, (Raabe & Beehr, 2003). They can span from basic *matching* programs founded simply on the participant's interest with no additional support to highly structured, monitored platforms with applications and sophisticated analytics that mandate specific levels of participation, (Singh et al., 2003; Janssen et al., 2016; Mohtady et al., 2019). While formal mentoring programs within an organization focus on specific processes and career advancement functions, formalized inter-organizational mentoring programs focus on more generalized, larger issues such as best practices within their profession and may include mentors who have retired, (Gisbert-Trejo et al., 2019a; Gisbert-Trejo et al., 2019b).

2.2.3.2. Informal Mentoring

Informal mentors are never identified explicitly as mentors yet meet the definition through their ongoing interest in an individual and their willingness to be consulted for specific concerns, career advice, moral quandaries, assurance and even to enhance morale; they put the individual's interests at the forefront and share their perspectives on the profession, (James et al., 2015; Mohtady et al., 2019).

Informal mentoring does not fall under a specific definition, it can be planned or spontaneous, occurring once or over the course of many years (Mohtady et al., 2019), and can be found in numerous relationship categories including the traditional senior-junior dyad as well as group, peer, lateral, and even situational mentoring, (James et al., 2015). This aligns with previous research, which refers to informal mentoring broadly, i.e. as similar to traditional mentor-mentee relationships that can be found in groups, through peer mentoring, or in one-on-one relationships that occur when needed, on an unscheduled basis, and/or without specified organizational support for an undefined length of time, (James, Rayner, &

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Bruno, 2015). Simply put, informal mentoring occurs when individuals establish a relationship without impetus, support, or direction from an organization, (Karkoulian, Halawi, & McCarthy, 2008).

Situational mentoring can occur in many forms including speed mentoring, wherein mentors meet with a variety of mentees in a rotational pattern for approximately 10 minutes each, then decide if and whom they would like to continue interacting with beyond the event. Despite these extremely short encounters, there is evidence that these mentoring dyads can be successful, (Mohtady et al., 2019.) As such, informal mentoring is often preferred over formal mentoring; studies have documented this preference as well, (Raabe & Beehr, 2003). For instance, James, Rayner, and Bruno's 2015 study found that informal mentoring was seen as a distinctive and preferred form of mentoring within various academic librarian communities. James et al.'s librarians considered their conversations as, "a one-off deal: they were simply available and willing to provide mentoring when it was needed," (2015, p.533).

These informal relationships may be considered more intense because they are unbounded, (Janssen, 2016; Gruber et al., 2020); the choice to continue belongs to the mentor and mentee, (Singh et al., 2003; Janssen et al., 2016; Mohtady et al., 2019). When mentoring is studied, no matter the subject, informal forms of mentorship are mentioned cursorily in most research, (James et al., 2015; Janssen et al., 2016; Mohtady et al., 2019).

2.2.3.3. Spot Mentoring

There are also informal mentoring opportunities that arise spontaneously, which are distinct from longer-term, more inclusive forms of informal mentoring. These conversations occur naturally, as we "are social beings and learn through conversation in a social context," (Megginson et al., 2006, p.28). Pasini defined these fleeting interludes as "spot mentoring" i.e., momentary exchanges where advice is offered on a specific subject; she maintains that these exchanges may be a complete mentoring experience unto themselves, (2012, p.35). Yet, they are rarely mentioned in academic research or industry publications and are not the focus of either's interest.

In an industry publication focusing on the law, Abbot and Natkin mention *episodic, situational, or just-in-time* mentoring, i.e., *spot mentoring*, which they define as a group of professionals who have agreed to be available for advice on an ad hoc basis. Yet even they see a difference between this type of mentoring and typical informal mentoring, "because no personal relationship may form between the mentors and the people they advise, this is

arguably not mentoring at all," but rather simply an expedient form of transferring knowledge, (Abbot and Natkin, 2016, p.290). *Just-in-time* mentoring was also mentioned in Gregory and Terzakis' research, but only briefly in the abstract; it is not mentioned again or described in any fashion, nor is it the focus of the research, (2017). Likewise, the phrase *just-in-time* learning resources are mentioned in conjunction with the creation of a mentoring platform that supported entrepreneurial venture development at the University of Waterloo. Once again, it's not the focus of the research, but simply a way of describing one of the platforms' key features, (Sparkes et al., 2016). These platforms can take many forms, from instant messaging to internal *chatting* software, and other forms of social communities including Microsoft Teams, Slack, etc. "Through these informal discussions (socialization), valuable tacit knowledge can be transferred," (Yang et al., 2020, p.282). In these informal settings, even when the information shared can be traced and cited, social communities often credit the author of the newly added, *codified* knowledge in their system as the *source* of the knowledge, which increases that individual's credibility within the organization, and, in turn, encourages even more knowledge sharing, (Yang et al., 2020).

In *social learning* or *socialization*, the most intuitive aspect is knowledge sharing, especially tacit knowledge that is inculcated through daily, face-to-face, social interactions, (Karkoulian, Halawi, & McCarthy, 2008). "Mentoring is about transition, change and transformation," which may occur slowly over time or may happen in mere moments; these may be referred to as "eureka moments" or "click" moments, (Megginson, 2006, p.28) When referring to these moments, Megginson et al. emphasized the learning component of these experiences: those times when a mentee reflected on their past vis-à-vis the mentor's statements and has a moment of clarity or realizes something important or significant.

When these interactions aren't possible due to physical distance or virtual work environments, it can negatively affect the ability to establish relationships, effectively communicate, and maintain personal connections, (Newfeld, Wan, & Fang, 2010; Tsouri, 2019; Hollenberg, 2020).

2.2.4. Mentoring Relationships

Although most research continues to focus on mentoring opportunities that are one-to-one relationship dyads, (Kram, 1988; Levinson, Darrow, Klein, Levinson, & McKee, 1978; Higgins & Kram, 2001; Raabe & Beeh, 2003; Ragins & Kram, 2007; Wanberg, Welsh & Hezlett, 2003; Megginson et al., 2006; Janssen et al., 2016; Mohtady et al., 2019), other

forms of mentoring relationships have been recognized and studied, such as network, group, peer or distance mentoring (Megginson et al., 2006; Ragins & Kram, 2007; James et al., 2015; Janssen et al., 2016; Garvey, Stokes, & Megginson, 2018; Sherbino, 2018; Iverson, 2019; Greco & Kraimer, 2020; Gruber et al., 2020). Even so, multiple relationships within mentoring structures have received minimal attention in academic research, (Garvey, Stokes, & Megginson, 2018).

2.2.4.1. Network Mentoring

As organizations become more interdependent and interconnected, mentees are able to form "complex webs of relationships and connections" resulting in a network of learning that constitutes an independent and systemic form of mentoring, (Garvey, Stokes, & Megginson, 2018, p.7). These work-based networks, with mentees at the center, allow various professionals to share their expertise by mentoring a particular mentee through specific learning situations, (Megginson et al., 2006; Jenssen et al., 2016; Garvey, Stokes, & Megginson, 2018; Greco & Kraimer, 2020; Tsouri, 2019; Gruber et al., 2020). In 2001, Higgins and Kram developed a structure to outline this phenomenon into four categories: Entrepreneurial, Traditional, Opportunistic and Receptive, (Garvey, Stokes, & Megginson, 2018).

Table 2.1. Developmental Networks; adapted from Garvey, Stokes, & Megginson (2018)

	High Developmental Network Diversity	Low Developmental Network Diversity
High Developmental Relationship Strength	**Entrepreneurial**	**Traditional**
Low Developmental Relationship Strength	**Opportunistic**	**Receptive**

Higgins and Kram's *developmental network perspective* was based on four criteria: the developmental network in its entirety, the relationships found within the network, the strength of those relationships, and the diversity of the network. The developmental network, as a subset of a mentee's social network, is a group of individuals who have taken an active interest in a mentee's career. Within the network, a mentee may have a number of varying relationships; what binds these relationships to the network is the group of individuals' ongoing interest in the mentee's growth and development.

Diversity in the developmental network refers to the varied backgrounds of the individuals within the network. The diversity of knowledge that these individuals within the network share with the mentee allows the mentee to access varied resources, i.e., different perspectives, (Gruber et al., 2020). Diverse networks produce an expansive variety of knowledge for the mentee to absorb; the more varied, the more strength in the network. In contrast, redundancy in a mentee's developmental network, i.e., low developmental diversity, results from exposure to individuals whose knowledge and perspectives align, which limits or narrows the variety of knowledge the mentee can absorb, (Higgins & Kram, 2001).

While Higgins and Kram's sharp distinctions were significant in further clarifying the broad range of learning opportunities that fall within a mentoring context, their demarcations were simplistic when applied to a specific context. Mentoring relationships are inherently complex; often well-connected mentees may have multiple mentors that offer "an array of strong and weak connections with each participant offering different perspectives, insights, skills and knowledge," (Garvey, Stokes, Megginson, 2018 p.173).

As this study progressed, it became clear to the researcher that further definition of the various opportunities for mentoring was necessary to delineate and clarify the mentor's responses and to gain a better understanding of their organization's mentoring process. Although they did not refer to these various forms of mentoring directly, differences were apparent.

2.2.4.2. Group Mentoring

Another delivery format is group mentoring, which is less common in practice. As a result, there are fewer studies that focus on it and a reduced understanding of its benefits, liabilities, etc., (Deutsch et al., 2017; Dutton, Bullen, & Deane, 2018). Commonly defined as a one-to-many situation wherein numerous mentees meet with and form relationships with one or more individuals, this form of mentoring maximizes an organization's investment while minimizing the mentor's time requirements. (Deutsch et al., 2017; P-Sontag, Vappie, & Wanberg, 2007). Outcomes vary, but tend toward the psychosocial, including advancement in social skills, self-regulation, and empathy, (Deutsch et al., 2017). Knowledge sharing and cross-functional communication were also outcomes that arose from mentor and peer interactions, i.e., peer mentoring, (P-Sontag, Vappie, & Wanberg, 2007).

2.2.4.3. Peer Mentoring

Peer mentoring, sometimes referred to as co-mentoring, involves two individuals who are roughly the same age providing support and guidance while sharing their experience; there is often a measure of reciprocity between the two, whether or not the boundary is formalized via a work relationship, (Garvey, Stokes, & Megginson, 2018). Although research on peer mentoring is limited, existing research shows a positive impact including increased retention of both parties, an enhanced sense of belonging, and heightened problem solving and critical thinking skills, (Connolly, 2016). The relationship may also encourage the mentees to become more self-reflective, gain new insights and develop new professional skills. Nonetheless, the mentees serve as role models for each other in specific situations, providing emotional and professional support, (Ensher, Thomas, & Murphy, 2001; Lim et al., 2017; Fisher, 2019; Tarr, 2020; Bapat et al., 2021).

2.2.4.4. Distance Mentoring

Distance mentoring, otherwise known as electronic mentoring (e-mentoring), online, or virtual mentoring, uses technology to enhance and extend mentoring opportunities within organizations. As the newest approach in the mentoring field, e-mentoring has added additional dimensions to face-to-face mentoring, (Singh & Kumar, 2019) and now stands on its own as an independent form of development, (Megginson et al., 2006, p.255). Unlike traditional forms of mentoring that assume face-to-face interactions are necessary (Weijs-Peree, Appel-Meulenbroek, & Arentze, 2020), e-mentoring supports the mentee's interests by encouraging them to pursue mentors who are experts in their field no matter where they are located; it also allows the dyad to incorporate mentoring into their busy schedules, (Megginson, 2006; Singh & Kumar, 2019). As a result, communication may occur asynchronously, which allows additional time for reflection, (Hawkins, 2006; Kennett, 2006).

2.2.5. Mentorship versus Coaching

Sometimes used interchangeably, the terms *mentoring* and *coaching* are often confused, (Garvey et al., 2018). Both are developmental interactions that occur in dyads over an extended period and involve an instructional component focused on new behavior, approaches, or experiential activities. Both typically also involve goal setting, action planning, and feedback (Allen, Finkelstein, & Poteet, 2009; Garvey, Megginson et al., 2006; Garvey, Stokes & Megginson, 2018). Frequently mentoring and coaching are differentiated without specific definition (Egbu, 2004; Pathirage, 2007; Loosemore, Dainty, & Lingard, 2003; Garvey et al., 2018). Some researchers have recognized this issue. "Contemporary

research is still yet to discriminate among coaching, mentoring, and sponsoring" (Scandura & Pellegrini, 2007, p. 79). Some have even addressed it. Garvey, Stokes, and Megginson in their book *Coaching and Mentoring: Theory and Practice* devote a large portion of their first few chapters attempting to define the differences, with limited success; even reviewing research methodologies deployed to studies that distinguish the two didn't help; "it is clear here (that in mentoring), as with coaching, we are examining a field of practice where the research protocols have not yet coalesced into a widely accepted form," (2018, p. 35).

This was the basis of D'Abate, Eddy and Tannenbaum's research; they attempted to find a literature-based consensus regarding these, as well as other, tacit-based, developmental interactions. "The published research literature, as well as opinions expressed at conferences, online, and in the popular press, fails to agree on what mentoring, coaching, apprenticeship, and other developmental interaction constructs represent" (D'Abate, Eddy, & Tannenbaum, 2003, p.361). After a detailed analysis of 182 articles from 1981 to 2002, the researchers found significant inconsistencies in the definitions. For instance, "…only 30% of the characteristics that were linked to traditional mentoring were consistently used" (D'Abate, Eddy &Tannenbaum, 2003, p.377). When they compared the characteristics describing *coaching* and *traditional mentoring*, it becomes clear that there are distinct differences.

Table 2.2. Mentoring versus Coaching; adapted from D'Abate, Eddy & Tannenbaum (2003)

	Mentoring	Coaching
Development	General development of the mentee; typically voluntary	Specific development of the mentee; typically a paid activity
Time Frame	Longer-term; could be several years	Short-term; less than a year
Support Mechanisms: Behaviors	Modeling, counseling, supporting, advocating introducing, and sheltering	Goal setting, providing practical application, providing feedback, and teaching

Even though both are dyadic and hierarchical, their unique characteristics suggest that they are not equivalent (D'Abate, Eddy & Tannenbaum, 2003).

These differences are echoed in multiple sources. Mentoring is often an internal initiative (Gisbert-Trejo et al., 2019b), whereas coaching typically employs an external consultant (Allen, Finkelstein, & Poteet, 2009). Gettman (2008) theorized that only mentors can facilitate mentees' advancement through Kram's *psychosocial* and *career* functions; since mentors are within the same organization, they can help prepare mentees for

advancement and/or make advancement easier. Because coaches are not typically within the organization, Kram's *career functions* ostensibly do not apply to coaching. Coaching is also deployed most often during times of "transition and change" and is often a "paid activity," (Garvey, Stokes, & Megginson, 2018, 18-19.) Thus, although there are similarities, coaching is different from mentoring, although both definitions are evolving, (Garvey, Stokes, & Megginson, 2018.)

Ramaswami and Dreher (2007) used Kram's model as a basis for their Protégé and Mentor Framework. This framework focuses on Kram's *career functions,* taking them one step further by creating *five process paths*. In their framework, mentorship is a *process* for accumulating human capital, i.e., knowledge, skills, and abilities (Ramaswami & Dreher, 2007).

2.2.6. Kram's Model Mentor Relationship

In Kram's *Mentoring at Work,* she maintains that model mentor relationships evolve through a four-stage process (Kram, 1988; Janssen et al., 2016).

Table 2.3. Phases of the Mentor Relationship (Kram, 1988)

Phase	Definition	**Turning Points** (Examples of the most frequently observed psychological and organizational factors that cause movement into the current phase)
Initiation	The period of six months to a year when the relationship begins and becomes important to both managers.	Fantasies become concrete expectations. Expectations are met; senior manager provides coaching, challenging work, visibility; junior manager provides technical assistance, respect, and desire to be coached. There are opportunities for interaction around work tasks.
Cultivation	A period of two to five years when the maximum range of career and psychosocial functions are provided.	Both individuals continue to benefit from the relationship. Opportunities for meaningful and more frequent interaction increase. Emotional bond deepens and intimacy increases.
Separation	A period of six months to two years after a significant change in the structural role relationship and/or in the emotional experience of the relationship.	Junior Manager no longer wants guidance but rather the opportunity to work more autonomously. Senior manager faces midlife crisis and is less available to provide mentoring functions. Job rotation or promotion limits opportunities for continued interaction; career and psychosocial functions can no longer be provided. Blocked opportunity creates resentment and hostility that disrupt positive interaction.
Redefinition	An indefinite period after the separation phase when the relationship ends or takes on significantly different characteristics, making it a more peerlike friendship.	Stresses of separation diminish, and new relationships are formed. The mentor relationship is no longer needed in its previous form. Resentment and anger diminish; gratitude and appreciation increase. Peer status is achieved.

The needs and concerns of mentors and mentees change as they progress throughout their careers. What each seeks and offers *shifts* as each advances (Kram, 1988). Career stages must be complementary (Hunt & Michael, 1983), and mentors should be more advanced (Allen & Eby, 2007). Mentor and mentee's ages, as well as their career stages, have an impact on the evolution of the relationship, (Mohtady et al., 2019). Levinson et al. (1978)

found that mentors were usually older by about 8 to 15 years (Hunt & Michael, 1983; Mohtady et al., 2019).

The origin of Kram's *model* mentor relationship can be traced in large part to Levinson et al.'s formative research, *The Seasons of a Man's Life* (Rigsby, Siegel, & Spiceland, 1998; Eby et al., 2013; Hunt & Michael, 1983). Both her *phases of a mentoring relationship* and *successive career stages* grew out of Levinson's research that suggests that the "mentor relationship is the most important relationship in young adulthood" (Kram, 1988, p.2).

Table 2.4. Characteristic Developmental Tasks at Successive Career Stages (Kram, 1988)

	Early Career	Middle Career	Late Career
Concerns About Self	Competence: Can I be effective in the managerial/professional role? Can I be effective in the role of spouse and/or parent?	Competence: How do I compare with my peers, with my subordinates, and with my own standards and expectations?	Competence: Can I be effective in a more consultative and less central role, still having influence as the time to leave the organization gets closer?
	Identity: Who am I as a manager/professional? What are my skills and aspirations?	Identity: Who am I now that I am no longer a novice? What does it mean to be a "senior" adult?	Identity: What will I leave behind of value that will symbolize my contributions during my career? Who am I apart from a manager/professional and how will it feel to be without that role?
Concerns About Career	Commitment: How involved and committed to the organization do I want to become? Or do I want to seriously explore other options?	Commitment: Do I still want to invest as heavily in my career as I did in previous years? What can I commit myself to if the goals of advancement no longer exists?	Commitment: What can I commit myself to outside of my career that will provide meaning and a sense of involvement? How can I let go of my involvement in my work role after so many years?
	Advancement: Do I want to advance? Can I advance without compromising important values?	Advancement: Will I have the opportunity to advance? How can I feel productive if I am going to advance no further?	Advancement: Given that my next move is likely to be out of the organization, how do I feel about my final level of advancement? Am I satisfied with what I have achieved?
	Relationships: How can I establish effective relationships with peers and supervisors? As I advance, how can I prove my competence and worth to others?	Relationships: How can I work effectively with peers with whom I am in direct competiton? How can I work effectively with subordinates who may surpass me?	Relationships: How can I maintain positive relationships with my boss, peers, and subordinates as I get ready to disengage from this setting? Can I continue to mentor and sponsor as my career comes to an end? What will happen to significant work relationships when I leave?
Concerns About Family	Family Role Definition: How can I establish a satisfying personal life? What kind of lifestyle do I want to establish?	Family Role Definition: What is my role in the family now that my children are grown?	Family Role Definition: What will my role in the family be when I am no longer involved in a career? How will my significant relationships with spouse and/or children change?
	Work/Family Conflict: How can I effectively balance work and family commitments? How can I spend time with my family without jeopardizing my career advancement?	Work/Family Conflict: How can I make up for the time away from my family when I was launching my career as a novice?	Work/Family Conflict: Will family and leisure activities suffice, or will I want to begin a new career?

In 1967, Levinson founded a research project to study adulthood, in which mentorship emerged as a primary driver of *healthy* adult development (Levinson et al., 1978). His model draws upon Erikson's *psychosocial theory of development*, the process known as generativity, which describes the impact of external factors on personality development throughout an individual's lifetime (David, 2014). Through *generativity*, middle aged individuals become

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aware of their place in the cycle of life. They become concerned for future generations, which leads to mentoring as a way to help others. Mentoring is doing something for themselves, too; they are making productive use of their own knowledge and skills (Levinson et al., 1978; Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021). Allen, Finkelstein, and Poteet (2009) also cite *generativity* as one of the benefits of the professional mentoring relationship. Mentors often find intrinsic satisfaction through mentoring, (Fleig-Palmer & Schoorman, 2011; Maynard-Patrick & Baugh, 2019; Burmeister, Wang, & Hirschi, 2020; Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021).

The focus on *generativity* notwithstanding, little research has focused on other benefits for mentors, (Raabe & Beehr, 2003). When considered, research has often cited enhanced career success, including enhanced loyalty from staff and recognition from leadership, which results in faster promotions that bolster organizational commitment and job satisfaction, (Rigsby, Siegel, & Spiceland, 1998; Ragins & Kram, 2007; Maynard-Patrick & Baugh, 2019; Iverson, 2019; Luo, Ma & Li, 2021; Lin, Cai, & Yin, 2021; Garg, Murphy & Singh, 2021). It may also include increased knowledge gained through reciprocal interactions with the mentee such as updated technical skills, (Higgins & Kram, 2001; Passmore et al., 2013; Maynard-Patrick & Baugh, 2019).

The benefits of mentorship for both mentors and mentees firmly established, we now move to formal mentoring programs. Kram set forth six principles that serve as a theoretical framework for formal mentoring programs.

Table 2.5. Principles for Designing Education on Mentoring; adapted from Kram (1988)

1. Define learning objectives for a specific target population.
2. Emphasize exploration of attitudes and the behavior required to initiate and manage relationships that provide mentoring functions. Supplement skill training and self-regulation with cognitive learning about life and career stages and the role of mentoring in career.
3. Provide opportunities to practice the interpersonal skills of active listening, communication, building rapport, managing conflict, collaboration, coaching, counseling, etc., in role-play situations and/or in discussion of on-the-job relationships.
4. Provide opportunities for constructive feedback from instructors and participate on interpersonal style and on specific strategies for initiating relationships that provide mentoring functions.
5. Provide opportunities to experiment with new behavior, and to see models of effective coaching and counseling.
6. End with planning for back-home application of skills to current and future relationships.

As a result of Kram's principles, there is recognition that formalized mentoring programs are organizational best practices and that "mentoring programs help organizations develop leaders, retain diverse and skilled employees, and enhance succession planning" (Allen et al., 2009, p.XI). Allen et al. created an evidenced-based guide to assist organizations in the design, application, and operation of a formal mentoring program. It is based upon the premise that some explicit, pragmatic tools can assist any organization in developing a successful program (Allen et al., 2009). They have concluded that mentoring programs should:

Table 2.6. Principles for Mentoring Programs; adapted from (Allen et al., 2009)

1. Be strategically aligned with the organization's core values and mission
2. Facilitate effective relationships
3. Include a framing structure
4. Conduct a mentee needs/profile form and mentor goals assessment
5. Produce a training program with agendas, activities, model forms
6. Include an evaluation plan
7. Establish and maintain a monitoring and evaluation process

Orientation and training processes help orient the mentor and adequately prepare them for the role (Allen et al., 2009; Maynard-Patrick & Baugh, 2019; Iverson, 2019; Lin, Cai, & Yin, 2021). Any mentorship program can benefit from some form of orientation and training (Murphy, 2012; Bouquillon, Sosik & Lee, 2005; Garvey, 2006; Iverson, 2019). Orientation

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and training programs also alleviate the stress mentors and mentees feel at the beginning of the mentorship process (Kram, 1988; Chun et al., 2010).

Monitoring the relationship, especially early in the match, ensures that the dyad is progressing towards shared goals and understand the initiative's importance to the organization. Monitoring programs should be designed with three aspects in mind: frequency, method, and content. An evaluation process should be used to determine if a program is meeting its stated goals, whether progress is cost effective, whether the participants' attitudes are included, whether it looks for areas of improvement, and whether the program addresses the standards necessary to justify its continued existence. Allen et al.'s process is founded on Kram's definition of mentorship; during the introduction, the authors outline Kram's career and psychosocial functions (Allen, 2009).

2.2.7. Issues in Professional Mentoring Programs

Although everyone can benefit from mentoring, not all mentoring relationships are successful, (Mohtady et al., 2019; Gruber et al., 2020). No matter how the mentoring relationship begins, many researchers have found that both parties utilized *social exchange theory*, i.e., considered the potential of the relationship from a cost-benefit perspective, when considering its success, potential for longevity, etc. (Raabe & Beehr, 2003, Janssen et al., 2016, Mohtady et al., 2019; Maynard-Patrick & Baugh, 2019). When both determine that the mentoring relationship is worth the investment, often there is an imbalance in benefits; by its very nature, mentoring tends to benefit the mentee, (Kram, 1988; Higgins & Kram, 2001; Megginson et al., 2006; Garvey, Stokes & Megginson, 2018; Maynard-Patrick & Baugh, 2019; Greco & Kraimer, 2020). As a result, the mentee may feel an unresolved debt that cannot be easily repaid to the mentor. According to *the theory of generalized reciprocity*, the mentee may resolve this *felt obligation* by sharing their knowledge and experience with their own mentee; nonetheless, this sense of *duty* does not guarantee effective mentorship, (Maynard-Patrick & Baugh, 2019).

Having served as both a mentee and a mentor, the researcher has experienced *generativity* from both perspectives. Although the term was not known to the researcher at the time, the researcher's feelings of deep appreciation for the guidance and reassurance that mentors provided felt like something that could never be repaid. As the researcher's career has expanded and moved into academia, opportunities to repay those debts by serving as a mentor expanded exponentially. As this study moved into its final stages, it became apparent

to the researcher that these feelings of obligation also affected her decision to expand the body of knowledge centering on mentorship.

Even when good intentions exist on both sides, obstacles can get in the way. Mohtady et al., found substantial differences in mentors' and mentees' perceptions of a successful relationship with each participant's age being an influencing factor, (2019). Likewise, Urick found that the Covid-19 pandemic exacerbated intergenerational challenges such as communication, which can lead to decreased knowledge transfer, (2020). Interpersonal skills are also extremely important (Wong, Cross, & Mueller, 2018; Gisbert-Trejo et al., 2019b); relationships can be sidelined due to issues with Kram's *psychosocial functions*, i.e., communication, active listening, empathy, competition, managing conflict, etc. that are subsets of emotional intelligence (Kram, 1988; Urick, 2020). Emotional intelligence— including accurately identifying, understanding, and controlling emotions—facilitates and intellectualizes emotional growth. Emotionally intelligent individuals are often more successful in interpersonal relationships; as mentors, these individuals tend to instill a feeling of acknowledgment, respect, autonomy, appreciation, and fulfillment in their mentees, which forms the basis for a trusting relationship (Chun et al., 2010; Bapat et al., 2021).

In formal mentoring programs, these support mechanisms are enhanced when a trusting bond is formed between the mentor and mentee. Thus, trust should be emphasized during the program's design, throughout training, and during the *matching* process (Bouquillon, Sosik & Lee, 2005). "Trust is the fabric or glue that binds mentor and protégé together in a safe, productive, and committed relationship" (Johnson & Ridley, 2008, p.115).

Additionally, a mentee's trust—that their mentor's motivations, expertise, and credibility are authentic—is a key component of the mentee's acceptance of advice, as well as their willingness to engage in activities suggested by the mentor necessary for a successful mentorship experience (Gettman, 2008; Mohtady et al., 2019; Bapat et al., 2021). One cannot assume, however, that trust between mentees and mentors is automatic or easily maintained when, "…young people, born in the last quarter of the twentieth century, bring a mindset that is quite different from their Gen-X and baby boomer predecessors" (Leonard, Swap, & Barton, 2015, p.196). "Millennials are less loyal and trusting than their predecessors, work/life balance is very important, at times more important than financial rewards, and they seek constant feedback and rapid career progression," (Lester, 2018a, p. 4). Millennials, now the United

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States' demographically largest generation, do not easily trust others (Pew Research Center, 2014; Pew Research Center, 2016).
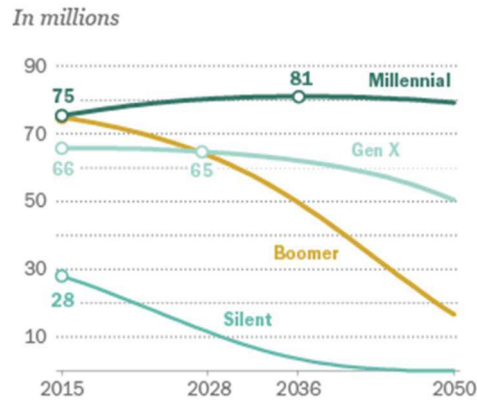
Figure 1: "Millennials are America's Largest Generation" (PRC, 2016)

A 2014 study by the Pew Research Center found that Millennials are reaching adulthood with the lowest level of *social trust* of any of the five generations in the working world, (Burmeister, Wang, & Hirschi, 2020). Nonetheless, Millennials pursue "continuous training and feedback," especially through mentoring; during a 2006 Deloitte study, Millennials expressed that their "ideal" work week would include more mentoring, (Iverson, 2019, p.51). As the majority of the workforce, they will dictate office culture for the next forty years (Moon, 2014).
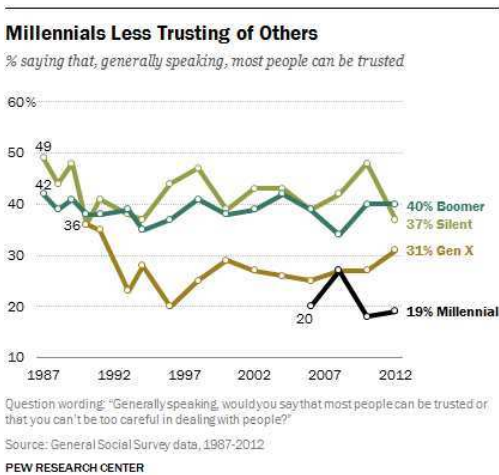
Figure 2.1. Millennials in Adulthood: Detached from Institutions, Networked with Friends (PRC, 2014)

Accordingly, this lack of trust must be dealt with in every organization. "Millennials want connection, which cannot be attained without trust. Mentoring builds trust" (Moon, 2014, p.27).

Just as mentoring builds trust, trust builds mentoring, (Garvey, 2006). Trusting relationships lead to more in-depth conversations; employees in firms that have higher levels of trust share more knowledge because trust mitigates perceptions of personal risk. Therefore, to increase knowledge transfer, every effort must be made to increase trust in all mentoring efforts (Fleig-Palmer & Schoorman, 2011, Saini, Arif, & Kulonda, 2018; Tsouri, 2019).

Trust also increases the probability that the knowledge received by the mentee will be understood, internalized, adopted, and utilized in the future; trust comes from continuing interactions, i.e., social embeddedness, and familiarity that is based on proximity, (Tsouri, 2019). While investigating the critical success factors that affect knowledge sharing within the lean construction process, Saini et al. found that the most important was trust, (2018). "Trust has also been considered a direct antecedent to knowledge transfer… …Allen, Finkelstein, and Poteet (2009) highlight a main benefit of formal mentoring programs for organizations: increased organizational learning and knowledge creation. Implicit in a formal mentoring program is the expectation that mentors will share technical and organizational knowledge..." (Fleig-Palmer & Schoorman, 2011, 336).

This may be problematic when mentoring dyads are not in proximity and mentoring programs are not internal to the organization, (Tsouri, 2019; Urick, 2020). An emerging trend in mentoring programs is *Inter-Organizational Mentoring*. When internal programs are not available or practical for the organization, outsourcing may be an answer. When smaller companies cannot support mentoring programs, they may join other organizations in a joint mentoring effort. Similar to professional organizations that sponsor their own mentoring programs, these programs are external to any specific organization and match mentors and mentees based on specific factors that do not include their employer, (Gisbert-Trejo et al., 2019a).

When organizations want to maintain their own program but do not have the resources internally, they may now purchase the services of external agencies. These agencies offer self-service options that provide guidance, training, and customized workflows to help launch an organization's internal program. If the organization does not have the resources to manage their own program, these agencies will also design, build, and manage a customized mentoring program for them, (Chikweche & Bressan, 2018; Coley & Associates, Inc., 2019).

In both situations, inter-organizational mentoring and outsourcing, trust and knowledge sharing may be hindered by these actions, (Tsouri, 2019). Since neither is highlighted as a benefit or hindrance, in these specific situations organizations that take advantage of these services may be determining that the other benefits of mentoring take precedence, (Chikweche & Bressan, 2018).

When knowledge sharing is a primary goal of the mentorship process, processes introduced in the next section, such as those of Leonard, Swap and Barton should be considered.

2.2.8. Professional Mentoring Programs and Knowledge Transfer

Critical Knowledge Transfer offers insights and practical advice on knowledge transfer, based on the authors' decades of research and experience in this area (Leonard, Swap, & Barton, 2015). These are manifested in an accelerated, formal mentorship program, which offers an organized, planned progression of directed experiences called OPPTY (Observation, Practice, Partnering, joint problem solving and Taking responsibilitY.) During *observation*, the mentee shadows the mentor, thoroughly analyzing their actions. *Practice* includes the emulation of one of the mentor's key tasks, observed, and evaluated by the mentor. Afterwards, both engage in a *partnering* exercise using interactive problem solving to explain their thought processes and/or actions, which allows the mentee to have an active role in their mentorship experience. Then, the mentee progresses to the final stage, *Taking responsibility*; during this stage, the mentee takes the lead role in one of the mentor's assignments, purposefully reflecting upon their actions and receiving coaching from the mentor. Overall, the mentee and mentor are equally responsible for the program's success (Leonard, Swap, & Barton, 2015).

The OPPTY experience includes *assessment*, which is unique amongst these programs. Assessment is fundamental when evaluating the success of the program and/or defending the investment made (Leonard, Swap, & Barton, 2015).

Table 2.7: Assessing Knowledge-Transfer Success; adapted from (Leonard, Swap, & Barton, 2015)

	Network-capability based (knowledge across the organization)	**Individual or group-competency based** (an individual's competency)
Input (effort; investment)	Infrastructure for knowledge sharing; creation of networks; tracking of participation; leadership of communities	Investment of time and effort in workshops and knowledge-sharing sessions; mentoring; being mentored
Output (changed state)	Increase in archives of knowledge tips; answers to inquiries; increased participation in networks	Achieving greater competence; narrowing gap between experts and learners; incumbents and successors
Value to Organization	Swift solution of problems; global access to expertise; high level of connectivity; diffusion of best practices	Less relearning; fewer mistakes; better job performance; better succession planning
Measures of Value	Cost avoidance; testimonials of value received	Gap closure; learning log; archiving competency level; recognition as expert; promotion

Knowledge transfer programs typically measure success across these metrics: participants' levels of satisfaction, participants' self-documented advancement, or by assessing the narrowing of the knowledge gap between the expert and learner. Only by putting proactive, systematic processes in place can progress be measured. Participants' *Learning Logs* can help demonstrate progress, but *Gap Assessment Tools* introduced at the beginning of the project allow knowledge transfer to be measured (Leonard, Swap, & Barton, 2015).

Allen and Leonard's mentorship programs share the same theoretical underpinning. Kram and Allen et al. created systems to build on and standardized the theory, while Leonard, Swap, & Barton established processes that target and enhance knowledge transfer.

Table 2.8. Comparison of Mentorship Training and Program Design

Kram	Allen	Leonard
Professional Mentoring Program	Professional Mentoring Program	Professional Mentoring Program
Planned Infrastructure	Planned Infrastructure	Planned Infrastructure
Goals & Objectives:	**Goals & Objectives:**	**Goals & Objectives:**
Training Process	Training / Workshop	Training – OPPTY / Workshop
	Mentor/Mentee Contract	Mentor/Mentee Contract
Implementation Opportunities (Practice)	Implementation Opportunities (Action Plan)	Implementation Opportunities (Action Plan)
Triads:	Triads:	Triads:
Monitor – program/relationships	Monitor – program/relationships	Monitor – program/relationships
Mentor Interaction	Mentor Interaction	Mentor Interaction
Mentee Interaction	Mentee Interaction	Mentee Interaction
Model Effective Coaching and Counseling	Model Effective Coaching and Counseling	Model Effective Coaching and Counseling
Evaluation / Assessment Measures	Evaluation / Assessment measures	Evaluation / Assessment measures
	Shared responsibility for success	Shared responsibility for success
		Emphasis on Experiential Learning, i.e., Directed, Mini-Practice Experiences
Outcome: Formalized mentorship processes that provide support to mentees via knowledge transfer in both psychological and organizational factors in a professional environment	**Outcome:** Organizational learning via customized, explicit tools for mentorship program success	**Outcome:** Knowledge transfer between individuals, specific groups, or entire organizations via an accelerated apprenticeship program

In all three programs, the goal of knowledge transfer, or sharing, is strongly implied or stated. Kram discusses the mentor's role in conveying specific expertise, i.e., knowledge transfer, which contributes to mentee skill development, emotional maturity, and learning. Allen's work addresses organizational learning as a desired outcome; the mentee is focused on learning the mentor's subject, their technological expertise, and/or a generational perspective. Leonard, Swap, & Barton, on the other hand, focus on transferring *deep smarts*, i.e., knowledge, through an accelerated apprenticeship program otherwise known as a mentorship program. Likewise, several recent studies have focused on "technical generativity," which focuses on mentoring that is centered on transferring workplace-based

technical skills, (Krahn, Johnson & Galambos, 2021). No matter the term used, the principles are similar; mentorship and knowledge sharing are intertwined.

2.3. Knowledge

2.3.1. The Definition of Knowledge

What is knowledge? Grant (1996, p.110) contends that "…this question has intrigued some of the world's greatest thinkers from Plato to Popper without the emergence of a clear consensus…" Even today—after much debate by great philosophers such as Aristotle, Socrates, Locke, Descartes, Kant, Marx, and Hegel—there is still no consensus. Alavi and Leidner simply define knowledge as personalized information contained in an individual's mind (2001). Only the briefest of definitions is accepted universally; that knowledge is 'justified true belief,' first attributed to Plato (Nonaka & Takeuchi, 1995, p.21). In the Oxford English Dictionary (1939), "intellectual acquaintance with, or perception of, fact or truth; the fact, state, or condition of understanding" is the most appropriate definition among a plethora of options (Little, Fowler, & Coulson., 1939, p.1093).

2.3.2. Data, Information, and Knowledge

Many scholars refine their definition of knowledge via a defined spectrum: from data to information to knowledge (Boisot, 1998; Alavi & Leidner, 2001; Beveren, 2002; Leonard, Swap, & Barton, 2015; Nonaka & Takeuchi, 1995). This is an important distinction that can create issues if improperly understood. Data are simply facts and figures; information is data that has been analyzed for a purpose. Likewise, information can be of limited value unless it becomes knowledge, (Yang et al., 2020). "Hordes of information are of little value; only that information which is actively processed in the mind of an individual through a process of reflection, enlightenment, or learning can be useful" (Alavi & Leidner, 2001, p.110).

Boisot took this concept and boiled it down to its essence. "Knowledge is a capacity that is built on information extracted from data" (Boisot, 1998, p. xiv). Nonaka and Takeuchi believe that information is a pathway for prompting and creating knowledge (1995). Leonard, Swap, & Barton defined data as isolated, neutral, unbiased facts and statistics; conversely, information is data grounded in a context that "conveys meaning" and knowledge is "information that is relevant, actionable, and at least partially based in experience" (Leonard, Swap, & Barton, 2015, p.18).

2.3.3. Explicit, Implicit, and Tacit Knowledge

Many scholars cite a basic concept or definition of knowledge but refer to discrete classifications and/or distinctions in the management literature to express their focus. These include "subjective vs. objective knowledge, implicit or tacit vs. explicit knowledge, personal vs. propositional knowledge, and procedural vs. declarative knowledge" (Grant, 1996, p.111). Of these classifications, tacit and explicit are the most common. "Tacit knowledge is personal, context-specific, and therefore hard to formalize and communicate. Explicit or 'codified' knowledge, on the other hand, refers to knowledge that is transmittable in formal, systematic language" (Nonaka & Takeuchi, 1995, p.59). This makes the management of tacit knowledge extremely challenging, (Chen et al., 2019).

Table 2.9. Two Types of Knowledge (Nonaka & Takeuchi, 1995)

Two Types of Knowledge

Tacit Knowledge (Subjective)	Explicit Knowledge (Objective)
Knowledge of experience (body)	Knowledge of rationality (mind)
Simultaneous knowledge (here and now)	Sequential knowledge (there and then)
Analog knowledge (practice)	Digital knowledge (theory)

Those in the built environment must understand both theoretical as well as practical knowledge based on experience, (Wong, Cross, and Mueller, 2018; Gorecki, 2019). In construction, "…managers get two-thirds of their information from face-to-face or telephone conversations (tacit) and the remaining third from documents (explicit)" (Egbu & Robinson, 2005, p.36). This is true throughout the built environment, where tacit knowledge is often the primary source of knowledge following formal education, (**Wong, Cross, & Mueller, 2018; Saini, Arif, & Kulonda, 2018**). "Most trainee engineers are thrust into the professional world armed with little more than the basics. Their lack of industry-related knowledge and experience can make the prospect a pretty daunting one, to say the least," (Wong, Cross, & Mueller, 2018, p. 22). Summing up a decade of research, Tom Allen of MIT found that engineers were "roughly five times more likely to turn to a person for information," i.e., tacit knowledge, "than to an impersonal source such as a database or a file cabinet," i.e., explicit knowledge (**Cross, Parker, Prusak, & Borgatti**, 2001, p.100). Construction companies find it challenging to identify specific opportunities for knowledge sharing in ongoing projects because every situation is an opportunity to gain experience. From moment to moment, every

action is time sensitive, thus employees must concentrate on the challenge at hand to solve issues when they arise, not the learning opportunity or the knowledge management process, (Tan et al., 2010). Nonetheless, knowledge repositories, such as databases, intranets and extranets, and social and e-learning platforms have become commonplace even in the built environment; often these systems fail to achieve their goals regarding the dissemination of knowledge, particularly tacit knowledge, (Yang et al., 2020).

When Polanyi's research on tacit knowledge began in the 1950s it "laid a theoretical foundation and coined the often-quoted phrase, *we can know more than we can tell*" (Taylor, 2007, p.61). Boisot elaborated on Polanyi's beliefs regarding tacit knowledge but propelled the concept even further by noting three distinct categories. The first being "not said because everybody understands them and takes them for granted," the second being "not said because nobody fully understands them, as such, they are elusive and inarticulate," and the third being "things that are not said because while some people can understand them, they cannot costlessly articulate them" (Boisot, 1998, pp.56-57).

Scholars such as Nichols and Leonard, Swap, and Barton include definitions/categorizations similar to Boisot's third classification; this is often referred to as *implicit* knowledge. "Knowledge that can be articulated but hasn't yet been expressed is implicit knowledge. Its existence is implied by or inferred from observable behavior or performance" (Nichols, 2000, p.13).
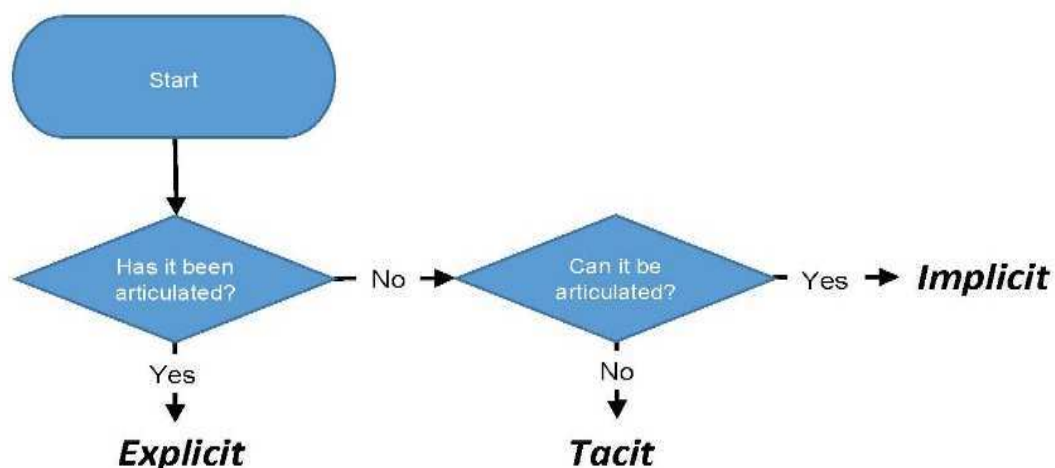
Figure 2.2. Differentiating Explicit, Tacit, and Implicit Knowledge; adapted from (Nichols, 2000)

Many professionals, especially those considered to be experts, can make use of and share their implicit knowledge at will. That is, they can access knowledge that has not been recorded previously, but which can be assessed and converted into explicit knowledge rather easily. Leonard, Swap, & Barton break implicit knowledge into two sub-categories: *undocumented but easily articulated*, knowledge that is top-of-the-mind and easily shared by the subject matter experts when asked, and *rules-based*, which are undocumented forms of knowledge that subject matter experts can turn into coherent steps or processes based upon rules of thumb. These become heuristics that are based upon experience and may or may not easily be articulated when elicited (Leonard, Swap, & Barton, 2015).

Accessing explicit, implicit, and tacit knowledge

Easier to access	Explicit:	Documented in some textual, visual, or auditory form; can be provided by the expert without much, if any, additional verbal explanation
	Implicit:	
	1	Not formally documented, but can be mapped as categories of tasks, skills, or roles
	2	Not documented or embedded in processes but can be articulated by the expert in rules, steps, stages, or techniques
More difficult to access	Tacit:	
	1	Never articulated before, but can be explained by experts through smart questioning
	2	Not recognized as knowledge by expert (knowledge is often unconscious)

Figure 2.3. Accessing Knowledge; adapted from (Leonard, Swap, & Barton*, *2015)

2.3.4. Knowledge Management

Garvey, Stokes and Megginson theorized that "… all economies are knowledge economies and they have always been, (2018, p. 166). In recent years, these three types of knowledge—explicit, implicit, and tacit—have been operationalized as organizational resources, i.e., knowledge *management* (KM). Starting in the 1950s, Peter Drucker posited formalized knowledge as a key resource for business success as well as an important resource for individuals; he defined these individuals as *knowledge workers*. By the 1990s, Drucker noted that knowledge had become directly linked to *action* and *results* (Drucker, 1993). Based on this, knowledge is an asset that must be managed.

Researchers proposed and have demonstrated that competitive advantage can be found and sustained in the long-term by incorporating KM techniques that encourage organizations to recognize and leverage their accumulated knowledge, (Tsouri, 2019; Gisbert-Trejo et al., 2019b; Chen et al., 2019). This allows organizations to transform their

current knowledge-based assets into new knowledge, which in turn becomes a foundation for achieving additional competitive advantage (Drucker, 1992; Alavi & Leidner, 2001; Arif, Al-Zubi, & Gupta, 2015; Holsapple & Singh, 2001; Saini, Arif, & Kulonda, 2018; Garvey, Stokes, & Megginson, 2018; Chen et al., 2019; Yang et al., 2020).

KM includes four basic processes: creating, storing/retrieving, transferring, and applying knowledge. "These major processes can be subdivided, for example, into creating internal knowledge, acquiring external knowledge, storing knowledge in documents versus storing in routines, as well as updating the knowledge and sharing knowledge internally and externally" (Alavi & Leidner, 2001, p.114).

It is not enough to create, store and formulate processes for knowledge transfer/exchange; these are preconditions for the successful application of knowledge. For knowledge management to be successful, the knowledge being managed must be *applied* within the organization. "The management of knowledge is not an end in itself, but a process, which is aimed at creating value, increasing productivity and gaining/sustaining competitive advantage" (Anumba, Kamara, & Carrillo, 2015, p.168). While trying to determine a mentor's essential characteristics for success, Gisbert-Trejo et al. (2019b) discovered that the most valued characteristics were directly related to knowledge sharing. Likewise, mentorship is aimed at creating value, increasing productivity, and gaining/sustaining competitive advantage by transferring knowledge from one individual to another. This is also known as talent development, (Dalal & Akdere, 2018).

2.3.5. Knowledge and the Built Environment

Knowledge has been studied extensively, even in the built environment, (Egbu, 2000; Egbu, 2004; Pathirage, 2007; Chen & Sherif, 2010; Bakar et al., 2016; Schröpfer, Tah, & Kurul, 2017; Hoffmeister et al., 2011; McGettingan & O'Neill, 2009; Nkomo & Thwala, 2013; Nkomo et al., 2018a; Nkomo et al., 2018b; Aigbavboa et al., 2016; Bashouri & Duncan, 2014; Egbu & Robinson, 2005; Lundberg, Lidelöw & Engström, 2017, Saini, Arif, & Kulonda, 2018). Specialized studies in knowledge research have focused on many subtopics, including tacit knowledge, knowledge transfer, and knowledge sharing in the built environment, (Saini, Arif, & Kulonda, 2018). These studies recognize that tacit knowledge is important because much of the knowledge in the built environment is experiential, based on intuition, lessons learned, etc. The project-based nature of the built environment also makes knowledge management more challenging as projects are temporary, teams vary from project

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to project, and the resulting knowledge gained during the project is fragmented and decentralized, (Arbabi, Salehi-Taleshi, & Ghod, 2020; Yang et al., 2020). Even when businesses have invested in knowledge management systems, usually databases, the return on investment is minimal.

Because of the fragmented nature of the built environment and the specificity of each project, the "AEC industry relies heavily on tacit knowledge… these characteristics affect how information flows between stakeholders in the process, making it difficult for the novice as well as seasoned professionals to understand the entirety of the process," (El Debs, Brunese, & Shaurette, 2018, p. 77). When Yang et al. (2020) asked their case study participants, employees of Siemens Power Generation, about their preferred ways of learning, they overwhelmingly preferred "learning by doing," followed by "conversations/discussions," and "reflecting on actions," over "videos with explanations," "reading," and "writing down information," (p. 282). Thus, their preferred processes, and tacit knowledge itself, make knowledge sharing in the built environment challenging, (Saini, Arif, & Kulonda, 2018). This is also exacerbated when the dynamic nature of the economy is considered (Chen & Sherif, 2010).

Therefore, developing organizational structures that encourage involvement, communication, and sharing is necessary. These include communities of practice, coaching, and mentorship (Egbu, 2004; Pathirage, 2007; Bashouri & Duncan, 2014).

2.3.6. Mentoring, Knowledge, and the Built Environment

As mentioned in 1.1 Background to the Research, mentorship has been discussed as a process for knowledge sharing in the built environment but has not been a focus of academic research (Egbu, 2000; Egbu, 2004; Pathirage, 2007; Chen & Sherif, 2010; Bakar et al., 2016, Schröpfer, Tah, & Kurul, 2017). Likewise, the little research that has been done on mentorship in the built environment has not focused on KM (Hoffmeister et al., 2011; McGettingan & O'Neill, 2009; Nkomo & Thwala, 2013; Nkomo et al., 2018a; Nkomo et al., 2018b; Aigbavboa et al., 2016).

More specifically, only two studies have focused on all three elements: mentorship, knowledge, and the built environment. The first, a quantitative survey that focused on union trade members in the Northwest U.S., asked questions about mentor characteristics, specifically which ones they found most desirable in a mentor. They were asked whether

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they'd had a mentor, but not whether they had served as a mentor. One of the conclusions of the study was that knowledge sharing was an important attribute of mentors in construction. Interestingly, one of the directions for future research stated that "a qualitative or phenomenological approach may prove useful in augmenting this line of research," (Hoffmeister et al., 2011, p. 684).

The second, a phenomenological study, used semi-structured interviews and thematic content analysis to explore a new mentoring paradigm sponsored by the National Science Foundation. Underrepresented minority faculty and emeriti faculty in various engineering disciplines were paired at multiple educational institutions. Eleven mentoring matches were produced by the researchers, who were then interviewed about their experiences. The duration of the mentoring relationship was not addressed in the article. Mentees found the new mentorship paradigm assisted career advancement and mentors found a sense of fulfillment in sharing their experience within their specific academic field. Knowledge sharing was not emphasized as a function or by-product of the study (Mendez, Conley, & Keith, 2017).

Although elements of both studies are incorporated into this research, neither fulfills the research agenda of this study.

2.4. Chapter Summary

As the foundation of this study, this chapter identified the key research areas necessary to understand the current state of management theory, mentorship, and knowledge research as standalone topics and in relation to the built environment. Since management theory is at the core of the two other topics, it was the first area presented, beginning with the classical definitions, then progressing into aspects of behavioral and systems management, including Koontz's Management Schools, then focusing on organizational behavior, theory, and organizational learning.

After introducing organizational learning, the chapter expands into a detailed description of its relationship to knowledge management, especially *socialization* as the most intuitive and effective facet of knowledge sharing. Several studies point to socialization as a key determinant in the formation of knowledge networks – noting its association with real-time feedback loops, and need for proximity, fellowship and trust – as well as the toll that distance, working in virtual environments, and exogenous shocks can take on knowledge

sharing. It then transitioned to mentoring within the context of organizational learning and the mentorship experience. Each of these topics, in turn, became key components of this study as no previous research was found that focused directly on mentoring as a means to knowledge sharing in the built environment, especially from the mentor's perspective.

A second key factor in this chapter, *the mentoring process* began with a definition of mentoring as the affiliation between two individuals whereby the more senior provides support and guidance to the junior to advance their career growth and professional development. After addressing mentoring from a historical perspective, the chapter focused on mentoring in its various forms from formal to informal – including episodic, situational, or spot mentoring – that are akin to, but not the same as *in between moments*, which became another strong tenet of this research.

The chapter then evolved into a discussion of various mentoring models as well as the difference between mentoring and coaching, which are often misunderstood and misused in popular media. After these sections, issues pertaining to professional mentoring programs were discussed including trust and knowledge transfer, which led to the third key factor in this study, knowledge.

As with the earlier sections, the knowledge section began with its definition, i.e., as a *true state of understanding*, then transitioned into an established spectrum, from *data* to *information* to *knowledge*. The next section addressed explicit, implicit and tacit knowledge, which is an important distinction that also directly affected this study and ends with a discussion of knowledge and the built environment. As discussed in that section, knowledge in conjunction with the built environment has been studied extensively via subjects such as project-based enterprises, tacit knowledge, etc. Even so, the combination of mentoring, knowledge, and built environment has not been a focus of much research and what research has occurred hasn't focused on this intersection from the mentor's perspective, nor from those in New York City. This all results in a measure of urgency for this research to begin to address this significant gap in the literature.

The researcher will begin to address this gap in more detail in the next chapter by determining the correct methodology for this exploratory study. As such, chapter three will consider the definition of research independently and within the confines of this study, then transition into an introduction to research paradigms, philosophical assumptions, and theory development. It will then shift into an overview of this study's research problem and

methodology, the data collection process and analyses, and conclude with a consideration of several ethics processes and validation strategies.

CHAPTER 3 — Methodology

3.1. Introduction

Within the context of the research, mentorship is defined as a relationship between two individuals, whereby the more senior is committed to providing guidance and support to the more junior for organizational socialization, career advancement, and professional development purposes (Ragins & Kram, 2007). Inherent in this process is the exchange of knowledge between these two individuals. Tacit knowledge held by mentors—knowledge that is individualized, context-specific and experience-based—is shared during mentoring. This enables crucial knowledge retention, becomes a critical source of competitive advantage, and contributes to an organization's long-term performance.

Beyond the study's aim and objectives, the 'metes and bounds' of this project are based on this definition. Therefore, the following includes a definition of research, an introduction to research paradigms, and an exploration of philosophical assumptions and theory development. Some sections and subsections are more detailed. Throughout the PhD journey's iterative process, including feedback from the Interim Assessment and Internal Evaluation, and comments from peer-reviewed conferences and journals, some sections became more detailed to reflect the researcher's understanding, philosophical position, and the methodology adopted for this study. It then transitions to the study's research problem, methodology, data collection, analyses, and concludes with ethics and validation strategies.

3.2. Definition of Research

The *English Oxford Living Dictionary* (2018) defines research as "The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions." This definition emphasizes that research is the rational, consistent pursuit of knowledge—not merely belief—via a process for uncovering facts and outcomes.

Thus, researchers must make decisions based upon the question being considered; additionally, they must be aware of their beliefs to mitigate bias being introduced into the process. "…Research comprises *what* (facts and conclusions) and *how* (scientific; critical) components. Being critical, even skeptical, rather than merely accepting, is essential" (Fellows & Liu, 2015, p.3).

Likewise, understanding one's personal philosophy is imperative when defining the approach to the research, the specific research design, and the stance on ethical issues, but it's also critically important during data collection, while analyzing the data, and while

disseminating the results. Dainty (2007, p. 1535) reminds us that which, "...paradigm to adopt fundamentally affects how data are collected and analyzed."

Therefore, this chapter will begin by discussing the researcher's philosophy and assumptions, then follow with the study's methodology and research processes.

3.3. Research Paradigms

Research cannot be separated from a researcher's assumptions and beliefs; hence each researcher must adopt a social consensus or paradigm. Paradigms represent "peoples' value judgments, norms, standards, frames of reference, perspectives, ideologies, myths, theories, and approved procedures that govern their thinking and action," (Gummesson, 2000, p. 19). Creswell and Creswell (2018, p. 5) use *paradigm* as a synonym for their term *philosophical worldview*, which they defined as "a basic set of beliefs that guide action."

Creswell's four worldviews define a researcher's orientation to the world: positivism, constructionism, transformative, or pragmatic. The positivist view that absolute knowledge about reality can be determined has been challenged and superseded by the post-positivist view that knowledge about reality will always be incomplete, especially where human beings are involved. Under positivism, quantitative theories are constantly refined and retested to better understand reality.

Constructionism "focuses on the ways that people make sense of the world especially through sharing their experiences with others via the medium of language" (Easterby-Smith, Thorpe, & Jackson, 2012, p. 23). Constructionists view reality from a subjective perspective garnered by the gathering of numerous participants' perspectives, typically via open-ended questioning that attempts to understand historical and social/cultural perspectives, as well as contextual drivers. The researcher is an active participant in this process, so personal experiences and biases must be made as explicit and transparent as possible during the active interpretation of the fieldwork.

Transformative researchers move beyond constructionism to focus specifically on society's ingrained structural drivers and the oppressed. Reality is rejected and may be simultaneously dismantled in favor of a more just political, social, and cultural reality in which oppression, domination, suppression, and alienation are mitigated.

Unlike the others, the pragmatic worldview is either anti-philosophical or philosophically neutral. The focus is on asking the right questions and on getting results, so

all approaches are judged based on their utility. Quantitative, qualitative, and mixed methods all are acceptable if the consequences and outcomes are operative (Creswell & Creswell, 2018; Creswell & Poth, 2018).

These *worldviews* are undergirded by philosophical assumptions and theory development.

3.4. Philosophical Assumptions

Several philosophical assumptions underpin all four paradigms. Ontological assumptions explain the "nature of reality," (Aldawod & Day, 2017) or *what is real* for the researcher. The researcher's views can range from seeing the world as *independent, ordered, and objective* to seeing it as *a place with multiple meanings and realities, based on interpretation*—which affects research choices.

Epistemological assumptions focus on knowledge—what is deemed appropriate, authentic, and valid—as well as the process of communicating knowledge to a broader audience. This can range from belief in the scientific method to assertions that facts are merely social constructs, or even that theories themselves are far too simplistic. These extremes represent two views: the former positivism and the latter social constructionism (Easterby-Smith et al., 2012). By analyzing the two extremes in detail, researchers can further ascertain the extent that their views align with a philosophical perspective, thus helping to define appropriate research design, etc.

Table 3. Contrasting Positivism vs. Social Constructionism; from (Easterby-Smith, 2012)

Philosophical Assumptions: The differences: Positivism & Social Constructionism

	Positivism	Social Constructionism
The Observer	Must be independent	Is part of what is being observed
Human Interests	Should be irrelevant	Are the main drivers of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research progresses through...	Hypotheses and deductions	Gathering rich data from which ideas are induced (or abduced)
Concepts	Need to be defined so that they can be measured	Should incorporate stakeholder perspectives
Units of Analysis	Should be reduced to simplest terms	May include complexity of 'whole' situations
Generalization through...	Statistical probability	Theoretical Abstraction
Sampling requires...	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Axiological assumptions refer to the role that ethics and values play in research design. Focusing on one subject area versus another is proof positive of the importance of the chosen subject. Likewise, the process chosen to collect data is an indicator. Reflecting their values, researchers may attempt to maintain an objective, independent stance about their inquiry, or see their interpretations as a key contribution to the work (Saunders, Lewis, & Thornhill, 2016). The way researchers think about these choices defines their view of the world, which impacts their research philosophy, and influences their approach to the research. The only real requirement is coherence.

3.4.1. Researcher's Background and Philosophical Assumptions

The researcher's professional and academic background played a large part in the formation of this study and directly impacted its philosophical and methodological approach. Even though she tended toward qualitative research, at the beginning of her PhD journey she assumed she'd pursue a mixed methods approach. This was based on her experience working at an engineering-focused institute that concentrated almost exclusively on quantitative research, which didn't align with her interest in human nature and the pursuit of knowledge, nor with her subjective view of reality.

After extensive review of Cresswell's philosophical worldviews, it was clear that she was a *social constructionist*, an individual who was interested in a context-specific process that was "socially constructed and determined by social structures," (Egbu, 2004, p.303), who preferred to conduct research that focused on people's views of *their* world in specific situations. Since she'd discovered knowledge management in the early 2000s, and it was an ongoing interest, she knew wanted to incorporate it into her pursuit of original research at the PhD level.

Likewise, a personal fascination with *talent*, especially as a strategic source of competitive advantage, had endured throughout her career. When considering *(tacit) knowledge management* and its role as a key differentiator that binds with an individual's personality, attributes, and work ethic, it became clear that paths to knowledge sharing, particularly *mentoring*, would also be a key part of the study. This was due in large part to her professional experience. Having been a mentor herself, she has served as an executive in each of the following Communities of Practice (CoP): the American Institute of Architects (AIA), the Design-Build Institute of America (DBIA), the Society for Professional Services (SMPS), and the Construction Management Association of America (CMAA) leading while adhering to their policies and processes. Additionally, she was a paid staff member at the DBIA, first

as the Executive Director of the Mid-America Chapter, and later as the Vice President of Membership and Marketing for the national organization in Washington, D.C. She'd also been invited to speak at numerous professional national and conferences on various topics related to career planning, strategic planning, competitive advantage, succession planning, etc., which all align with mentorship.

Additionally, at the New School of Architecture, she developed and led an alumni mentorship program, which allowed her to proactively develop processes and pragmatically explore the role of mentorship in emerging professionals' careers. She also taught mentorship as a topic in several classes, including two she personally developed: *Professional Practice for Construction Managers* and *Strategic Responses to Cyclical Environments*. While at Stevens Institute of Technology, she adapted and taught *Strategic Responses to Cyclical Environments* for another seven years, integrating knowledge sharing and mentorship as active components.

Each of these experiences influenced not only this research topic but her approach to the study itself. As a *social constructionist*, she knew that her perspective on the topic could not be separated from the study and that her focus would be to gather rich, complex data from the participant's perspectives, which would increase a holistic understanding of the situation. As she completed the literature review, it became apparent that research on mentorship in the built environment was almost non-existent and that the little research that did exist focused almost exclusively on the mentee's perspective. Thus, the general premise of her topic began to evolve until it focused on an exploration of how to improve mentorship programs as a resource for knowledge sharing in the built environment. The study would focus on mentors' perspectives of the mentoring process in New York City to gain an overall understanding of the situation using an iterative, inductive form of theory development.

Her academic research has also concentrated on these topics from a similar perspective. Mentorship and/or knowledge sharing has been the topic of her last twelve peer-reviewed conference presentations and papers. In 2020, her paper, "Strategic Responses to Disruptions: A Mobilization / Response Plan to Manage Knowledge and Intellectual Capital in the Built Environment During Trying Times" became a finalist in the *6th International Knowledge Management /Intellectual Capital Excellence Awards at* the 21st European Conference on Knowledge Management and was published in their journal. As an Assistant Dean at Pennsylvania College of Technology, she mentors more than 30 faculty direct reports, sharing her extensive knowledge of the workings of the built environment.

3.5. Theory Development

A project may be prompted in response to a theory, a noticed anomaly, or a gap in the research. That catalyst, and the cascade of actions in response, constitute research, though theory development must be considered prior to a methodology being selected. There are three distinct types of theory testing: deductive, inductive, and abductive. "It is actually more useful to think of theories as falling at points along a deductive-inductive continuum than as falling into distinct categories," (Miner, 2007, p. 7).

Deduction is simply theory testing. This *top-down* approach begins with a set of propositions, premises, or hypotheses that are evaluated based on data collected; these are formed in rational thought and logic, which is an area of concern as well as the basis for the development of the study's theory. Deduction is typically[1] associated with Positivism. When the data support the theory, the proposition is *true*.

Its counterpart, induction, is a *bottom-up* approach that considers the entire data set, logically arriving at a theory. Founded in observation, researchers develop theories to explain the results of their studies. After theories are developed, new tests are conducted to test the veracity of the newly established theories. Induction is typically associated with constructionism.

A third form, abduction, occurs when an anomaly is noticed, and a set of potential premises are explored to determine a new theory or modify an existing one. The data collection process is formulated to generate a conceptual framework, which is then retested to drive further data collection in an iterative process (Gummesson, 2000; Miner, 2007; Saunders et al., 2016; Easterly-Smith et al., 2012).

3.5.1. Theory Development Adopted for this Study

Once a gap in the research became apparent, i.e., that research on mentoring in the built environment was almost non-existent – especially from the mentor's perspective – the researcher leaned towards a bottom-up, inductive approach. As a constructionist and someone who was trained in *observation* during her undergraduate degree in journalism, interactions with mentors based on such an approach seemed logical and appropriate. She theorized that once a rich and complete data set was collected and analyzed, theory building would be inevitable. Selecting the correct methodology was the critical next step in the process.

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[1] For other deductive approaches, see (Braun & Clarke, 2013)

3.6. Research Methods

"Research methodology refers to the principles and procedures of logical thought which are applied to a scientific investigation; a system of methods" (Fellows & Liu, 2015, p.31). Each stage of the research process is fully integrated to create a clear, consistent process that, when rigorously applied, confidently advances the body of knowledge. Within the built environment in the last 35 years, as a variety of research methods were adopted, philosophical differences arose, prompting debate. Some researchers criticized and even challenged the significance and accuracy of others' research (Dainty, 2007). To avoid such issues in the future, coherent, consistent, and *transparent* methodology is critically important.

3.6.1. Quantitative Research

Quantitative research often uses highly structured data collection strategies to measure or compare attributes in a deductive manner. It focuses on the comparison of two or more variables, measured numerically, for accuracy and validity. Researchers typically don't interact (or minimize interaction) with respondents in pursuit of objectivity. Quantitative researchers use statistics to analyze data and create tables, graphs, and diagrams to interpret it, all in pursuit of trends that reflect relationships (Saunders, et al., 2016; Yin, 2018). Quantitative strategies include experimental research and survey research.

3.6.1.1. Experimental Research

Experimental Research itself is rooted in classical laboratory-based experiments, often found in natural science. It studies the probability of change between two variables, where the dependent variable is changed by the independent variable. More advanced experiments emphasize the numerical value of the change or deal with additional moderating variables. It involves predictions, or hypotheses, as to what will occur during the experiment. Typically, experimental research includes a randomly selected control group and an experimental group, which is the subject of an intervention. To maintain control over the process, experiments often occur in laboratories rather than the field, (Saunders et al., 2016).

3.6.1.2. Survey Research

Survey Research is usually deductive and exploratory in nature and focuses on the descriptive. The results are typically easy to explain and understand as they focus on questions that consider *who*, *what, where*, *how many* and *how much*. Economical in nature,

researchers can send standardized surveys to members of statistically representative populations; the resulting quantitative data is easy to analyze and describe, and should accurately address the population's trends, attitudes, and opinions. Questionnaires are the most common data collection technique, but structured interviews and observations can be included in this strategy, (Saunders et al., 2016).

3.6.2. Qualitative Research

Qualitative research explores *socially constructed* or *subjective* social or human issues to understand, focusing on the complexity of a particular situation. Researchers build flexibility into the work by allowing questions and procedures in their research to emerge over time while generalized themes in the data convey the various perspectives of participants and provide thorough descriptions of their experiences that are then interpreted in the search for meaning, (Creswell & Creswell, 2018). These researchers, termed interpretivists, focus on words and images, not numbers, to explore *meaning* through research. They need to examine, scrutinize, integrate, and transform large masses of data to find themes and complete their research (Saunders et al., 2016, Moorley & Cathala, 2019). "Corresponding to the qualitative strategy of inquiry, these results may also provide a detailed description of their experiences (phenomenology), or a theory generated from data (grounded theory)," (Creswell & Creswell, 2018, p. 203). Qualitative research methods include Narrative Research, Ethnographic Research, Grounded Theory, Case Research, Action Research, Interpretative Phenomenological Analysis, and Phenomenological Research.

3.6.2.1. Narrative Research

Narrative research explores the lives of individuals. It is focused on events or actions, told in chronological order, i.e. a *story*. These stories often contain crisis events or turning points in the participant's experience and contain specific details about times, places, and consequences. While collecting narratives, researchers should endeavor to keep the inquiry fluid; they should not be proscriptive in their approach to the interview. Often the researcher meets with the participant several times capturing additional details with each interaction. These interactions may be recorded, or the participant may collect their stories in journals. The researcher may also interview those who know the participant and may even collect artifacts such as photos, letters, official documents, etc. During data collection, analysis, and

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resulting work, the researcher will incorporate personal experiences and cultural aspects and provide a historical context to the work, (Creswell & Creswell, 2018; Saunders et al., 2016).

3.6.2.2. Ethnographic Research

The first type of qualitative research, ethnography began in the 1700s when researchers initiated the study of social groups and cultures. Researchers typically immersed themselves in the social groups they were studying, actively interacting with their subjects, and creating detailed cultural assessments. This included the active study of a social group's beliefs, religion, rituals, and communication processes, as well as their basic way of life, as seen from the perspective of the researcher. Thus, ethnographic research is more interpretive and naturalistic than traditional research. The results are extremely detailed accounts of the social group and culture at a specific point in time, which ranges from objective and factually based, to subjective impressions, to exploring and explaining the social group's situation as advocates/researchers, (Saunders et al., 2016).

3.6.2.3. Case Study Research

Case Study research centers on an event, a person, an organization or group, or a change process. The project is initiated to study the dynamics of a phenomenon that led to a specific outcome, it can be informed by quantitative, qualitative, or mixed-use methods, be inductive or deductive, and encompass single or multiple cases depending upon the objectives of the research. Outcomes are generally complex, including empirical descriptions, while defining what occurred, its effects on individuals and/or groups, and implications for the future, (Saunders et al., 2016; Yin, 2018).

3.6.2.4. Action Research

Action Research is designed to develop real solutions to challenging situations. It emphasizes practical outcomes, which necessitates an emergent process, with collaborative overtones, that is focused on research *in action* rather than *about action*. Knowledge informing the study can be theoretical, but experiential knowledge from the subjects is also informative. Through an iterative process – diagnosis, planning action, taking action and evaluating the results – the researcher works with the study's subjects as a facilitator to improve outcomes or find solutions. This is an intense and time-consuming process that is best suited to longer-term research projects, (Saunders et al., 2016).

3.6.2.5. Grounded Theory

By 1965, quantitative methods dominated sociological research. As a response, Glazer and Strauss wrote their seminal book, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (1967), to dispute many assumptions about qualitative research, including the belief that it was impressionistic and anecdotal and only a precursor to quantitative tools; that there should be an arbitrary division between theory and research; that elitists controlled the production of theory and its construction; that it was necessary to use quantitative research to validate or evaluate qualitative research; and that qualitative studies could only be descriptive, (Charmaz, 2017). In doing so, Glaser and Strauss *founded* a new approach to theory development based on data collection. While Positivism was seeking prediction and explanation, they were pursuing *what* and *how* questions from a neutral perspective, (Birks, Hoare, & Mills, 2019).

Consequently, this new approach provided *explanatory* theory focusing on social interactions — within their environments — to determine patterns of behavior and examine those social processes, i.e. the causes, conditions, covariances, contexts, contingencies and consequences of those actions, (Stark & Brown-Trinidad, 2007). In the 1990s, a second generation of researchers began modifying *classical* grounded theory. Kathy Charmaz adopted the basic tenets of *social constructionism*, i.e. subjectivity and relativity, and imported them into classical grounded theory. She called this updated version *Constructivist Grounded Theory*, (2007). Adele Clarke, a former student of Anselm Strauss, who was in a grounded theory-focused writing group in the '80s with Kathy Charmaz, produced an alternative theory-building perspective/methodology called *Situational Analysis*, which challenged grounded theory's (alleged) philosophical shortcomings. Clarke's situational analysis expanded grounded theory by diagrammatically mapping the situation being studied, as well as the social world within which it exists, and the discursive positions of the study. Ultimately, Clarke's goal was to consider the situation being studied more broadly, (Clarke & Keller, 2014).

Grounded Theory has therefore evolved into an inductive, emergent strategy that starts with data, codes it, and evaluates the results of the process to build theories. Before beginning the research, core tenets are established to guide the work. Grounded Theory is a holistic approach that *dictates the research process* from the determination to employ it for a study to the results, culminating a time consuming and intense, but thorough, process. Emanating from *purposive* samples, they generally include one of the overarching principles of grounded theory, theoretical sampling (Starks & Brown-Trinidad, 2007).

Theoretical sampling is used throughout a study to enlist specific participants that inform the theory building process, thus there are several rounds of data collection each enlisting new participants chosen to elaborate on particular categories of information gathered from the previous rounds of interviews, (Creswell & Poth, 2018). An iterative process is thereby established that compares the new data being collected to established codes and categories, which leads to continuous adjustment to codes and categories, and the emergence of a developing theory, (Birks, Hoare, & Mills, 2019). When new data trends toward being repetitive, data collection has reached *theoretical saturation*. The overall result is the generation of new theory based on insights, themes, and meanings discovered over the course of the process, (Saunders, et al., 2016, Creswell & Creswell, 2018). Thus, grounded theory practitioners are pursuing opportunities to apply insights founded in participants' experiences and practice, (Stark & Brown-Trinidad, 2007).

3.6.2.6. Phenomenological Research

Although Husserl is often credited as the founder of phenomenology, there is a longstanding philosophical tradition of this type of *theoretical* research dating back to Plato, Aristotle, and the medieval scholastics, (Luft & Overgaard, 2012). Phenomenological research is based on the experiences of individuals who have similar backgrounds, understandings, or knowledge; "in the process of asking participants to reconstruct and reflect on their experience, researchers using a phenomenological approach ask participants to search again for the essence of their lived experience…," (Seidman, 2013, p. 17). Phenomenology is not a strict method, as many of the classical phenomenologists, including Husserl, Heidegger, Sartre, Merleau-Ponty, and Beauvoir each used their own processes in accordance with their research, (Moran, 2018). It relies on no overt and/or pre-defined theoretical orientation; its emphasis is on building vivid, comprehensive descriptions of the *common meaning* of a concept based on the participants' experiences, (Creswell & Creswell, 2018, Moran, 2018, Neubauer, Witkop, & Varpio, 2019). A variety of analytic methods can be used in phenomenological research including Thematic Analysis as "it can develop themes inductively by collecting data and drawing conclusions from observations as well as deductively, which allows the researcher to explore their own theoretical ideas and apply them to the data," (Braun & Clarke, 2013, p. 17). No matter which method is chosen, the result should be a "composite description" of what the participants experienced and how they experienced it, (Cresswell & Poth, 2018).

For instance, when interviewing is chosen, questions should be open-ended and broad to allow participants' responses to contribute to the construction of complex, detailed descriptions of the phenomena. They are used to create a richer understanding of participants' memories, as well as an understanding of their interpretations of those experiences, which the researcher then uses to gain insights, discover themes, and generate meaning, (Neubauer, Witkop, & Varpio, 2019). In line with the phenomenological approach, the research should be situated in a "natural" setting as perceived by participants, and the researcher should collect the data in person, especially in cases where interviewing and direct observation are selected as the source of data collection. They should also be flexible throughout the process. Listening is important, but recording the interview is imperative, and taking notes is helpful, especially when focusing on the research problem, (Luft & Overgaard, 2012).

Although the questions are pre-determined, the researcher should allow an emergent design to occur so that the research can evolve throughout the process, (Creswell & Creswell, 2018). The researcher should also reflect upon their role in the process as well as their perspective, based on their background, culture, and experiences, to avoid a biased outcome. Lazard and McAvoy (2017, p. 2) argue that "…the point of reflexivity is to scaffold critical thinking in order to make visible some of the connections between research questions and research conclusions, and to open the way to critically different interpretations." This can be accomplished by constructing a composite *story* melding key elements and familiar features from different participants' experiences, often represented via anecdotes, that convey an understanding of that experience to the reader, (Stark & Brown-Trinidad, 2007). The outcome of the research should be a complex view of the issue being studied and address possibilities for continued research, (Creswell & Creswell, 2018).

3.6.3. Mixed Methods Research

The final research method, mixed methods research, combines qualitative and quantitative methods to address the research question completely. This most often occurs when the researchers are not strict followers of a single philosophical position, choosing two or more divergent methods to address the complexity of the subject; "…rarely do individual scholars conduct both forms of research, and even more rarely do they present them together in one scholarly work," (Kaplan, 2014, p. 1). Those who choose to implement quantitative and qualitative methods simultaneously employ *concurrent triangulation* to produce richer datasets that can be compared. If the researcher uses two or more phases of data collection and both philosophies, then they are participating in *sequential exploratory* (qualitative

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followed by quantitative), *sequential explanatory* (quantitative followed by qualitative), or *multi-phase design* mixed methods research (Kaplan, 2014; Saunders et al., 2016). Pragmatic research and mixed methods are often synonymous.

3.6.3.1. Pragmatic Research

Pragmatist Research often utilizes mixed method strategies to reconcile the extreme nature of strategies employed in strict quantitative and qualitative studies. Methodologies are typically chosen based on the research question, the setting, and participants, or the potential outcomes, (Saunders, et al., 2016).

3.6.4. Research Design Strategies Considered for this Study

As the researcher began reviewing the various methodologies and considering which might be the correct method for this study, each was considered systematically. Nonetheless, throughout the study, there were key points when the researcher reconsidered this decision at the prompting of her advisor and review committee.

3.6.4.1. Considering Interpretative Phenomenological Analysis

After the pilot data were collected and reviewed by the advisor, he suggested that Interpretative Phenomenological Analysis (IPA) be considered as an alternative methodology to Thematic Analysis. This was investigated, and IPA was discussed with another University of Salford PhD candidate using IPA in her research. After considering this input, and conducting some additional research, Thematic Analysis was reaffirmed as the primary method of analysis for the pilot study and the next stage of the research.

Although IPA is "a rich source of ideas about how to examine and comprehend lived experience," (Smith, Flowers & Larkin, 2009, p. 11), focusing on a participant's experience and perceptions, the proposed research focuses less on the specific experience of individuals and more on patterns across a broader data set. This is reinforced by electing a constructionist/social constructionist perspective that emphasizes garnering a view of reality from the subjective perspective of numerous participants, (Easterby-Smith, Thorpe & Jackson., 2012). Aggregation is better aligned with Thematic Analysis.

The need to pursue data over a larger set of participants is primarily due to the research question, *"Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?"* and the aim of the study: *"...to explore how to improve mentorship programs as a resource for knowledge sharing in the built environment."*

To gain a deeper understanding of the mentorship process for those in NYC's built environment, this research must incorporate a multiplicity of observations on mentorship and its connection to knowledge sharing.

Additionally, since there's little previous research that focuses specifically on mentorship in the built environment, this research needs to be exploratory in nature to help generate a baseline understanding of this milieu while vetting the postulated communal structure of mentorship. Thus, the aim of this research does not align as closely with IPA, which focuses on "personal meaning and sense making in a particular context, for people who share a particular experience," (Smith, Flowers & Larkin, 2009, p. 45). Thematic Analysis, on the other hand, "can identify the concepts and ideas that underpin the explicit data context, or the assumptions and meanings in the data," (Braun & Clarke, 2013, p. 178). Its advantage is that it can develop themes inductively by collecting data and drawing conclusions from observations as well as deductively, allowing the researcher to explore theoretical ideas and apply them to the data, (Braun & Clarke, 2013). Accordingly, exploration of the research question proceeded holistically along the inductive continuum. The goal remained to discover how mentors perceive mentorship in relation to knowledge sharing more broadly and establish critical success factors for mentorship as a pathway to knowledge sharing, as well as recommendations to improve knowledge sharing in the built environment.

3.6.4.2. Considering Grounded Theory versus Phenomenology

Similarly, during the Internal Evaluation, the evaluators provided interesting feedback. Based on a few of the reviewers' comments, the researcher agreed that more explicit and detailed information about the participants' challenges as they specifically relate to the New York City marketplace would establish a firmer foundation for the study's results. They also suggested that Grounded Theory might be appropriate, as it would eliminate the need for a survey—the *then-proposed* method of validation—thereby avoiding a "mixed methods" approach, with all its associations.

In response, the researcher incorporated specific examples of the numerous challenges facing those working in the built environment in New York City. She also circled back to the philosophical, theoretical, and pragmatic processes of Phenomenology *and* Grounded Theory to determine whether the phenomenologically based pilot study should be continued during the final study, or if a grounded theory approach might be more fruitful. This comparison

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became a challenging, time-consuming struggle. There are many similarities between these two methodologies, as they would be used in this study, including:

- the pursuit of qualitative data,
- the use of interviews to obtain each participant's history and experience,
- an iterative interview process to find common, core elements,
- a subjective process of developing codes and themes,
- an inductive process of allocating codes, then a search for patterns to develop common themes — condensing those themes into key concepts to explain the participants' experiences, and even
- the similarities between phenomenological reflection and reflexivity, and grounded theory's memoing, etc.,

There are also significant differences, (Creswell & Creswell, 2018, Creswell & Poth, 2018, Starks & Brown-Trinidad, 2007).

Most of these differences appear in the way the research is designed and conducted. While phenomenology focuses on describing the common experiences of the participants in the study, grounded theory focuses on theory building related to the phenomena of interest, (Creswell & Poth, 2018). While phenomenological studies are designed to explore a specific phenomenon, influenced in part by any researcher's acknowledged preconceptions, classical grounded theorists should be unbiased observers, or "distant experts" focusing on 'what" and "how" from an assumed *reality*, (Creswell & Poth, 2018, Birks, Hoare, & Mills, 2019). In grounded theory, researchers shouldn't have preconceptions, they should complete their interviews and analysis independently, before embarking on the literature review; therefore, theory emerges from the data, (Charmaz, 2014). Even in Charmaz's *constructed grounded theory*, data emanates predominantly from the interaction of the researcher and the participants, as such, literature reviews are minimal (Charmaz, 2014, Birks, Hoare, & Mills, 2019). When that data is analyzed on an iterative basis, analysis generally follows Strauss and Corbin's detailed outline, (Timonen, Foley, and Conlon, 2018). In contrast, phenomenology doesn't follow a strict method; researchers may choose the analytic procedure that fits their study, (Moran, 2018).

The same is true for the sampling process. Phenomenological studies follow no prescribed process, participants are often chosen from those who can provide detailed stories of the experience, (Starks & Brown Trinidad, 2007). This is an important distinction. When

engaging in grounded theory, a tenet of any project is *theoretical sampling*, which is not used in other forms of research. Although studies often begin with purposive sampling, theoretical sampling is an expected part of the process and begins early in the project, (Birks, Hoare, and Mills, 2019). Creswell and Creswell (2018) suggest that the number of participants in phenomenological studies should range from 3-10, while 20-30 is more appropriate in grounded theory, although *saturation* is equally viable. Chamaz (2006) said that "one stops collecting data when the categories (or themes) are saturated: when gathering fresh data no longer sparks new insights or reveals new properties. This is when you have an adequate sample," (p.186).

After an extensive review of numerous publications defining phenomenology and grounded theory, as well as several studies that incorporated each approach, the researcher determined that many of the actions mandated by grounded theory didn't align with this research project. For instance, theoretical sampling didn't occur in this study. Additionally, by the time the researcher participated in the IE, she had already completed three of the ten interviews that would form the final study and had requested interviews from the majority of the final study's participants. These requests followed the sampling process formulated during the pilot study, i.e., randomly selecting 10 firms from the New York Building Congress' membership and interviewing a senior-level professional from that representative firm, as part of a stratified sample based on the predominant discipline within each firm, and the distribution of these firm types within the NYBC membership.

Likewise, early in this study the researcher determined that her philosophical stance was founded in social constructionism, which focuses on gathering rich data while acknowledging the researcher's preconceptions and understanding that conclusions are based on multiple realities. Although Charmaz's constructivist grounded theory incorporates elements of social constructionism, grounded theory is focused on developing theories rather than open-ended pursuit of the experiences of the participants. Even though the pilot study was coded using Braun and Clarke's version of *thematic analysis*, which generally aligns with Strauss and Corbin's and Charmaz's approaches, an extensive literature review was undertaken before the pilot study began, as required by Salford's Institutional Research Board's *Ethics Approval Form for Researchers* that asked, "What is the rationale which led to the project?"

Thus, the researcher determined that the study should remain focused on encapsulating the *experiences* of mentors in New York City's Built Environment during a tumultuous time: the extremely aggressive and competitive design and construction

environment from 2007-2020. Grounded theory precludes extensive literature reviews. These had already taken place. Grounded theory was therefore tainted as a potential approach. Since no other study of this topic and venue had yet taken place, gaining a deeper understanding of this phenomenon through a multiplicity of participants' perspectives is a best practice first step (aligned in spirit, although not in methodology with Grounded Theory) prior to formulating substantive theories or devising a process or policy for how to move forward.

As a result, the researcher elected to continue with the phenomenological approach. This maintained continuity with the original direction of the research project, the original question, and the aim of the study. Interestingly, the researcher found that Creswell and Poth seem to support this decision, "…the beginning researcher needs to first understand one approach thoroughly and then venture out and try another approach before combining different ways of conducting qualitative research," (2018, p. 66). The researcher agreed with this stance, and although rejecting it in this instance, found the extensive consideration of grounded theory beneficial as viable and a *potential next step* in this research.

The researcher therefore completed the remaining interviews for the final study following the same process and analysis formulated in the pilot study. This was straightforward, with only slight deviations in the questions asked of the last four participants.

In this study, one objective was to ascertain from mentors their perspectives on the benefits and challenges of mentorship, another was to determine critical success factors for mentoring, and a third was to generate recommendations for mentorship programs to improve knowledge sharing. To pursue these objectives, participants must impart complex, detailed descriptions of their experiences so the researcher can gain insights, find themes, and construct meaning.

At the beginning of the study, while the researcher was establishing the study's questions and selecting the methodology, she considered mixed methods as a potential approach and focused on implementing quantitative and qualitative methods simultaneously to produce a richer data set. This *concurrent triangulation* was pursued in the pilot study as part of a multi-phased process that provided flexibility in case the chosen sampling or data collection process was insufficient. As will be discussed in Chapter 4 – Pilot Study Data Collection and Analysis, this approach proves faulty. Thus, the researcher altered her approach and pursued only qualitative methods in the final study.

As there was little mentoring research within the built environment, and none focusing on mentors at the beginning of this study, the researcher chose the interview process

as the sole means of data collection. This allowed her to ask questions in real time to probe their thoughts on mentoring through explanations of their experiences, opinions, and beliefs.

3.6.5. Data Collection Methods Considered for this Study

There are three types of data collection in qualitative research: surveys, observations, and interviews. All three methods tend toward the exploratory and focus on finding the underlying reasons for behaviors and actions to share insights and gain a better understanding of a phenomenon, (Creswell & Creswell, 2018). Qualitative surveys tend to have open-ended questions that must be filled in by the participant; the data collected is then categorized into groups to obtain themes in the research. Observations involve watching people to gather descriptive data on their behavior in natural settings and special events. The researcher can be completely immersed in the moment, but must take notes, or set up recording devices so they can review the data later. These observations can be covert or overt, depending on the study, but in either case, the goal is to understand participant behavior, (Saunders et al., 2015). The last form is the most common – interviews – which will be discussed in more depth, as it was the means of data collection chosen for this study.

3.6.6. Interviews as a Data Collection Method

Interviews are an effective process for collecting large amounts of data that can be culled for insights due to their facility capturing participants' authentic, often complex opinions and views, (Remenyi et al., 1998; Yin, 2018, Kulatunga, Amaratunga, & Haigh, 2007). The interview process, "as a basic mode of inquiry," is the most widely used tool for collecting qualitative information, (Seidman, 2013, p.8). Interviews also allow the participants the flexibility to discuss complex issues and provide detailed descriptions of their experiences; when the researcher wants more detail or needs additional explanation, it is much easier to do so within an interview format. This can be very helpful when conducting novel research as it allows the researcher to probe for more information, follow up when something is not understood – in real time – and gain insights that might otherwise be lost when using other means of data collection.

Interviews can also be especially useful from an ethnomethodological perspective when the researcher is immersed in the social group, as this researcher was, as a member of the New York Building Congress. This allows the researcher to gain the participants' trust more quickly, which increases their interest in providing detailed accounts, as well as

answering questions in a more detailed way; it also provides an opportunity for the researcher to understand the participants' answers, even when relating implicit knowledge. The questions and corresponding answers may range from objective and factually based to subjective, to exploring, or when explaining situations within the social group as advocates/researchers, (Saunders et al., 2016).

Participants are most often randomly selected from a larger group of individuals with specific criteria, but self-selection or purposeful selection is also possible, (Alsaawi, 2014). No specific number of participants is required, but sufficiency should be considered; saturation is the most common criterion to determine the number of participants, (Seidman, 2013).

There are four types of interviews: structured, i.e. predetermined questions using predetermined sequencing and static phrasing; semi-structured, whereby questions are predetermined, but the sequencing of the questions and their wording can be modified or omitted and new questions added, if necessary; unstructured, which introduces a broad topic and encourages participants to speak freely; and focus group interviews, which address several participants in a simultaneous interview, (Yin, 2018, Alsaawi, 2014).

3.6.6.1. Structured Interviews

As the most controlled way to obtain information from interview participants, structured interviews work well when used in studies where the interview needs to be tightly focused and when researchers are seeking a specific response from a limited set of categories, (Alsaawi, 2014; Qu & Dumay, 2011). Following a Neopositivist perspective, "the underlying assumption is that if the questions are phrased correctly, they will uncover all the information relevant to the topic," (Qu & Dumay, 2011). As such, these interviews lack potential depth and richness, have limited responses, and restrict the interviewer's ability to clarify or elaborate on the topic, (Alsaawi, 2014).

3.6.6.2. Semi-structured Interviews

A mixture of structured and unstructured interviews, semi-structured interviews are the most common method in qualitative research, (Goulding, 2002, Qu & Dumay, 2011). This is primarily due to its flexible and effective process, which encourages a full understanding of the participants' perceptions, (Flick et al., 2004, Qu & Dumay, 2011). Less restrictive than structured interviews, the questions are outlined and sequenced in advance,

based on identified themes. Interview Guides, which vary from extensively scripted to loosely outlined, are used to maintain consistency across interviews. Thus, the researcher can change directions during the interview, including adding and deleting questions, (Qu & Dumay, 2011, Alsaawi, 2014).

3.6.6.3 Unstructured Interviews

As the most flexible type of interviews, unstructured interviews are unpredictable but work well when researchers are studying a specific subject in depth. Like a conversation, the researcher asks a question and allows the participant to respond without prompting, interruptions, or guidance. Once the participant has fully responded, another question is asked. It is the most relaxed form of interviewing and is sometimes referred to as an *ethnographic* interview. This method often generates an enormous amount of data, (Qu & Dumay, 2011; Alsaawi, 2014).

3.6.6.4 Focus Group Interviews

Focus groups are like other forms of interviewing, but most often involve six to 12 participants who participate in an active conversation with each other that often involves prompting, debating, challenging, and even arguing about a specific topic. The format can be unstructured, semi-structured, or structured and usually generates rich and complex data. This form is particularly appropriate for sensitive topics and/or specific populations, but confidentiality may be an issue, (Krueger, 1998; Allsaawi, 2014).

3.6.7. Interview Formation

After determining the type of interview process most beneficial for a study, the researcher establishes the tone of the interview. No matter the type of interview chosen, the researcher's job is to develop rapport and ensure trust and confidentiality, so the participant feels secure and openly communicates their opinions, (Goulding, 2002). Even before the interview begins, the researcher should ensure that all information given to the participants is uniform and consistent and that they understand the purpose of the study (Creswell & Creswell, 2018). Questions develop directly from the research question and its aims and objectives. The wording and sequencing of the questions merit careful attention, (Flick et al., 2004).

Generally, questions are arranged to be more general at the beginning of the interview and become more specific as the interview progresses; they should also move from broad to

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narrow in scope, from positive to negative, and from abstract to specific until the questions are targeted directly at the research objectives. This approach allows participants' opinions to emerge, and the participants to build upon them throughout the interview, (Krueger, 1998).

3.6.7.1. Question Formation

Question formation is at the center of any study utilizing the interview format. If the questioning process is inadequate, the data will be faulty. Thus, while the study is being developed, it is important to consider how the interview will be conducted and how the questions will be presented, worded, and delivered for maximum results (Creswell & Creswell, 2018). There are a variety of types of questions, each with its distinct purpose. Word usage must be simple, direct, jargon-free, and comfortable; Krueger emphasizes that "conversational questions are essential to create and maintain an informal environment," (1998, p. 3). Before starting the interview process, the researcher should consider sharing their questions with other researchers or individuals who represent the potential participants. Such a *de facto* pilot study provides an opportunity for critical feedback and a chance to remedy any issues and/or alter questions, as necessary, (Krueger, 1998).

The first or *opening questions* should make the participant feel comfortable, (Flick et al., 2004; Creswell & Creswell, 2018). They typically include information, often about the participant's background, and are intended to create a connection between the researcher and the participant as well as to confirm participant demographics, (Creswell & Creswell, 2018). After the opening questions, *introductory questions* lead to the general topic of the study by asking the participant to consider their experience or connection with the overall topic. These are *open-ended, exploratory* questions, such as asking the participant to consider the definition of the topic, to explain something, or to provide an overview of their experience with the topic of the study, (Creswell & Creswell, 2018). Because neither the answer nor the manner of response is implied or suggested, the participant determines the direction of the answer; they must respond based on their own experience, (Siedman, 2013). It may be helpful to *reweave* the participant's answers into later questions. Likewise, if the participant offers something unexpected, it is good to use *explanatory* questions to define and refine answers, or a *follow up* question, such as a *probing, drawing out,* or *suggesting* question for clarification, (Easterby-Smith et al., 2002; Siedman, 2013; Creswell & Creswell, 2018). Likewise, if the answers are too brief, the researcher can indicate a request for additional depth by asking follow up questions, (Krueger, 1998).

These same questions can be used to transition to another topic. They serve as a logical link between various topics in the interview and may preview the next topic for the participant. Generating the most relevant data, *key* or *content* questions usually start a few minutes into the interview, (Creswell & Creswell, 2018). These may take any form, but are usually exploratory at first, followed by an explanatory or another form of follow up question, then move into explanatory questions to confirm the participant's intent, (Easterby-Smith et al., 2002). Follow up questions are linked to the preceding question in some manner. This may be connected by subject, by a logical process, or by an interest in what the participant's most recent response elicited from the researcher. Too many follow up questions or probing questions may be annoying. They can also result in too many insignificant details in the resulting data. They can also stifle the conversational pattern established throughout the interview. If answers are too brief, the researcher can indicate a request for additional depth by asking probing questions, (Krueger, 1998).

As the interview draws to a close, *ending* questions bring closure and may seek clarification of earlier answers. These may be *all things considered* questions, which allow the participant to reflect on their earlier answers and clarify and/or identify the most important elements discussed. If there was inconsistency, this is an opportunity for the participant to clarify their position or to refine their answers (Creswell & Creswell, 2018). *Summary* questions generally focus on the big ideas or the most important comments from the interview. They are often important in the analysis of the data. A final open-ended question, such as "is there anything you'd like to add?" is normally reserved for the last five to ten minutes of the interview. This helps ensure that nothing remains unsaid. It prompts the participant that the interview is almost over, and contributes to perceptions of closure, (Easterby-Smith et al., 2002, Krueger, 1998).

The researcher incorporated these tactics into the interview process, which provided additional consistency to the semi-structured interviews without additional preconceived, defined questions that would have restricted or formalized the process, thus turning them into structured interviews.

3.6.7.2. The Interview Process

Throughout the series of interviews conducted, the researcher should maintain as much consistency in the administration of questions as possible to ensure that the data is reliable. When a study involves *selective coding*, the researcher does not analyze all the

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questions, (Flick et al., 2004). The researcher must consider this when developing the questions, especially if they are using an Interview Guide.

Often preferred by academics, an Interview Guide is a list of questions in sequential order that provides a foundation for structured or semi-structured interviewing. Written in a conversational tone, an interview guide provides confidence in reliability across interviews due to the preciseness and consistency of questioning typical of guide use. The interviewer needs to be involved as much as possible in the development of the interview guide, otherwise the wording of the questions may seem awkward, which might affect delivery; put another way, the questions may seem stilted or insincere. Due to the interviewer's unease or unfamiliarity with the questions, longer pauses may also occur, (Krueger, 1998).

An Interview Guide is often preferred to a Topic Guide, which is simply a list of topics or issues to remind the researcher of the key points of the interview. Topic guides are easier to develop since they are not scripted. However, the interviewer must reformulate questions during each interview. While Topic Guides are good for simple, straightforward, often structured interviews, the researcher must be skillful at phrasing coherent, single-dimension questions in real time. The resulting data may be inconsistent due to variation in the wording of the questions, which may lead to sloppy, invalid research and poor results, (Krueger, 1998).

3.6.7.3. Altering the Interview Process

When a question does not work, as demonstrated by the participant simply not answering, saying they do not understand, or answering the question incorrectly, the researcher should change or delete the question from the interview. Additionally, if saturation occurs, e.g., a participant's responses to a question becomes predictable and uniform across multiple interviews until no new evidence surfaces that is relevant, there is nothing to be learned from further data collection, (Goulding, 2002, Creswell & Creswell, 2018). However, "there is considerably more to gain by changing questions to build on what you have learned in the earlier groups," and further, to "…change the question if past responses lead you to another level," (Krueger, 1998, p. 56).

Conversely, researchers must ensure that they have not inadvertently *cued* participant responses. Likewise, when examples are provided to clarify or explain a question, they may alter, limit or restrict the thinking of the participant. One approach is to ask uncued questions first, then follow with cued ones to prompt additional discussion. The uncued questions must

be open-ended and broad enough so participants have no difficulty in providing unprompted, lengthy commentary. In doing so, participants typically offer recent thoughts or vivid memories that made an impression on them.

After the introduction and deliberation of the study's topics, the researcher might offer some cues when an interview topic receives short shrift. Cued questions can help determine whether inadvertent omissions or perceptions of irrelevance resulted in the omission, (Krueger, 1998).

3.6.7.4. The Interview Process Chosen for this Study

Of the four types of interviews, semi-structured interviews were chosen for this study due to their *bounded* flexibility. As there has been virtually no research on mentors and the mentoring process in the built environment, this approach provides structure and direction, and encourages both the researcher and the participant to remain on topic, while not limiting the participant's responses.

It also aligns well with phenomenological research in that it encourages the participant to reflect on individual experiences and elaborate on key issues based on the researcher's questions. Ultimately, the data resulting from these interviews should provide insight and establish a unified understanding of the current state of mentorship, as well as its relationship to knowledge sharing, in New York City's built environment, once saturation is reached.

3.6.8. The Data Collection Process
3.6.8.1. Sampling Processes

Once the methodology is chosen and data collection techniques are defined, the researcher should determine the characteristics of the participants. This is a critically important step as the chosen participants must represent the larger population, (Naoum, 2013). The first step is to determine what the researcher wants to know and about whom; the next step is to determine how and whom the subjects of the study should be. After the study's subject list, or sampling frame, is formulated, the sampling process is chosen, (Remenyi et al., 2010). The method of analysis needs to align with the method of data collection, (Braun, Clarke & Gray, 2017).

There are two broad types of sampling, random and selected. Random, or probability sampling, can take many forms from simple random sampling, to systematic and stratified

random sampling and non-random accidental and purposive sampling, (Naoum, 2013). Random sampling is often chosen in quantitative research; large data sets are pursued as the aim is generalizability across a wider population, (Remenyi et al., 2010; Braun & Clarke, 2013). Simple random sampling gives each member within the sampling frame a chance to be chosen based on a random procedure; systematic sampling is also a random sample, with a fixed periodic interval, that is selected from a larger population. Stratified sampling divides the assembled population into homogeneous groups, or strata, which become a sub-unit, sampling frame; random samples are chosen from each stratum, (Remenyi et al., 2010). Non-random accidental sampling, also known as convenience or opportunity sampling, is based on gathering a population of participants based on whoever is close at hand. It's not based on demographics, etc., and is typically used for non-academic, influence-gathering surveys, etc., while purposive sampling involves the proactive selection of a sample population that isn't statistically representative of the larger population; researchers use this technique when they are seeking feedback from a specific profile of participants within their community of interest.

In general, qualitative research tends to use smaller samples than quantitative research; there is no set sample size in qualitative research, but there must be enough data to identify key patterns. A sample size of 15-30 individual interviews is common, but the number depends on the scope of the study, the topic, the quality of the data obtained from each interview, etc. (Braun & Clarke, 2013).

Selected sampling, also known as purposive or non-probability sampling, is often chosen in qualitative research, especially when conducting exploratory research via interviews. As interviews produce large, complex data sets, researchers often narrow the participants to only those with specific characteristics that are beneficial to the study. As such, these sets are not statistically representative, but look instead for patterns in the data, (Remenyi et al., 2010; Naoum, 2013; Braun & Clarke, 2013).

There are several types of selective sampling including Convenience Sampling, which allows the researcher to choose the participants solely based on the researcher's convenience. Selecting these participants is solely random; the participants tend to be self-selected, i.e., those who are willing to participate when approached. Similar in nature, Snowball Sampling grows organically by soliciting the initial participants, then selecting future participants based on the initial participant's network. The researcher literally asks a participant if they know anyone who might also be appropriate for the study. This is helpful when it's not easy to gain access to appropriate participants, (Remenyi et al., 2010).

Theoretical Sampling also seeks participants throughout the study. This is achieved through an iterative process where data analysis and theory development directly shape the data set and affect the selection of subsequent participants. Unlike these, Criterion Sampling is used when researchers are seeking participants who are associated with a specific issue, date, or event. Participants may have nothing in common other than the specific issue that is pursued by the researcher, (Corbin & Strauss, 2015; Remenyi et al., 2010; Naoum, 2013).

No matter the sampling method chosen, saturation is often used to determine the size of the study. Evolving from Grounded Theory, Glaser and Strauss' original definition (1967) is based on the researcher's view that the new data being collected has become redundant. Others have taken that assumption further to encompass redundancy in codes and/or themes, whether it's attached to a specific theory or not; these studies separate *saturation* from Grounded Theory to employ in other research methods, (Saunders et al., 2018).

3.6.8.2. The Sampling Process Chosen for this Study

Throughout this study, the researcher critically introduced personal experience, cultural aspects of interactions, and historical context. As the official NYBC representative for her university, the researcher had access to the membership directory but has had only cursory contact with a handful of representatives on the list. Thus, a representative sample from the sample frame was possible without undue researcher bias.

The researcher's background was advantageous in this process. She had direct experience in conducting objective interviews, given her background in journalism. Likewise, her extensive built environment experience helped her establish rapport and a relationship of trust with the participants and allowed real-time comprehension of the participant's responses, resulting in appropriate probing, in-depth questions based upon the participants' initial answers.

This is due primarily to the research question, *"Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?"* and the aim of the study: *"...to explore how to improve mentorship programs as a resource for knowledge sharing in the built environment."* This research necessitates a context-specific, detailed, and comprehensive process based on individual experiences garnered primarily through a series of one-on-one conversations. In pursuit of deep understanding of the mentorship process, the research encompasses a multiplicity of views on mentorship and its relationship to knowledge sharing. This is best pursued through an iterative, inductive form of theory development.

3.6.9. Initial Interview Theme and Question Framework

<u>Theme</u>: The Current State of Mentorship in the Built Environment in New York City

- How have respondents' past experiences shaped their perceptions of mentorship?
- How have respondents' mentorship processes arisen? Are they organized or ad hoc?
- How do they promote mentorship within their organizations? Firm-driven, communities of practice, etc.

<u>Theme</u>: Mentorship as a Vehicle for Knowledge Sharing in the Built Environment in New York City

- How do respondents characterize knowledge management? What about knowledge exchange?

- Is mentorship seen as a means of accomplishing knowledge exchange? If so, how?
- Is mentorship-driven knowledge exchange perceived as a differentiator or as a competitive advantage?

These initial questions, to be asked as part of the semi-structured interview process, tie directly to the research question and the aim of the study, while remaining open enough to give the participant the freedom to respond truthfully based on their experiences and beliefs. In each case, these open-ended questions elicit individual responses that can be analyzed to formulate over-arching themes in the research. The first theme, the current state of mentorship in the built environment in New York City, is intended to profile the aggregate mentorship experience. The first question, about experience, provides an easy entry into a deeper conversation, then the second and third questions link back to the literature on mentoring to determine whether mentoring in the built environment is similar or unique based on the outcomes of past studies, which were conducted almost exclusively outside the built environment. These questions will pursue the mentor's tacit knowledge of mentoring. After obtaining answers to these questions, the researcher will transition to the second theme, which examines the mentor's implicit understandings of the mentorship process and its relationship to knowledge sharing; the final question, which pursues thoughts on mentorship-driven knowledge exchange as a competitive advantage, ties together both categories and addresses the impetus for mentoring programs.

3.7. Data Analysis

Analyzing the data collected from a research project is significant as it allows the researcher to construct theories founded in empirical evidence. This process starts when the data is disconnected from its initial research materials, sorted into basic units that are eventually integrated into patterns that generate conclusions and meaningful theories (Kulatunga, Amaratunga, & Haigh, 2007).

When pursuing a topic and determining an appropriate methodological framework, each stage of the research design process must integrate to assure consistency and allow validation of the results. As such, the procedure chosen to analyze the data for this research is critically important, must be chosen specifically for the study, and must be extensive (Rafidee, Hasbollah & Baldry, 2016).

The research methodology chosen drives the analysis process. If a study is quantitative, its analysis is also quantitative. Quantitative analysis techniques, such as statistical modeling and the production of graphs and tables, assist researchers in analyzing and interpreting their data. This data can be primary or secondary and is derived from simple counting projects to complex, multi-dimensional numerical studies, (Saunders, et al., 2016).

Likewise, qualitative methodologies necessitate qualitative analyses. All forms of qualitative data analysis have three coding elements in common: the reduction of data into specific segments that can be coded, the ability to combine codes and segments into larger themes, and the use of these processes to evaluate, compare, and contrast the data (Creswell & Poth, 2018). These common elements are the foundation for this type of qualitative analysis.

3.7.1. The Coding Process

As another important step in the research process, coding is the process of breaking down the data into individualized statements of meaning, or *codes*. These statements are then clustered into distinct groups that form specific categories and are re-evaluated through a continuous process of refinement until the interrelationships between the codes are discovered. When links begin to appear, they are gathered into sub-themes, then themes, as a part of emergent theory. Theory development is an iterative process that takes time. Interpretation is always present, so the researcher must take care to analyze the data consistently. (Goulding, 2002).

In qualitative analysis, there are two main approaches: complete coding and selective coding. When utilizing complete coding, always keeping the research question in mind, the researcher codes anything that might be relevant throughout the entire data set. As codes can be used in multiple ways, it is important to code the data with terms that capture the researcher's intent. Both — latent, unknown, unrealized, or unconscious data — versus manifest, conscious, intended or deliberate data — should be coded, (Braun & Clarke, 2013).

Selective coding allows the researcher to search for specific types of data and selectively code only what is of interest or aligns with the study. By selecting only that data, the researcher is pre-determining the analytic concepts that will be useful to the study, (Goble et al., 2012).

3.7.2. Definitions of Data Analysis Techniques

3.7.2.1. Qualitative Analysis

All forms of qualitative data analysis have three coding elements in common: the reduction of data into specific segments that can be labeled, the ability to combine codes and segments into larger themes, and the use of these processes to evaluate, compare, and contrast the data, (Creswell & Poth, 2018). There are several forms of qualitative analysis including Interpretative Phenomenological Analysis, Template Analysis, Discourse Analysis, Thematic Analysis, Content Analysis, and Data Display and Analysis.

3.7.2.2. Interpretative Phenomenological Analysis

Focusing on the interpretation of an individual's experiences, perceptions and interactions, Interpretative Phenomenological Analysis attempts to attribute *meaning* to an individual's lived experience. (Smith, Flowers, & Larkin, 2009). As such, it's very specific, focusing on "personal meaning and sense making in a particular context, for people who share a particular experience," (Smith, Flowers & Larkin, 2009, p. 45). As an outgrowth of psychology, it presumes that the researcher will take an active role throughout the study and that participants are engaged in the interpretation of the events they're involved in and their interactions with others, (Biggerstaff & Thompson, 2008; Pringle, Drummond, & McLafferty, 2011).

3.7.2.3. Template Analysis

Template Analysis is essentially a sub-category within Thematic Analysis. Using Template Analysis, researchers only code a portion of the data, then develop an initial set of themes that serve as a template for the analysis of ongoing research via newly established transcripts. The template may be modified through an iterative process as additional research occurs. It is not connected to inductive or deductive approaches or objectivist or subjectivist positions, (Saunders, et al., 2016).

3.7.2.4. Discourse Analysis

Discourse Analysis focuses on the use of language, particularly in naturally occurring situations, to examine how social reality affects social practice. To fully understand the discourse being analyzed, researchers must consider them in a historical context. This approach is often used in partnership with other analyses where transcripts are produced; these include ethnographic and content analysis, action research, etc., (Saunders et al., 2016).

3.7.2.5. Thematic Analysis

In the past Thematic Analysis was seen as a process that was used within methodologies such as Grounded Theory, but in 2006 Braun and Clarke argued that it should be considered a stand-alone method, independent of epistemologies and theories, even a "foundational method for qualitative analysis." As a result, researchers who choose to use Thematic Analysis in their studies must explicitly outline their epistemology and be clear about their analytical process, as well as their role in the process through a reflexive dialogue. At its most basic, Thematic Analysis identifies, analyzes, and reports patterns and themes within a data set; it is an extremely useful method when researching a novel area with participants whose views are unknown.

It is also a flexible approach to evaluating complex data sets that align with both the Essentialist and Constructionist Methods; the former exposes the reality of participants by simply revealing their experiences, and the latter through an examination of the way that experiences, events, and meanings affect underlying definitions, assumptions, concepts, and ideologies (Braun & Clarke, 2006). As such, this method is congruent with the researcher's perspective that meaning and experience are context-specific and affected by structural conditions.

Thematic analysis also fulfills the researcher's goals, as it provides an operative method for examining participants' perspectives, allows the researcher to examine

connections as well as differences in responses, allows the researcher to be open to emergent properties, and helps produce rich and detailed accounts (Nowell, Norris, White, & Moules, 2017).

Various types of coding are available including semantic content but are especially focused on *in vivo* codes (terms used by the participants,) *a priori* codes (derived from terms used in existing theory and the literature,) and defining new terms (Saunders et al., 2016). Once the data set is collected, it is actively analyzed and coded to search for patterns through a recursive process. Next, these codes are compiled into groups, known as sub-themes, then further refined into candidate themes with corresponding descriptions. At this stage, the researcher should consider how the candidate themes align with the research question, etc., and further define and refine the candidate themes into overarching themes with accompanying definitions, supporting data, and an accompanying narrative. The resulting report should provide vivid examples that support the researcher's analysis and present a cohesive answer to the research question, (Braun & Clarke, 2006; Braun & Clarke, 2013).

3.7.2.6. Content Analysis

As with Thematic Analysis, Content Analysis is a "way of collecting and organizing non-structured information into a standardized format, which facilitates making inferences about the characteristics and meanings of written or recorded material," (Kulatunga, Amaratunga, & Haigh, 2007, p.498). As such, it is broadly used by researchers to systematically and objectively analyze the frequency of factual objects or key words. It is considered consistent, transparent, and replicable (Saunders et al., 2016). Depending on the researcher, its definitions can vary from simple word counts to thematic analysis and beyond, (Kulatunga, Amaratunga, & Haigh, 2007). It "may be employed, at its most simplistic, to determine the main facets of a set of data, by simply counting the number of times an activity occurs, a topic is mentioned, and so on," (Fellows & Liu, 2015, p. 192).

The researcher initially used content analysis during the pilot study to create quantitative analyses that would be used in the study to increase validity and triangulate the study's findings (Neuendorf, 2017). This was abandoned due to introduced bias associated with a stop word list.

3.7.2.7. Data Display and Analysis

Data display and analysis simplify and summarize a large amount of data to selectively focus on specific relationships, key themes, trends, and patterns that are worthy of further explanation and analysis. This visual process can be utilized in conjunction with other types of analyses including Thematic Analysis and Content Analysis. It is especially suitable for research that uses inductive strategies on qualitative data. Although Data Display can be created after coding has been done by hand, Computer-Assisted Qualitative Data Analysis Software (CAQDAS) can also be used by researchers to produce matrices and networks, and content mapping, e.g., word clouds, to visualize extremely complicated concepts, (Saunders et al., 2016). For this study, the researcher also used *data display and analysis* in the pilot study to further interpret and derive meaning by simplifying and summarizing the large amounts of aggregated data to selectively focus on specific relationships, key themes, and trends, that were considered worthy of further analysis and explanation. Computer Assisted Qualitative Data Analysis Software (CAQDAS) to assist with portions of this process.

3.7.3. The Use of Computers with Qualitative Data Analysis

Numerous Computer Aided Qualitative Data Analysis Softwares (CAQDAS) have been developed to assist with the – at times – cumbersome word counts, coding process, conceptual models, and connecting of concepts to create themes, hierarchies, clusters, and networks for immediate use by the researcher. It also allows multiple researchers to simultaneously work together in a collaborative effort to code, analyze, and interpret a data set.

In the pilot study, NVivo 12 was used to facilitate qualitative data analysis processes via content analysis. In addition to quickly and precisely totaling the frequency of words, NVivo 12 also created stop word lists, frequency charts, and word clouds to further the analysis of the pilot study, (Corbin, & Strauss, 2015). Even so, as the researcher reviewed the results of the content analysis process, she ultimately abandoned it due to the bias introduced throughout the "stop word" process, (see Chapter 4).

3.8. Validation

Validation in qualitative research has been a complex, highly contested issue for decades. Numerous approaches have been proposed, but none are currently dominant. At its core, validity demonstrates and assures the integrity of data gathering methods, the data itself, and that the analytic methods applied to provide outcomes that accurately reflect the data,

(Moorley & Cathala, 2019). Alternative terms for internal and external validation, reliability, and objectivity have been proposed, but none have become widely accepted. Definitions of validation range from the broad, e.g., "a process of verifying research data, analysis and interpretation to establish their validity/credibility/authenticity," (Saunders et al., 2016, p. 206) to the more specific, e.g., "an attempt to assess the 'accuracy' of the findings as best described by the researcher, the participants, and the readers (or reviewers)" (Creswell & Poth, 2018, p. 259).

Creswell and Poth propose several *validation strategies* for each of their three key participants: the researcher, participants, and the reviewer, and suggest that researchers use at least two for validation of their studies. The statements below were adopted by the researcher for the research study.

3.8.1. Researcher's Validation Strategies

- Addressing Researcher Bias and Reflexivity:
  The researcher proactively and reflexively addressed biases, experiences, etc. throughout the study that may have affected approaches to and interpretations of the study (Saunders et al., 2016).

- Triangulation to Corroborate Evidence:
  Triangulation — using multiple methods or sources of data to confirm the validity of the data itself, its analysis, or the researcher's interpretation — was employed in this study. By using multiple sources of data and techniques, e.g., thematic and content analysis, the researcher verified the research and created a more complex and complete view of the topic, especially vis-á-vis the research question and objectives, (Nowell et al., 2017).

3.8.2. Participant Related Validation Strategies

- Feedback from Participants:
  The researcher sought validation via feedback obtained from participants. Once the data was compiled and aggregated, the researcher created a report summarizing the findings. The report was shared with participants who provided feedback to the researcher (Saunders et al., 2016).

3.8.3. Reviewer's Validation Strategies

- Generation of Extensive Descriptions:
  The researcher included extensive descriptions of participants, study details, the site, etc. to provide rich context for others to replicate the study (Creswell & Poth, 2018).

By incorporating several validation strategies in this study, the researcher confirmed that the data was sound, the analysis was valid, and the findings relevant.

3.9. Ethical Approach

Ethics is an extremely important topic in research. There are ethical issues during each stage of the research process, especially when human participation is part of the study. Before beginning the study, the researcher submitted plans for review to the University of Salford's Institutional Review Board (IRB). The researcher addressed the potential for harm to participants, including psychological or physical harm. The IRB did not address social, economic, or legal vulnerabilities, as they were not a potential result of the study. Additionally, the researcher obtained signed consent forms from participants (Creswell & Creswell, 2018).

It is also important to consider how the specific techniques used in the study affect the data. Interviewing, as a technique, has been criticized as a process that is "exceptionally poor at revealing anything beyond the immediate interview situation" (Dainty, 2007, p. 1541). Therefore, after the final study interviews, the researcher created a summary report based on aggregate data to share with all the study participants for feedback. Based on this feedback, protocols could be adjusted for future studies; see Chapter 5 for additional details.

Analyzing data can also be problematic. When using thematic analysis, interpretation of data must be internally consistent and fall within the theoretical framework (in this case Constructionism.) As demonstrated by the tables within Chapters 4 and 5, as well as in the Appendix, the researcher used extensive descriptions and exact quotes from the interviews to ensure that theoretical assumptions were thoroughly outlined and kept extensive journal notes to ensure that the researcher's perspective was addressed (Braun & Clarke, 2006).

Ultimately, the researcher followed all required and suggested ethical protocols during the research process, with the actions taken by the researcher vis-á-vis ethical protocols called out in these chapters.

3.9.1. Ethical Protocols Prior to Conducting the Study

Prior to conducting the study, the researcher sought approval from the University of Salford's Institutional Research Board; while approval was being evaluated, the researcher

worked on the literature review in more detail and explored the Code of Ethics for several professional membership organizations to ensure that the study was following their protocols. After approval was obtained, the researcher reached out to sampled participants of the pilot study and sought and gained permission from the participants while agreeing to the interview location, most often in their office.

3.9.2. Ethical Protocols for Beginning the Study

At the beginning of the study, the researcher reached out to the proposed mentors, explained the purpose of the study, and sought their permission to conduct an interview. Almost all said yes or suggested another individual in their organization. Once they said yes, the researcher sent the Consent Form, set the date for the interviews, and obtained the signed permission forms.

3.9.3. Ethical Protocols for Collecting Data

As data collection commenced, the location of the interview was not disturbed, i.e., the work was not interrupted by the interview. In one case, we did have to move to another location due to a meeting and another's location was changed at the last minute to an extremely loud location. As there was no alternative, the interview proceeded; fortunately, the recording was audible, and the transcript was complete. In most cases, the interview followed the correct process by reiterating the purpose of the study, how the Interview Guide would be used, and the way the data would be used. The researcher also mentioned the prospect of receiving the results, with unanimous interest from participants. At no time was sensitive information intentionally pursued, but at times the participants did volunteer things that could be considered sensitive; this could be interpreted as partially due to their comfort with and trust in the researcher, and the researcher's familiarity with the built environment.

3.9.4. Ethical Protocols for Analyzing Data

During the data analysis, the researcher analyzed each interview considering multiple perspectives and conflicting reports. Once each interview was transcribed, it was assigned a pilot or final study number; from that moment on, each transcript was only referred to by that number.

3.9.5. Ethical Protocols for Reporting, Sharing, and Storing Data

The original interview recordings and the data spreadsheet were locked in the researcher's office. At no time were those documents in someone else's custody. There is no need to reprint or adapt the interviews, but the location was moved when the researcher left her first institution. It now resides in a locked space in the second institution, where it will remain for at least five years. Copies of the results were distributed to the participants after the data was analyzed and their feedback was solicited. Their feedback is discussed in Chapter 5.

Table 3.1. Ethical Issues in Qualitative, Quantitative, and Mixed Methods Research; adapted from (Creswell & Poth, 2018).

Ethical Issues Throughout the Research Process	*Types of Ethical Issues*	*How to Address the Issue*
Prior to conducting the study	• **Seek approval of research on campus through IRB** • **Gain local permission from site and participants** • **Select a site without a vested interest in the outcome of the study** • Negotiate authorship for publication	• **Consult the code of ethics for professional associations** • **Submit proposal for IRB approval** • Identify and obtain local approvals • **Select sites that make participants comfortable** • Give credit for research; decide on author order
Beginning the study	• **Identify a research problem that will benefit participants** • **Disclose the purpose of the study** • **Seek signatures on consent forms** • **Respect norms and charters (as needed)** • Be sensitive to the needs of vulnerable populations – N/A	• **Conduct a needs assessment or informal conversation with participants about needs** • **Contact participants, and inform them of the general purpose of the study** • **Tell participants that consent forms are requests** • **Discuss individual differences that need respect** • Obtain appropriate consent for vulnerable populations (e.g., children) – N/A
Collecting Data	• **Respect the site; do not disrupt** • **Make certain all participants are treated equally** • **Avoid deceiving participants**	• **Build trust, and convey the extent of anticipated disruption in gaining access** • Put into place wait list provisions for treatment for controls • **Discuss the purpose of the study and how data will be used**

	• **Respect potential power imbalances and exploitation opportunities** • **Do not "use" participants by gathering data and leaving the site** • **Avoid collecting harmful information**	• **Avoid leading questions.** • **Withhold sharing personal impressions. Avoid sensitive information. Involve participants as collaborators** • Provide rewards for participating • **Stick to questions stated in an interview protocol** *(in alignment with the semi-structured interview process)*
Analyzing Data	• **Avoid siding with participants (going native)** • **Avoid disclosing only positive results** • **Respect the privacy and anonymity of participants**	• **Report multiple perspectives** • **Report contrary findings** • **Assign fictitious names or aliases;** develop composite profiles of participants
Reporting, sharing, and storing data	• **Avoid falsifying authorship, evidence, data, findings, and conclusions** • **Do not plagiarize** • **Avoid disclosing information that would cause harm** • **Communicate in clear, straightforward, appropriate language** • **Share data with others** • **Keep raw data and other materials (e.g., details of procedures, instruments, etc.)** • **Do not duplicate or piecemeal publications** • **Provide complete proof of compliance with ethical issues and lack of conflict of interest, if requested** • **State who owns the data from the study**	• **Report honestly** • See APA (2010) guidelines for permissions needed to reprint or adapt the work of others • Use composite stories so that individuals cannot be identified • **Use unbiased language appropriate for the audiences of the research** • **Provide copies of report to participants and stakeholders; share results with other researchers;** consider website distribution; consider publishing in different languages • **Store data and materials for 5 years (APA, 2010)** • Refrain from using the same material for more than one publication • Disclose funders for research; disclose who will profit from the research • Give credit for ownership to the researcher, participants, and advisers.

As summarized in Table 3.1., ethics was proactively addressed throughout the study. Although many of the processes were redundant, they ensured that nothing was taken for granted that could affect the results of the study.

3.10. Chapter Summary

After the researcher defined the study's research problem, question, aims, and objectives, the path to achieving them became apparent.

Figure 3. Research Methodology Decision Process
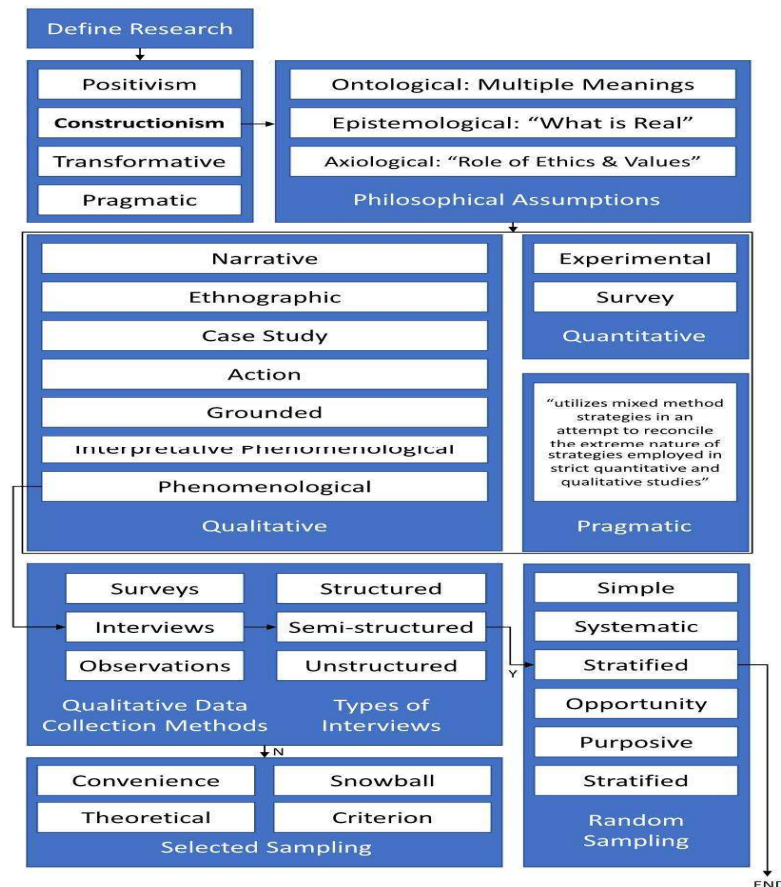
While progressing through the methodological process, the researcher was faced with numerous decisions that affected this study, which are indicated in figure 3. Each decision affected the next, narrowing the approach, until the methodology was finalized, determining the parameters of the pilot study, then the final study. The first decision was not a choice, but a revelation, as the researcher's philosophical worldview was solidified many years ago. After studying Creswell and Creswell's paradigms (2018), the researcher realized that she was a *social constructionist* who believed that *knowledge* is socially constructed, which meant that it could evolve over time as societal conditions change and new *norms* develop; thus, in her opinion, objective reality doesn't exist. This was key to the study's

methodological approach, as well as the findings to some extent, as social constructionists believe that knowledge emerges from human relationships.

The next decision was an outgrowth that evolved over time but was affected by the researcher's worldview as well as her previous work experience and exposure to academic research. As this was her first exposure to deep research, after determining the interview process as well as the study group – members of the New York Building Congress – she relied on stratified random sampling to determine her study participants. This decision was strongly influenced by her exposure to "pragmatic" and even "positivist" research, which was an overwhelming majority at her university. After the study participants were chosen, she focused on a mixed-methods approach as another way to reconcile the extreme difference between her personal philosophy and her co-workers' strong tendencies toward positivism. Thus, she used both Content Analysis and Thematic Analysis in the pilot study to analyze the *semi-structured interview* process chosen to gather data from key experienced, built environment mentors.

Unfortunately, her methodological process had to be reconsidered during the pilot study as Content Analysis proved problematic for this study. The researcher chose Content Analysis to objectively and systematically analyze the *word frequency* found in the transcripts of the interviews. After removing all the *stop words* necessary to render the content relevant, she determined that the stop word process introduced bias into the study.

Once the pilot study's interview transcripts were analyzed via Thematic Analysis, the results were validated from the researcher, participant, and reviewer's points of view, with ethics at the forefront. As the pilot study results proved valid, the same process was repeated in the final study; both will be addressed in detail in Chapters 4 and 5, respectively.

In Chapter 4, the pilot study will be addressed, including the data collection process used to determine the study participants, the interview questions themselves, and concerning the Interview Guide, the semi-structured interviews and the coding process, the mixed methods approach using Content and Thematic Analysis and their results, which culminate in the Candidate Themes, Final Themes and the pilot study's Summary Statement.

CHAPTER 4 — PILOT STUDY DATA COLLECTION AND ANALYSIS

4.1. Introduction

As an exploratory research study on the current state of mentorship and its connection to knowledge in New York City's built environment, the researcher determined that a pilot study was necessary to ensure that the processes proposed would lead to insights into this under-researched area.

After defining the research question, formulating the objectives, conducting the literature review, and addressing the methodological framework, the researcher determined a strategy for analyzing the data using appropriate tools, including validation processes. Then, in alignment with ethical considerations, the researcher gained IRB approval and began the pilot study, the participant selection process, the formulation of introductory questions for the semi-structured interviews, the actual interviews, the creation of transcripts, and the coding process were undertaken. Analysis and the results followed. Each is presented in turn to provide the reader with a *wayfinding* process that will facilitate understanding of how the interviews were undertaken and analyzed, as well as their outcomes.

4.2. Pilot Study Data Collection Process

To gain insights and understanding of a phenomenon, it is important to determine the best approach to answering the research question. Therefore, the researcher conducted a series of semi-structured interviews to explore the notional research process and determine what, if any, aspect of the study needed refinement before conducting the final study interviews.

At the beginning of this study, the researcher was heavily influenced by her employment at a small research institute just outside New York City. As stated previously, most of the research completed at the institute was quantitative. As the sample set was determined early in the study, this impacted the selection of the participants in this study, as obtaining an objective, representative, stratified sample was paramount. Even so, this process did not taint the research; it simply explains the painstaking objectivity of the selection of participants.

To solicit the study's participants, all firms in the A/E/C sections of the New York Building Congress' Membership Directory were entered into an Excel file. The list had 241 companies: 53 architecture firms, 85 engineering firms, and 103 contractor / subcontractor / developer organizations. To obtain the representative, stratified sample, the distribution of organizations was calculated, and a proportional sample size determined. The intent was to interview a group of senior-level professionals in the A/E/C industry in New York City with 22% architects, 35% engineers and 43% contractors/developers. To determine pilot study participants, participants were randomly selected following these ratios. The researcher interviewed twelve (12) professionals with 20 or more years of experience between October 2018 and March 2019. All ten (10) participants were male, nine were Caucasian and one was of South Asian descent. Only one professional said no; even then, he suggested another individual from his organization as a substitute. Two others suggested potential participants and sent emails of introduction. Ultimately, these references would have countermanded the chosen sampling process by introducing snowball sampling, so these referrals were not pursued.

When contacting the prospects via email, the following attachments—the IRB approved Research Participation Invitation Letter, the Research Participant Information Sheet, and the Participant Consent Form—were attached. The same information was mailed to each prospect's office (see Appendix B). These documents provided an overview of the confidentiality/anonymity process for review and approval. Once the prospect agreed to participate, their contact information was archived on Stevens Institute of Technology's password-protected and encrypted server. Saving the master spreadsheet on the secure server was required by the University of Salford's IRB process, and since the data was collected in the United States (US), the participants are US citizens, and the researcher was employed by Stevens as an Associate Professor, that location was secure and expedient. This master spreadsheet tracked the state of the research project, including the participants' consent, the date of the interview, the audio file name, the transcription date and the file name, etc. After receiving consent, the researcher assigned each participant a pseudonym, which was exclusively used from that point forward.

To be able to participate in the study, each prospect was required to signify consent by signing a consent form. To ensure this occurred, the researcher arrived at the in-person interview with extra copies of the Participant Consent Form and the Research Participant Information Sheet, both of which were necessary for informed consent. After the introductions, the researcher described the research process, explained semi-structured

interviews, reinforced that each participant's anonymity would be protected, and emphasized that withdrawal from the study—without penalty—was allowed at any point in the process. Nine of the ten interviews were held in office environments: seven in the participants' offices and two in the researcher's office. At his request, one interview was conducted in a restaurant close to the participant's office. The researcher asked between 50-70 questions and analyzed more than 82,000 words from more than 8.5 hours of recordings.

Table 4. Summary of Pilot Study Participants and Interview Duration

	Educational Background	Professional Experience	Title	Organizaton	Experience	Interview Duration	Word Count
1	BE Mechanical Engineering / MBA	Safety Professional - Construction Site	Vice President	Developer / Const. Mgmt.	30+ years	49 minutes; 32 seconds	8,001
2	Bachelor of Architecture	Architect	Principal	Architecture Firm	30 + years	57 minutes; 50 seconds	9,861
3	Bachelor of Architecture	Architect	Principal	Architecture Firm	50 + years	1 hour; 22 minutes; 30 sec	10,553
4	BE Civil Engineering	Construction Manager	Vice President	Construction Organization / Const. Mgmt.	30 + years	39 minutes; 45 seconds	6,085
5	BE Civil Engineering	Construction Manager	Executive Vice President	Construction Organization / Const. Mgmt.	20 + years	35 minutes; 11 seconds	5,859
6	BE Electrical Engineering	Electrical Engineer	Senior Engineer	Electrical Engineering Firm	20 + years	1 hours; 5 minutes; 28 sec	11,850
7	BArch Architecture / MA Interdisciplinary Studies	Architect	Senior Associate	Architecture Firm	20 + years	57 minutes; 38 seconds	7,574
8	BE Civil Engineering	Civil Engineer	Vice President	Architecture/Engineering Firm	30 + years	51 minutes; 29 seconds	6,352
9	BE Civil Engineering / ME Civil Engineering	Construction Manager	Executive Vice President & Chairman	Full Service Firm (A/E/C/CM)	30 + years	52 minutes; 19 seconds	10,180
10	BE Civil Engineering	Transporation Engineer	Principal	Civil / Transporation Engineering Firm	20 + years	36 minutes; 28 seconds	6,139

4.2.1. Pilot Study Interview Questions

Before beginning the interview process, the researcher confirmed the interview questions directly pertained to the research question and objectives.

Table 4.1. Summary of Research Question, Objectives, and Interview Questions

Research Question	*Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?*
Research Objectives	**Interview Questions**
To define current mentorship theories and practices, in general and specifically within the built environment	Tell me a little bit about yourself and your professional background… How have your past experiences shaped your perceptions of mentorship?
To examine theoretical frameworks of knowledge sharing in the context of mentorship programs	How did you formulate your mentorship processes? Are they organized or ad hoc? Do you promote mentorship within your organization? If so, how?

To identify the benefits and challenges of mentorship programs in the built environment	Are you familiar with knowledge management? How would you define it? What about knowledge exchange or knowledge sharing?
To determine the critical success factors (CSF) for mentoring and knowledge sharing as identified by mentors	Are you familiar with knowledge management? How would you define it? What about knowledge exchange or knowledge sharing? How does your firm share knowledge? Does it involve mentorship? If so, how?
To generate recommendations for mentorship programs that will enhance knowledge sharing in the built environment	Tell me a little bit about yourself and your professional background… How have your past experiences shaped your perceptions of mentorship? How did you formulate your mentorship processes? Are they organized or ad hoc? Do you promote mentorship within your organization? If so, how? How does your firm share knowledge? Does it involve mentorship? If so, how?

Then an Interview Guide was developed and populated with relevant interview questions aligned to establish the conceptual framework.

Table 4.2. Interview Guide with Corresponding Interview Questions

Research Question		*Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?*
Introduction		This interview focuses on mentorship in New York City's built environment. As such, I'll be asking a series of questions about your experiences with mentorship and exploring mentorship within your firm. During the interview, we'll also discuss some of the benefits, processes, and roles typically seen in a mentoring relationship including knowledge management and competitive advantage.
Section	**Description**	**Relevant Interview Questions**
A	**Current State of Mentorship**	
A1	Past Experiences	Tell me a little bit about yourself and your professional background. How have your past experiences shaped your perceptions of mentorship?
A2	Mentorship within Organization	How did you formulate your mentorship processes? Are they organized or ad hoc?

A3	Mentorship Processes	How did you formulate your mentorship processes? Are they organized or ad hoc?
A4	Promotion by Mentors / of Mentees	Do you promote mentorship within your organization? If so, how?
A5	Results Generated by Mentorship	What is your firm's competitive advantage? Is mentorship-driven knowledge exchange perceived as a differentiator or as a competitive advantage? If so, how?
B	**Mentorship & Knowledge Sharing**	
B1	Definition – Knowledge Management and/or Knowledge Sharing	Are you familiar with knowledge management? How would you define it? What about knowledge exchange or knowledge sharing?
B2	Mentorship Supports Knowledge Management / Knowledge Sharing	How did you formulate your mentorship processes? Are they organized or ad hoc?
B3	Relationship Between Mentorship & Knowledge Sharing	Are you familiar with knowledge management? How would you define it? What about knowledge exchange or knowledge sharing? How does your firm share knowledge? Does it involve mentorship? If so, how?
B4	Mentorship & Knowledge Sharing - Relationship to Competitive Advantage	What is your firm's competitive advantage? Is mentorship-driven knowledge exchange perceived as a differentiator or as a competitive advantage? If so, how?

The researcher used the Interview Guide and the same questions for all interviews. These questions served as a framework for the semi-structured interviews but were not posed verbatim, or in a strictly pre-determined order. However, each interview followed the same general procession. Each interview began with an icebreaker question, followed by questions about the current state of mentorship, then transitioned to knowledge sharing and its relationship to mentorship, and concluded with general questions about the firm's competitive advantage.

4.2.2. The Semi-Structured Interview Process

The first interview went well, lasting 49 minutes and 32 seconds. The researcher was nervous after several years of not conducting interviews. Additionally, the researcher's professional relationship with the participant made the interview more awkward. "In some

ways interviewing strangers is easier than interviewing people you know because you don't have to manage a dual relationship..." (Braun & Clarke, 2013, p. 88) …thus, the researcher was caught off guard. After the researcher explained a bit about the research itself—including the differences between content and thematic analysis—the researcher asked the first question.

| Researcher: | 00:29 | … What do you consider yourself at this point? Do you consider yourself an executive? Do you consider yourself a safety professional? I mean, you're a mechanical engineer by training, but what do you consider yourself as far as your true specialization? You're working for a developer, you know — it's kind of all over the map. |

As Holloway and Jefferson (2013) discussed in *Doing qualitative research differently: a psychosocial approach*, this question was not successful because "it seems to come across as abstract because it is introduced abruptly, devoid of context, and prior to the build-up of any rapport," (p. 26). Having not thought about the opening question in relation to someone who was known to the researcher—until that moment—the researcher was caught off guard and continued attempting to ask focusing questions, which was interpreted by the participant as a request for specificity. Although the researcher recovered quickly and began asking follow up, probing questions, it was a challenging start to the interview.

As this interview proceeded, the researcher pursued various strategies to conduct an effective interview, i.e., asking open questions, asking singular questions, focusing the participant's responses by repeating an aspect of their answer, further refining their statements, then following up with open, probing questions.

Table 4.3. An Excerpt from Interview 1

Participant:	03:46	My mentorship came through my superiors, my, my, um, the people I worked for, my bosses.
Researcher:	03:52	Direct supervisors?
Participant:	03:53	Direct supervisors. Uh, and then in some cases, you know, um, maybe more senior level person that ultimately became my supervisor.
Researcher:	04:03	Okay.

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Participant:	04:03	And um, it was, uh, it was based on, I would say on the job training and that's how I became. A great example would be with a bachelor's and then even a Master's.
Researcher:	04:19	Yeah.
Participant:	04:19	Vastly improved on the job.
Researcher:	04:23	Why is that?

By the end of the first interview, questions that supported the research objectives had elicited thoughtful answers from the participant. The interview was ultimately a success.

As the researcher continued the interviews, she became more comfortable with the semi-structured interview process, began varying the order of the questions and delved into topics raised by earlier participants. At times, the researcher would double back to an earlier question to reaffirm the participant's answer. Regardless, the researcher adhered to the overall structure of the Interview Guide.

Pilot Interview Seven was analyzed to demonstrate the process described in Chapter Three's Methodology sections, (3.6.7. Interview Formation) and (3.6.7.1. Question Formation). In these sections, the researcher discussed the need to establish a rapport with the participant, establish trust, communicate clearly and maintain consistency within the bounds of the Interview Guide. The researcher also clarified various types of questions, i.e. *exploratory* questions that are often used at the beginning of an interview to understand the participant's background, experience, perspective on a subject, etc. Another common question type utilized was *explanatory* – often used to refine answers – followed by *probing*, *suggesting* or *drawing out* questions that sought additional details or clarification from the participant, (Easterby-Smith et al., 2012; Siedman, 2013; Creswell & Creswell, 2018).

4.2.2.1. Analysis of Pilot Interview 7 Questions

As demonstrated below, the researcher utilized the Interview Guide while initially asking opening, exploratory questions that made the participant feel comfortable, then transitioned into probing or drawing out questions. Questions are color coded by the type of question and bolded when the question directly aligned with the Interview Guide.

Table: 4.4. Pilot Interview Questions

Color Code:					
Probing	**Mirroring**	**Drawing Out**	**Suggestions**	**Exploratory**	**Explanatory**

Interview 7 Questions:

1. **Tell me a little bit about yourself...**
2. Did you have mentors in the past?
3. How did you mentors work with you? Did they all mentor you in the same way?
4. **So how has your interaction with you (pause) your mentor's interaction with you (pause) shaped your perception of mentorship?**
5. Do you have a mentor now?
6. In what way?
7. Do you stay in touch with any of your other mentors? You mentioned one. Do you have multiple mentors?
8. Do any of them give you career advice? You talked or seek them out for career advice?
9. **How have these relationships arisen? Where do they occur and how do they occur?**
10. **Were these relationships organized or were they more ad hoc?**
11. How did that work?
12. Did your mentor ever seek you out? That one that you were talking about with the long distance relationship? Did that person ever seek you out or was it always you seeking them out?
13. Was this a person you worked with? Or worked with within the same firm and you were working on projects with this person?
14. So, you never had a mentor that was in a community of practice? Or outside of the firm/supervisor relationship?
15. Meaning?
16. And when you're talking about that individual, did that individual give you personal advice?
17. What type of advice was this? What did it extend to?
18. Did your other mentors give you the same sort of advice? Not just technical, but moving beyond the technical?
19. When your mentors were talking to you about technical knowledge or giving you information... What do you consider that? ...What type of information do you consider that to be? Do you consider that to be knowledge?
20. Is most of that knowledge that you would be able to obtain somewhere else?
21. Has it been true for all of your mentoring relationships that you feel like it was more information you could have found somewhere? Or was it, as their information that would have been impossible to find if you, weren't involved in that relationship or involved in another relationship similar to that?
22. You mean a case study?
23. Such as terminology or (pause) that sort of thing?
24. So, how did your mentors teach you something? Did, you said, you're talking about them giving you examples or case studies (pause) then did they give you an opportunity to work on your own?
25. What differentiates the mentoring relationships that you've had, that you consider to be mentoring relationships from other relationships you've had in, you know, throughout your tenure in an organization or in the built environment itself?
26. **How does that experience translate to your mentorship today? Are you mentoring individuals? And if so, how?**
27. So you're investing in them?

28. So, you brought up market and, and the fact that the market is very good right now. Were your mentoring relationships, well how were your mentoring relationships affected by the recession in 2007/2008?
29. Did you have a mentor in the new firm that you're referring to?
30. And how was that relationship different or the same from other relationships that you've had with mentors?
31. **Um, so do you see mentorship as a means of exchanging knowledge?**
32. **Can you describe how that works?**
33. **Are you familiar with the term knowledge management?**
34. **How would you define it?**
35. So, you made a point of differentiating knowledge from the procedural, um, information that you were just speaking about… What is the difference?
36. So you've been in firms where there is some sort of knowledge management system?
37. The firm you're in right now and the type of mentorship that you're receiving now, that type of information or knowledge that you're receiving from your current mentor, is that captured anywhere?
38. When you say "all the people," how is that information or knowledge transmitted to a group?
39. Can you elaborate on the peer-to-peer?
40. And what, how would you characterize those, that relationship, those exchanges?
41. Would you consider that mentorship?
42. **How do you define mentorship?**
43. **Um, where do you see the source of competitive advantage lying in an architecture firm?**
44. Can or cannot?
45. Because that project would have been a shortcut?
46. So when that situation or that example that you just mentioned occurred, was there any, um, afterthought by either you or your principal about how to do that better next time?
47. But their (emphasis) projects?
48. Why is that a back burner issue?
49. Have you ever had a system like that in any of the firms you've worked in?
50. How many firms have you worked in?
51. Seven? And they range in size from what to what?
52. So, okay, 35 people to 95,000 people. That's how you're, um, judging?
53. But there wasn't a system, even within the largest firm, that, um, you could have done research within that system on an element to see how they'd handled it in the past?
54. Was there, what was the process to find someone to help? Was it formalized?
55. So it wasn't formalized?
56. **And what makes the people the competitive advantage, what element of that individual or those individuals makes them the differentiator?**
57. So, um, do you perceive that, that talent that they have that's based on, on how hard working they are or how conscientious they are?
58. So, where do those, where did that talent arise from? In other words, did they learn in school? Did they read it in a book? Where did, where did that come from?
59. Why not?
60. So, he had a different form of experience, a different specialization?
61. Um, so do you think that the mentors that you'd had and the information or knowledge that you have that has been shared over time, has been an advantage to you?
62. In what way?
63. **So, you think that mentorship and that knowledge exchange is a differentiator (pause) or isn't a differentiator (pause) as far as the competitive advantage of a firm?**
64. And how does your firm encourage that?
65. And how do you, you're saying multiple project managers?

66. How do you think that is transferred or permeated from project manager to project manager to form that sort of culture? Is that a formalized process or an informal process?
67. And it seems pervasive...
68. **Is there anything else that you'd like to add to the discussion that we've had?**
69. **And how do you support that within your organization?**
70. **Is that something that, um, you feel has transmitted to other people or does that come from something, some experience you've had in the past?**
71. So there's a relationship?
72. How does your, when you're saying you're investing more time and energy, how has that manifested?
73. **Are you emulating someone in your past or are you emulating a process that you experienced when you do that?**
74. **So, that was a more personal relationship?**

As this was an exploratory research study, the researcher's goal was to use primarily open-ended questions aimed at understanding the current state of mentorship and its connection to knowledge in New York City's built environment. Thus, the researcher started the interviews with *opening* and *introductory exploratory* questions, supported by *probing* ones, interspersed with *drawing out*, making *suggestions*, and *explanatory* questions for refinement. After the first nine questions, *probing* questions dominated the first third of the interview, with a few *mirroring* questions scattered in for support.

Exploratory, *transition* questions were used to change the trajectory of the interview by introducing new topics or concepts that supported the various sections found in the Interview Guide. Roughly the second third of the interview was dominated by *key*, *explanatory* questions that defined and refined the role and characterization of previous answers or predicted and differentiated them to obtain a better understanding of the participant's answers. At times these took the form of "why," "what," and "how" questions.

The final ten *ending* questions begin with *probing* questions, then transitioned into *drawing out*, *mirroring* and *suggestion* questions that kept the participant engaged and encouraged additional details or refinement of answers. These *all things considered*, *key* questions allowed the researcher to obtain a better understanding of what the participant was saying, i.e., his true meaning as well as his feelings about the content being discussed. By reflecting the participant's answers through *summary* questions, the researcher demonstrated interest in the participant's intent and assisted him in further clarification by allowing the participant to *hear* his answers and alter them as necessary, (Easterby‑Smith et al., 2012; Siedman, 2013; Creswell & Creswell, 2018). By paraphrasing the participant's answers, the researcher also confirmed that she was not interpreting the participant's answers based on her own bias or preconceived notions. Question 68, "Is there anything else that you'd like to add

to the discussion that we've had?" began the *closing* portion of the interview, prompting the participant to introduce anything left out of earlier answers and indicating that the interview was drawing to a close. As a result, the participant was encouraged to elaborate, which assisted the researcher in achieving the study goals.

4.2.3. The Coding Process

At the beginning of each interview, the researcher sought verbal permission to record it and showed the participant the ITalk application on the researcher's iPhone 8. The interview was then recorded via the application and labeled as Interview 1, Interview 2, etc. Once the interview was complete, it was uploaded onto the DropBox application on the iPhone as a digital file. Then, the digital file was uploaded to Temi.com, a website that transcribes digital media into Word files in less than 24 hours. Once transcribed, the researcher reviewed the Word file, while simultaneously listening to the audio file. Temi has a feature that highlights each word as it is spoken to allow the researcher to review the transcription for accuracy. The website also categorizes sentences into paragraphs and attempts to categorize them into the transcription format. This format can easily be updated and is automatically saved within seconds of the update. Even with this advanced technology, it is necessary to review each transcript multiple times to obtain the exact wording, classify supportive comments that urge the participant to continue, such as "right" or "um hum," and separate each section while labeling them as "researcher" or "participant."

4.2.3.1. Qualitative Coding Using Thematic Analysis

Next, using thematic analysis, the researcher began the coding process electronically using Word files of the interview transcripts. This was the most challenging aspect of the pilot study. To grasp Braun and Clarke's thematic analysis *procedures*, including their six phases of analysis – becoming familiar with the data, producing preliminary codes, searching for themes, refining themes, naming themes, analyzing the themes and compiling evidence – the researcher read their highly cited 2006 article several times. Once a working understanding of their approach was gained, a few attempts were made to analyze the first interview, but these failed. Initially, the researcher attempted to code the data electronically by color coding key words, highlighting text, underlining, and adding sticky notes, all using Adobe Acrobat. After some frustration, the researcher determined that manually coding each interview, although more time intensive, would provide the most comprehensive analyses.

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In the second attempt at coding the first review, the researcher formatted the Word file in landscape mode and increased the right margin to create space for notation. As outlined and defined in section 3.7.2.5. Thematic Analysis in the methodology chapter, the researcher followed a strict process to determine the themes found in this research.

First, the researcher simply read the printed transcript, circled and/or underlined key words, and captured initial ideas by writing on the right margin. Although time-consuming, this *screening* process proved expedient and allowed the researcher to achieve a deeper understanding of the participant's meaning and actively considered the data from a third-person perspective. This process brought to mind the researcher's thoughts during the interview, which helped identify manifest and latent content within the data, as well as important patterns and potential codes. This continued with each interview. The coding sequence strictly followed the interview sequence.

Next, the researcher began to highlight initial codes using different colors and collated them across the entire data set. These codes were data-driven and included the entire interview, including those sections not directly related to the study. Some 'multiple coding' occurred, in which the same segment of text was assigned different, but equally applicable, codes. Eventually, repeated patterns began to emerge, (Braun & Clarke, 2006).

Once the initial coding was complete, the researcher used the codes to begin developing potential themes. Using post-it notes for each code, the researcher employed an inductive process to form groups, which eventually became themes. At this point, it became clear that some codes simply did not apply to the aim or objectives of the study. In alignment with Braun and Clarke's process, which was outlined in their 2006 article as well as their 2013 book, the researcher elected to *selectively code*, eliminating such candidate themes and their associated codes from further consideration. This ensured that the analysis focused only on the complex phenomena being studied.

Some of the remaining themes seemed to be at opposite ends of a spectrum, some were more inclusive while others were more specific; the more inclusive themes became *candidate themes* while the themes that were more limited in scope became *sub-theme*s. While most were semantic – within the explicit content – a few were latent, i.e., found within the subtext and/or understood on an interpretative level, (Braun & Clarke, 2006.) For example, none of the participants stated that mentorship was an "enjoyable process," but throughout coding, it became apparent that their answers revealed enjoyment, which was a latent conclusion produced by the researcher.

Once the researcher was satisfied with the candidate themes, re-analysis of the data set began, but this time with the themes in mind. Whenever the researcher found something that seemed to fit into a theme, it was noted on the physical document and re-coded. During this phase, several new themes were identified, including Lifespan of Mentorship, Mentorship is Good for Business, Mentorship Requires Personal Chemistry, Mentorship Training, Training as Form of Knowledge Sharing, Mentorship Requires Trust, and Mentorship is Personal. These new themes only fully emerged during the coding of Interview 9; thus a third round of analysis was necessary to ensure that the new themes were fully integrated into the analysis across all ten interviews. After completing the third round of analysis, each theme was defined.

At this stage, the researcher synthesized a Thematic Map (Figure 4.), exploring, establishing, and then iteratively refining the relationships between codes, sub-themes, and candidate themes. The seven candidate themes coalesced into four themes and then coalesced into a single statement that captured the essence of pilot study participants' understandings of mentorship in NYC, (Braun & Clarke, 2006).

Figure 4. Thematic Analysis Themes
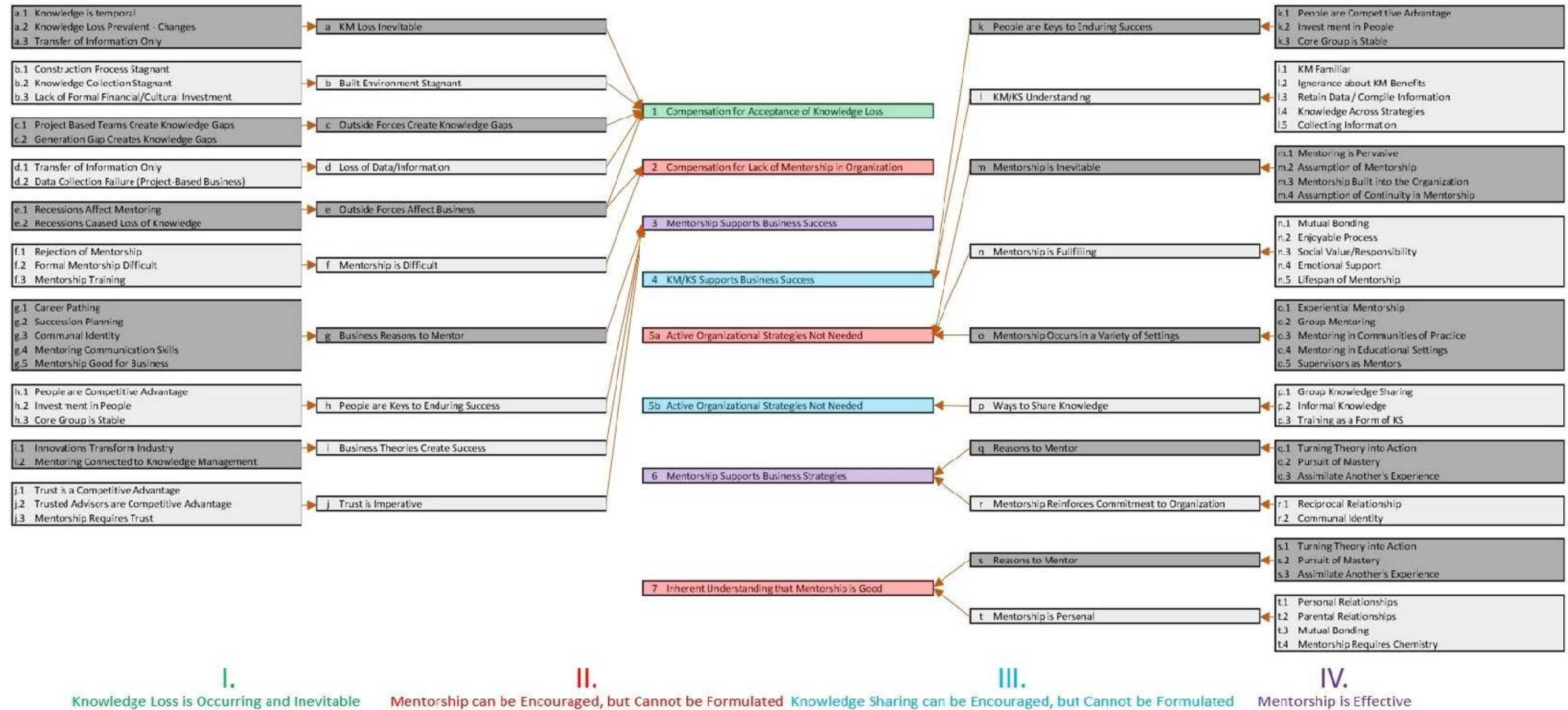
Figure 4. Thematic Analysis Themes

Mentorship is an Important and Effective Means of Knowledge Sharing and Retention, but Cannot be Formulated or Forced.

After generating the Thematic Map, to further communicate the findings and provide additional detail, the researcher wrote extensive descriptions of the thematic analysis coding and theme generation process, (see section 4.3.4. Findings Generated from Thematic Analysis). As such, each section is organized based on one of the seven Candidate Themes, which are summarized at the beginning of each section, connecting back to the literature, then providing a brief statement explaining the participants' experiences and detailing the candidate theme in relation to its corresponding sub-themes and initial codes.

One could argue that another approach to describing and defending the themes was possible, but once the researcher's advisor asked her to explain her process, the researcher realized that she'd inadvertently reverted to the "Inverted Triangle" style of writing she'd learned in Journalism School. Journalists use the *inverted triangle* as a method of organizing their stories from the most important statement to the supporting details, then background information, in descending order of importance, which allows the reader to ascertain the most critical information first, then decide whether to proceed or stop reading, (Mahony, 2009).

Figure 4.1. Inverted Pyramid in Journalism

By organizing the code analysis in this way, the study's readers could review the most important information regarding each specific Candidate Theme, then decide to continue reading to ascertain more detail or simply jump to the next Candidate Theme or section.

The researcher also created 20 tables focused on each sub-theme, as its organizing *anchor*. Each table visually organizes the sub-theme, placing each initial code on the left, in the first column, then defining the code in the second column, and then supporting each code by providing illustrative quotes from the interviews in the third column. In doing so, the researcher has provided a quick way for the reader to visualize the amount of support for each code, and quickly evaluate the researcher's analysis of the interviews, (see table 4.10.

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Knowledge Loss is Inevitable (a)). Table 4.10. was inserted into this chapter to serve as an example; the others sub-theme tables are included in Appendix C.

4.2.3.2. Quantitative Coding Using Content Analysis

Thematic Analysis was chosen due to its idiographic nature, and its focused approach to creating full and precise conclusions from a phenomenological perspective that connects the data's unique aspects to known philosophies. The interview transcripts were subsequently evaluated using Content Analysis. Due to the subjective nature of Thematic Analysis, as demonstrated by its dependence upon the researcher's opinions, background, and ability to determine appropriate conclusions from the data, the researcher elected the most basic form of Content Analysis—word counts—to mitigate subjectivity and analyze transparently. Since Content Analysis is considered nomothetic, due to its interest in formulating objective, generalized conclusions from an assembled data set; this was also an attempt to test validity and triangulation of the results of the pilot study (Remenyi, Williams, Money, & Swartz, 2010).

Even though manual Content Analysis is possible, for accuracy and reliability the researcher chose to use a computer-aided software application to count the number of times each word appeared during the 10 interviews and more than 82,000 words. As a matter of practicality, the researcher selected *NVivo*, software that is not methodologically bound, that works well with a variety of data analysis methods, and that allows multiple researchers to work on the same data files from remote locations. None of these features were required to conduct the pilot study, but since NVivo is used routinely in built environment research and learning new software is time intensive, the effort was justified as 'being a good investment.'

The same digital files that were used for the pilot study's thematic analysis were uploaded into NVivo 12 using the same names, i.e., Interview 1, Interview 2, etc. The Text Content Language feature in NVivo 12 was set to English to allow the software to conduct spell check, note words with the same *Stem*, such as *talk* and *talking* or *learn, learning*, and *learned*, and use the pre-loaded *Stop Word* list. The Stop Word list allows the researcher to filter out words that are not relevant to the study, nor meaningful in the content analysis process, or are merely insignificant to the research such as contractions, prepositions, and conjunctions (NVivo 12, 2019). The original Stop Word list contained 201 words.

Table 4.5. Original Stop Word List

a about above after again against all am an and any are aren't as at be because been before being below between both but by can can't cannot can't could couldn't did didn't do does doesn't doing don't down during each few for from further had hadn't has hasn't have haven't having he he'd he'll he's he'd he'll her here here's hers herself he's him himself his how how's I I'd I'll I'm I've if in into is isn't it it's its itself let's me more most mustn't my myself no nor not of off on once only or other ought our ours ourselves out over same say says shall shan't she she'd she'll she's she'd she'll she's should shouldn't so some such than that that's the their theirs them themselves then there there's these they they'd they'll they're they've they'd they'll they're they've this those through to too under until up upon us very was wasn't we we'd we'll we're we've we'd we'll were we're weren't we've what what's when when's where where's which while who who's whom who's whose why why's will with won't would wouldn't you you'd you'll you're you've you'd you'll your you're yours yourself yourselves you've

One at a time, these files were partitioned into (1) the researcher's portion of the semi-structured interview and (2) the participant's responses; at that point, the researcher's portion of each file was eliminated so only the participant's responses were analyzed. After some experimentation with the software, sub-codes were created for each transcript, and a query run grouping words with their stemmed words, and similar words, to create a list of remaining relevant words. This list was reviewed extensively and applied to each interview as a query to compare interviews directly and to compile one final Word Frequency List.

After finishing the first round of culling, additional criteria were applied to reduce the number of words left in each of the participant's transcripts. Words that were only listed once in any given interview, or that weren't significantly contributing to answering the researcher's questions such as proper nouns and numbers were added to the Stop Word list. This list, Stop Words 1, now contained 396 words.

Table 4.6. Stop Word List 1

000 a about above actually Aecom after again against all already also always am Amtrak an and another any are aren't as at authorities authority back ballistic basic basically be because been before being below between bit blah both boy boys but by call called came can can't cannot can't cat certain certainly cetera come comes coming correctional corrections could couldn't couple dah Dan date dating Dave definite definitely did didn't dinner do does doesn't dog doing don't down during each eight either else etc. even ever every exactly eye facilities facility fees few first five foot for Fordham forth four from further general generalized generally get getting glasses gloves going gone gonna got gotta grammar grammarly guess had hadn't Halpren has hasn't have haven't having he he'd he'll he's he'd hell he'll her here here's hers herself he's hey him himself his honestly honey Honeywell house housing how how's HRH Hudson hundred hunter I I'd I'll I'm I've I'd if I'll I'm in into is isn't it it's its itself jail Japanese jay john just juvenile kids kind kinds know knows Lagos Lehrer let let's like Linda little look looking lot Malone Marty max maybe Mcgovern me mean MHMM Michael might mike model more most much music mustn't my myself name names Nate never Nigeria Nigerian Nigerians no nor not now obviously of off okay on once one only onto or other ought our ours ourselves out over own participant percent pizza point port pretty put quite Raphael really related researcher right rob rose said same say says see seeing seen shall shan't she she'd she'll she's she'd she'll she's should shouldn't sit sitting six Skanska so solar some somebody something sort sorts Stockton stuff STV such sure terms than that that's the their theirs them themselves then there there's these they they'd they'll they're they've they'd they'll they're they've thing things think thinking this those thought three through tiffany Tishman to too troy two ultimately under until up upon us very vinegar was wasn't way ways we we'd we'll we're we've we'd weight weighted well we'll went were we're weren't we've what what's whatever what's when when's where where's whereas where's which while who who's whole whom who's whose why why's will with won't would wouldn't yards yeah yes York you you'd you'll you're you've you'd you'll your you're yours yourself yourselves you've

Even after the new Stop Words 1 list screened the data, there were many words remaining that, upon review, were irrelevant.

At this point, the researcher realized that the *word count process* used in this form of Content Analysis did not reduce ambiguity or remove subjectivity. To reach a useful Word

Frequency List or Word Cloud, the researcher would have to make key decisions, introducing bias into the process. Searching through articles, book chapters, and other reference materials did not resolve this, as most don't delve deeply into the actual analysis. They refer to a step-by-step process, mention strengths and weaknesses, challenges, etc. but don't provide enough detail to allow replication (Seidman, 2013; Saunders et al., 2016; Easterly-Smith et al., 2012). Others refer to Content Analysis but define the process vaguely or seem to broaden the definition to encompass something similar to Thematic Analysis (Kualatunga, Amaratunga, & Haigh, 2007; Braun & Clarke, 2013; Rafidee, Hasbollah & Baldry, 2016).

Additionally, a word like "concrete" was problematic as it could have multiple meanings; it could refer to a construction material or a definitive process, e.g., "…he made a concrete decision." To achieve an accurate reflection of the participant's statements, the researcher decided to interpret the data and make decisions based on the researcher's opinions of what the participant *meant* by any statement, effectively eliminating the objectivity of the analysis. Once this decision was made, another round of culling resulted in the Stop Word 2 list, which contained 1,244 words.

Table 4.7. Stop Word List 2

000 1990 2000 2007 2010 2012 50th 51c3 52nd 80s 90s a abbreviated able about above absolutely across actual actually addict addition afford affordable after again against agency ago agree agreed airfare all almost already alright also always am amongst an and another any anybody anymore anyone anything anytime anyway anywhere apart Apollo approach approaches architect architects are aren't ark around as aside asked aspects ass assemblies assembly assume at author authority Autocad away awesome awhile babies baby back backed bad ball ballistic balls band bar baseball based basic basically basis bay be beautiful became because become becomes been before beginning begins behind being believe below Bergen best better between big bigger biggest bio birthday birthdays bit blah bless blindly blow board born both bottom box boxes boy boys brain brains brand break brick bricklayer bricks bridge bridges brilliant bring bringing British brother brought buffalo built burn business businesses busy but buy buying by bye call called came can can't cannot can't card cards care Carnegie cartoon case cases cat category cause celebrate celebrating center centers certain certainly cetera changed changing chapters checks chemistry child children chores Christmas circumstance circumstances cities city civil cleaned cleaning cleans clear cleared closest closet coast coffee come comes coming commissioner commissioners committee committees common compound con concrete consider considered consultant continued continues contractor contractors conversant converse cool cooper cord corporation correctional corrections cost could couldn't countries country coup couple cover crack craft crappy crisis critical current cut dad dah date dating day days definite definitely deliver department depends depth design designed designer designing desk Detroit did didn't different differently dig dinner direct directed directive directly discrepancies discrepancy disgusted district do does doesn't dog doing dollars domestic don don't donated donation done don't dot double doubled down drafted drafting drag dragged draw drawing drawn drew drive driven drives due dump dumped during each early easier east easy eat eight either electric electrical electrically elevators else end ended energy engineer engineers enough entire Enugu environmental environmentalist eroding especially essentially etc. even eventually ever every everybody everyone everything exact exactly except expect expecting exterior extra extreme extremely eye eyes face faced facilities facility fact facts fall falling families family fantastic far father feed feeds fees ferry few field fields fifties figure figured figures figuring fill filled find fine fire fired fires firing first fitness five fix flack floor folder follow followed food fool foot for forever form formula forth forward found founded four from front full functions further garage garages garbage gave general generalized generally get gets getting give given giving glass glasses gloves god goes going gone gonna good got gotta gotten government grab grabbed grabbing grade graded graduates grammar grammarly grand grassroots great grew grow growing grown guess gutted guy guys had hadn't half Halpren hand handle handled hanging happen happened happening happens hard has hasn't hated have haven't having he he'd he'll he's head headed headquarters health healthcare hear heard heavy he'd hell he'll her here here's hers herself he's hey high higher highly highrise him himself his history hit home honestly honey Honeywell hope hopefully hoping horrible hospital hot hotel hotels hour hourly hours house housing how how's however how's HRH Hudson huge hundred hunter I I'd I'll I'm I've I'd if I'll I'm immediately in inaubile incredible Indian injuries instance instead instill interesting into inventory is island isn't it it's its itself jail jails Japanese jealous jersey join joining jump jumping just justice juvenile Kennedy keypad kid kids kind kinda kinds kit kitchen knew knock knocking know knows laboratory Lagos landlord large larger last late lately later laughter law lay laying least less let let's level like liked likely Linda line lines literally little live living local location locations long longer look looked looking looks lot love lower made mading make maker makes making manner mantra many marketing married Marty massive math matter may maybe mayor me mean medical members mentioned mess met metal MHMM mid middle might million mind mini ministries ministry minute minutes mix mixed mobility model mom moment money months more morning most mother

motor move moved moving much multiple music mustn't my myself name names nationally nations nature need needed needs neighborhood neighborhoods net never next nice niche niched Nigeria Nigerian Nigerians night no nobody nor north northeast not notes nothing now number numbers objects obviously occasionally occur occurred of off office okay old on once one ones only onto open opening opens operated operation ops options or organic other others ought our ours ourselves out over overhead own panels pants parenting parents parkway part participant particular particularly parties party passed past paste pause pension percent perfect perhaps period Pershing person phenomenal physics pick picked piece pipe piped piping pits pizza place places play played playing please plentiful plenty plug plumber plumbers plus point political pool pools port portion position post postpone predates prep president presser pretty previous previously principal prix probably problem produce produced product products proof proposal proposals public publicly pull pulling purchasing pure purposely put putting quarterback question quite quo quotes race racing raise raised raising ran rare rarely rate rather rating read ready real really reason reasons reduced region regional related researcher residential respect rest Revit RFP right risk roll rolled roof room rooms ropes run running runs safety said sales same saw say saying says scale scream screaming script seat second seconds secretaries section sections sector see seeing seem seemed seems seen self sell selling semi senior sent set setting seven seventies shakeup shall shallow shame shan't shape she she'd she'll she's she'd sheet shell she'll she's short should shouldn't show showcase showing shows side sidewalks similar simply since single sit site sitting six sixties skin slip small so solar Somalia some somebody somehow someone someplace something sometimes somewhere son sorry sort sorts sounded sounding sounds space spacing span spawned spec spectrum spectrums spend spending spent stadium staff stage stand standing starve state states status step stepped stick still stone stop stopped stories story straight street stuff stupid stupider style subway successful such sudden suddenly summer supposed sure surrounded table take taken takes taking talking tell tend tends term terms than that that's that'd that's the their theirs them theme themselves then there there's these they they'd they'll they're they've they'd they'll they're they've thing things think thinking third this those though thought thousand three through throughout throw ticket tiered tiffany times to together toilet toilets told too took tool top topic topics torn touch tough tower towers trade trades transit transportation travel traveled treatment tremendous tremendously tried tries trouble troubled troy truly trump try trying tunnel turn turned turning turns twice two type types typically typing typist ultimately under united universal university until up upon ups upward urban us use used user users using usually utility vacuum vacuums variety various venture ventures versus very vinegar vision wait waiting waits walk walked walking wall walled walls wanna want wanted wants was wasn't waste water way ways we we'd we'll we're we've wear wearing website we'd Weehawken week weekend weekends weeks weight weighted well we'll went were we're weren't west we've what what's whatever what's when when's where where's whereas where's wherever whether which while who who's whole whom who's whose why why's wife wiki will window wire wired with within without woman won't word wording words worker world worry would wouldn't would've wound written wrong yards yeah year years yelling yes yet York you you'd you'll you're you've you'd you'll your you're yours yourself yourselves you've

000 1990 2000 2007 2010 2012 50th 51c3 52nd 80s 90s a abbreviated able about above absolutely abstract across actual actually addict addition afford affordable after again against agency ago agree agreed airfare all almost already alright also always am amongst an and another any anybody anymore anyone anything anytime anyway anywhere apart Apollo approach approaches architect architects are aren't ark around as aside asked aspects ass assemblies assembly assume at author authority Autocad away awesome awhile babies baby back backed bad ball ballistic balls band bar baseball based basic basically basis bay be beautiful became because become becomes been before beginning begins behind being believe below Bergen best better between big bigger biggest bio birthday birthdays bit blah bless blindly blow board born both bottom boulevard box boxes boy boys brain brains branco brand break brick bricklayer bricks bridge bridges brilliant bring bringing British brother brought buffalo built burn business businesses busy but buy buying by bye call called came can can't cannot can't card cards care Carnegie cartoon case cases cat category cause celebrate celebrating center centers certain certainly cetera changed changing chapters checks chemistry Chicago child children chores Christmas circumstance circumstances cities city civil cleaned cleaning cleans clear cleared closest closet coast coffee come comes coming commissioner commissioners committee committees common compound con concrete consider considered consultant continued continues contractor contractors conversant converse cool cooper cord corporation correctional corrections cost could couldn't countries country coup couple cover crack craft crap crappy crazy crisis critical current cut dad dah date dating day days definite definitely deliver department depends depth design designed designer designing desk Detroit did didn't different differently dig Dilbert dinner direct directed directive directly discrepancies discrepancy disgusted district do does doesn't dog doing dollars domestic don don't donated donation done don't doors dot double doubled down drafted drafting drag dragged draw drawing drawn drew drive driven drives due dump dumped during each early easier east easy eat eight either electric electrical electrically elevators else end ended energy engineer engineers enough entire enugu environmental environmentalist eroding especially essentially etc. even eventually ever every everybody everyone everything exact exactly except expect expecting exterior extra extreme extremely eye eyes face faced facilities facility fact facts fall falling families family fantastic far father feed feeds feel fees felt ferry few field fields fifties figure figured figures figuring fill filled find fine fire fired fires firing first fitness five fix flack floor folder follow followed food fool foot for forever form formula forth forward found founded four from front frugal full functions further garage garages garbage gave general generalized generally get gets getting give given giving glass glasses gloves god goes going gone gonna good got gotta gotten government grab grabbed grabbing grade graded grading graduates grammar grammarly grand grandpa grassroots great grew grow growing grown guess gutted guy guys had hadn't hairpin half Halpren hand handle handled hanging happen happened happening happens hard has hasn't hated have haven't having he he'd he'll he's head headed headquarters health healthcare hear heard hearings heat heavy he'd hell he'll her here here's hers herself he's hey high higher highly highrise him himself his history hit home honestly honey Honeywell hope hopefully hoping horrible hospital hot hotel hotels hour hourly hours house housing how how's however how's HRH Hudson huge hundred hunter i I'd I'll I'm I've I'd if I'll I'm immediately in inaubile incredible Indian injuries instance instead instill intel interesting into inventory is island isn't it it's its it's itself I've jail jails Japanese jealous jersey join joining jump jumping just justice juvenile Karl Kennedy keypad kid kids kind kinda kinds kit kitchen knew knock knocking know knows laboratory Lagos land landlord landscape large larger last late lately later laughter law lay laying least less let let's level like liked likely Linda line lines literally little live living local locate location locations long longer look looked looking looks lot lots love lower made mading make maker makes making Malone Manhattan manner mantra many mark marketing married

Marty massive math matter may maybe mayor me mean medical members mentioned mess met metal MHMM mid middle might million mind mini ministries ministry minute minutes mix mixed mobility model mom moment money months more morning most mother motor move moved moving much multiple music mustn't my myself name names nationally nations nature necessarily need needed needs neighborhood neighborhoods net never next nice niche niched Nigeria Nigerian Nigerians night no nobody nor north northeast not notes nothing now number numbers objects obviously occasionally occur occurred of off office often okay old on once one ones only onto open opening opens operated operation ops options or organic other others ought our ours ourselves out over overhead own panels pants parenting parents parkway part participant particular particularly parties party passed past paste pause pension percent perfect perhaps period Pershing person phenomenal physics pick picked picking piece pieces pipe piped piping pits pizza place places play played playing please plentiful plenty plug plumber plumbers plus point political pool pools port portion position post postpone predates prep president presser pretty previous previously principal prix probably problem produce produced product products proof proposal proposals public publicly pull pulling purchasing pure purposely put putting quarterback question quite quo quotes race racing raise raised raising ran rare rarely rate rather rating read ready real really reason reasons reduced region regional related researcher residential respect rest Revit RFP right risk roll rolled roof room rooms ropes run running runs safety said sales same saw say saying says scale scouts scream screaming script seat second seconds secretaries section sections sector see seeing seem seemed seems seen self sell selling semi senior sent set setting seven seventies shakeup shall shallow shame shan't shan't shape she she'd she'll she's she'd sheet shell she'll she's short should shouldn't show showcase showing shows side sidewalks similar simply since single sit site sitting six sixties skin slip small so solar Somalia some somebody somehow someone someplace something sometimes somewhat somewhere son sorry sort sorts sounded sounding sounds space spacing span spawned spec spectrum spectrums spend spending spent stadium staff stage stand standing starve state states status step stepped stick still Stockton stone stop stopped stories storm story straight street strongly stuff stupid stupider style subway successful such sudden suddenly summer supposed sure surrounded table take taken takes taking talking tap tell tend tends terabyte term terms than that that's that'd that's the their theirs them theme themselves then there there's these they they'd they'll they're they've they'd they'll they're they've thing things think thinking third this those though thought thousand three through throughout throw ticket tied tiered tiffany times to today together toilet toilets told too took tool top topic topics torn touch tough towards tower towers trade trades traffic transit transportation travel traveled treatment tremendous tremendously tried tries trouble troubled troy truly trump try trying tunnel turn turned turning turns twice two type types typically typing typist ultimately under united universal university until up upon ups upward urban us use used user users using usually utility vacuum vacuums variety various venture ventures versus very vinegar vision wait waiting waits walk walked walking wall walled walls wanna want wanted wants was wasn't waste water way ways we we'd we'll we're we've wear wearing website we'd Weehawken week weekend weekends weeks weight weighted well we'll went were we're weren't west we've what what's whatever what's when when's where where's whereas where's wherever whether which while who who's whole whom who's whose why why's wife wiki will window wire wired with within without woman won't word wording words worker world worry would wouldn't would've wound wow written wrong yards yeah year years yelling yes yet York you you'd you'll you've you'd you'll your you're yours yourself yourselves you've

After all the interviews were analyzed utilizing the Stop Words 3 list, the researcher used the software to generate Frequency Tables and Word Clouds for each stage of the analysis, and for each interview, as well as an *all participants* aggregated version.

Detailed analysis of the frequency of words that remained via a visual review of the Word Clouds and a manual review of lists of words and their relative frequency were undertaken to determine similarities and differences between the interviews and between individual interviews and the aggregate frequency counts for all the interviews. The next section elaborates on the findings generated through this process.

4.3. Pilot Study Data Analysis and Findings

4.3.1. Introduction

Chapter Three focused on the study's methodology, including a detailed description of the definition of research, research paradigms and philosophical assumptions, as well as the philosophical position adopted and clarification of the research method, validation strategies, and ethical approach. It then transitioned into an extensive overview of the data collection and coding process, including the consideration and rejection of IPA after the interviews were complete, and a review of Content Analysis, which failed on its own terms.

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The focus of this chapter then transitioned to present the findings of the pilot interviews and addressed the next steps necessary to complete the final study while specifically addressing the aim of this study: to explore how to improve mentoring programs as a resource for knowledge sharing in the built environment. Accordingly, this portion of the chapter is structured into two main sections.

The first section presents detailed outcomes from the semi-structured pilot interviews focusing on the seven Candidate Themes formed from the thematic analysis, as well as providing an analysis of each with supporting evidence from the codes derived from the initial aggregated data. Then, the second section includes a discussion of the outcomes of the pilot study analyses, the generation of the four final themes and the distillation of those themes into one summary statement, focusing on the research question: 'Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?'

4.3.2. Findings of the Pilot Interviews

Once the coding was complete, graphs, frequency charts, tables, and word clouds were generated from content and thematic analyses to evaluate the study's results and compare those results for validity and triangulation. These results were then linked to the theoretical contexts derived from the literature review and viewed from the researcher's perspective to further analyze the main codes and concepts to answer the research questions and generate conclusions to the pilot study.

4.3.3. Findings Generated from Content Analysis

To augment Thematic Analysis, which is a subjective, although structured, analytical approach, the researcher chose to utilize Content Analysis in its most basic form—word frequency—to avoid subjectivity and cultivate transparency in the methodology. Further, it was to provide validity and triangulation to the pilot study's results. At its core, this process was extremely simple; the researcher uploaded the data, created a stop word list, and ran a query to create a list of remaining relevant words. The remaining list, based on word frequency, in theory, points toward themes in the research.

As this progressed, the stop word list grew from 201 words to 1,287 words in its final form in a quest for relevant data analysis. During this iterative process, the researcher made *decisions* about which words would *remain*, thereby *introducing bias*. Consequently, Content

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Analysis' innate objectivity, and use as a quantitative measure, was *undermined*. Even so, the researcher reviewed the results to search for generalized themes, patterns, and meanings.

4.3.3.1. Frequency Tables

In a search for themes, patterns and meanings, frequency tables for each interview—separately and in their aggregated form, i.e., as one entity encompassing all ten interviews—were produced by NVivo 12. As the approach changed from one version to the next, the changes that accumulated generated forty frequency tables; the changes were significant, but nonetheless inconsequential to the overall analysis. Evaluating the most frequently used words, when most of the words have no context free meaning does not advance the analysis. As an example, Participant P1's five most frequently used words were: **know** (mentioned 98 times), **people** (mentioned 39 times), **yeah** (mentioned 36 times), **mean** (mentioned 33 times), and **think** (mentioned 25 times). Participant P7's most frequently used words were: **know** (mentioned 115 times), **like** (mentioned 50 times), **work** (mentioned 47 times), **firm** (mentioned 45 times), and **project** (mentioned 41 times). The fact that Participants 1 and 7 shared the most frequently used word **- *know* -** did not advance the search for meaning in this study as "**know**" is the second word in the colloquial statement "**you know**"; "**you**" was listed on the *original word list* in NVivo, thus it was edited out.

Aggregated word frequency charts named *"all participants"* were created, including one for the original version and then for versions one, two, and three. When comparing them, from the purely *objective* original to the undoubtedly *subjective* Version 3, there were significant differences, but as before, these differences did not advance the search for meaning in this study.

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Table 4.9. Aggregated Original vs Aggregated Version 3 Frequency Word Tables (words 1-20)

	Word	Count	Similar Words
1	knows	843	know, knowing, knows
2	like	354	like, liked, likely
3	think	297	think, thinking
4	just	286	just
5	works	286	work, worked, working, works
6	yeah	249	yeah
7	people	238	people, peoples'
8	things	213	thing, things
9	kind	209	kind, kinds
10	firm	203	firm, firms
11	get	189	get, gets, getting
12	times	168	time, times
13	one	160	one, ones
14	right	156	right, rights
15	going	154	going
16	mentors	151	mentor, mentored, mentoring
17	means	150	mean, meaning, means
18	really	150	really
19	way	148	way, ways
20	lot	145	lot, lots

	Word	Count	Similar Words
1	works	286	work, worked, working, works
2	people	238	people, peoples'
3	firm	203	firm, firms
4	mentors	151	mentor, mentored, mentoring
5	time	144	time
6	projects	139	project, projected, projects
7	job	132	job, jobs
8	buildings	93	build, building, buildings
9	learn	91	learn, learned, learning
10	knowledge	87	knowledge, knowledgeable
11	managers	77	manage, managed, management
12	company	76	companies, company
13	started	68	start, started, starting, starts
14	talk	65	talk, talked, talks
15	new	59	new
16	mentorship	58	mentorship, mentorships
17	program	57	program, programs
18	help	49	help, helped, helpful, helping, helps
19	experience	47	experience, experiences, experiment
20	school	47	school, schools

After taking these steps, it became apparent that only the aggregated, Version 3 frequency word table might have something to contribute to this study.

4.3.3.2. Word Clouds

Word clouds, a feature in NVivo 12, were generated to help visualize the content analysis. Since word clouds are visual representations of text, based on frequency analysis, they provide simple, visual overviews that use font size, weight, and color to denote hierarchy in the data.

Figure 4.2. Aggregated Data Word Cloud (Original)

Figure 4.3. Aggregated Data Word Cloud (Version 3)

In parallel with the frequency word tables, word clouds were created for each interview, both independently and in the aggregated form, i.e., as one set encompassing all the interviews. Four (4) word clouds were developed for each: one for the original word frequency list as well as one each for versions one, two, and three. This resulted in 44 total word clouds.

As with by the frequency tables, the word clouds were not helpful in the search for meaning (Figure 4.2.). Only the word clouds based on Version 3 (Figure 4.3.), the heavily reviewed and therefore subjective version, appeared to be of any use.

As this visual representation demonstrates, even the aggregated data produced by the aggregation of the ten interviews were not relevant when analyzed while using the original *stop word* list. Only after extensive editing, was the word frequency output transformed into something intuitively useful.

4.3.3.3. A Summary of Content Analysis Process

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The data collection and analysis process described in this chapter were time consuming but necessary to ensure the validity and reliability of the study. Soliciting study participants required extra effort since the individuals pursued were executive level for the most part and their time was very valuable; however, once committed, each one was extremely cooperative and open about their experiences with the mentoring process. Considerable thought went into phrasing the interview questions and developing the Interview Guide, as their validity was critical and the answers they solicited had to fulfill the study's aims.

Likewise, the laborious nature of the interview process, the time-consuming execution of the thematic analysis, the unexpected focus on the development of the *stop word* list during content analysis, including its analysis and subsequent demise – within the confines of this study –
slowed the process considerably but assured that the final output produced was meaningful, at least to some extent. Even so, the researcher chose to eliminate content analysis from the final study as it was no longer deemed quantitative but was seen as qualitative due to extensive editing during the *stop word* review process. Thus, the next section provides an extensive description of the aggregated data considered *only* using thematic analysis. It also provides a summary from the researcher's perspective, culminating in four themes and a summary statement that addressed the research question.

4.3.4. Findings Generated from Thematic Analysis

After completing the Thematic Map and organizing the 65 codes and 20 sub-themes seven *candidate themes* emerged. These were: (1) Compensation for Acceptance of Knowledge Loss; (2) Compensation for Lack of Mentorship in Organization; (3) Mentorship Supports Business Success; (4) KM/KS Supports Business Success; (5a/5b) Active Organizational Strategies Not Needed; (6) Mentorship Supports Business Strategies; and (7) Inherent Understanding that Mentorship is Good. Codes and sub-themes were linked to candidate themes, which were defined and summarized via narrative. The thematic analysis process eventually produced four final themes and one summary statement. The following provides an extensive description of each level encompassed in the Thematic Map; candidate themes were chosen as the organizing principle for this section to provide support mechanisms for the reader.

Figure 4.4 Keyplan

a.1. Knowledge is temporal
a.2 Knowledge Loss Prevalent - Changes
a.3 Transfer of Information Only

a KM Loss Inevitable

b.1 Construction Process Stagnant
b.2 Knowledge Collection Stagnant
b.3 Lack of Formal Financial/Cultural Investment

b Built Environment Stagnant

c.1 Project Based Teams Create Knowledge Gaps
c.2 Generation Gap Creates Knowledge Gaps

c Outside Forces Create Knowledge Gaps

d.1 Transfer of Information Only
d.2 Data Collection Failure (Project-Based Business)

d Loss of Data/Information

e.1 Recessions Affect Mentoring
e.2 Recessions Caused Loss of Knowledge

e Outside Forces Affect Business

f.1 Rejection of Mentorship
f.2 Formal Mentorship Difficult
f.3 Mentorship Training

f Mentorship is Difficult

g.1 Career Pathing
g.2 Succession Planning
g.3 Communal Identity
g.4 Mentoring Communication Skills
g.5 Mentorship Good for Business

g Business Reasons to Mentor

h.1 People are Competitive Advantage
h.2 Investment in People
h.3 Core Group is Stable

h People are Keys to Enduring Success

i.1 Innovations Transform Industry
i.2 Mentoring Connected to Knowledge Management

i Business Theories Create Success

j.1 Trust is a Competitive Advantage
j.2 Trusted Advisors are Competitive Advantage
j.3 Mentorship Requires Trust

j Trust is Imperative

1 Compensation for Acceptance of Knowledge Loss

2 Compensation for Lack of Mentorship in Organization

3 Mentorship Supports Business Success

4 KM/KS Supports Business Success

5a Active Organizational Strategies Not Needed

5b Active Organizational Strategies Not Needed

6 Mentorship Supports Business Strategies

7 Inherent Understanding that Mentorship is Good

k People are Keys to Enduring Success

l KM/KS Understanding

m Mentorship is Inevitable

n Mentorship is Fullfiling

o Mentorship Occurs in a Variety of Settings

p Ways to Share Knowledge

q Reasons to Mentor

r Mentorship Reinforces Commitment to Organization

s Reasons to Mentor

t Mentorship is Personal

k.1 People are Competitive Advantage
k.2 Investment in People
k.3 Core Group is Stable

l.1 KM Familiar
l.2 Ignorance about KM Benefits
l.3 Retain Data / Compile Information
l.4 Knowledge Across Strategies
l.5 Collecting Information

m.1 Mentoring is Pervasive
m.2 Assumption of Mentorship
m.3 Mentorship Built into the Organization
m.4 Assumption of Continuity in Mentorship

n.1 Mutual Bonding
n.2 Enjoyable Process
n.3 Social Value/Responsibility
n.4 Emotional Support
n.5 Lifespan of Mentorship

o.1 Experiential Mentorship
o.2 Group Mentoring
o.3 Mentoring in Communities of Practice
o.4 Mentoring in Educational Settings
o.5 Supervisors as Mentors

p.1 Group Knowledge Sharing
p.2 Informal Knowledge
p.3 Training as a Form of KS

q.1 Turning Theory into Action
q.2 Pursuit of Mastery
q.3 Assimilate Another's Experience

r.1 Reciprocal Relationship
r.2 Communal Identity

s.1 Turning Theory into Action
s.2 Pursuit of Mastery
s.3 Assimilate Another's Experience

t.1 Personal Relationships
t.2 Parental Relationships
t.3 Mutual Bonding
t.4 Mentorship Requires Chemistry

I.
Knowledge Loss is Occurring and Inevitable

II.
Mentorship can be Encouraged, but Cannot be Formulated

III.
Knowledge Sharing can be Encouraged, but Cannot be Formulated

IV.
Mentorship is Effective

Mentorship is an Important and Effective Means of Knowledge Sharing and Retention, but Cannot be Formulated or Forced.

Figure 4.4. First and Second Candidate Themes

Codes	Sub-Themes	Candidate Themes

a.1 Knowledge is temporal
a.2 Knowledge Loss Prevalent - Changes
a.3 Transfer of Information Only

a KM Loss Inevitable

b.1 Construction Process Stagnant
b.2 Knowledge Collection Stagnant
b.3 Lack of Formal Financial/Cultural Investment

b Built Environment Stagnant

c.1 Project Based Teams Create Knowledge Gaps
c.2 Generation Gap Creates Knowledge Gaps

c Outside Forces Create Knowledge Gaps

d.1 Transfer of Information Only
d.2 Data Collection Failure (Project-Based Business)

d Loss of Data/Information

e.1 Recessions Affect Mentoring
e.2 Recessions Caused Loss of Knowledge

e Outside Forces Affect Business

f.1 Rejection of Mentorship
f.2 Formal Mentorship Difficult
f.3 Mentorship Training

f Mentorship is Difficult

1 Compensation for Acceptance of Knowledge Loss

2 Compensation for Lack of Mentorship in Organization

4.3.4.1. Candidate Theme One: Compensation for Acceptance of Knowledge Loss

The first candidate theme, *Compensation for Acceptance of Knowledge Loss,* is grounded in the participants' latent understanding that knowledge is valuable. As such, when their organization loses knowledge, it has a direct effect on the profitability of the firm and ultimately, business success, (Wahda, 2017). As leaders in their organizations, it is their responsibility to reduce and negate this knowledge loss, which may lead to guilt and overcompensation, driving some of the comments found during the semi-structured interviews. Thus, if they espouse that *Knowledge Loss is Inevitable*, a sub-theme found under this *candidate theme,* their direct responsibility is diluted.

4.3.4.1.1. Knowledge Loss is Inevitable (a)

Table 4.10. *Knowledge Loss is Inevitable,* (sub-theme a) includes three codes that provide support to this statement. The *Knowledge is Temporal* (a.1), code, which was mentioned by four participants, frames the interpersonal dimension of knowledge sharing in primarily negative ways, "you try to give them advice… they don't care, they don't want to hear it," i.e., others don't value knowledge sharing, (Participant P1). It also compensates for knowledge loss by connecting it to industry innovations, changing management processes, and the integration of computers in numerous aspects of the design and construction process. As Participant P2 pointed out, any specific example is only useful for "maybe a decade because that's about as far as the useful knowledge goes…." At times it also takes on a personal tone, "you have to be willing to reinvent yourself," (Participant P8). Ultimately, all these comments unite to emphasize that it's fine that knowledge loss is inevitable because any *piece* of knowledge is not valuable after a certain period.

The second code associated with *Knowledge Loss is Inevitable* is *Knowledge Loss Prevalent – Due to Changes* (a.2), which 6 participants discussed, focuses on knowledge loss that occurs due to changes caused by uncontrollable forces. These include employees who refuse knowledge, "this is not the position they're going to be in for a while… [so] they're not investing, (Participant P1), or leave the organization, "as people evaporate, knowledge, their knowledge, goes with them, (Participant P3). It also highlights that knowledge can be inadvertently lost, simply not captured, "hit the wrong switch, do the wrong toggle" or can be inaccurate and therefore useless, "garbage in, garbage out, (Participant P8).

Throughout the third code, *Transfer of Information Only* (a.3), five participants shared examples of data or information sharing but did not distinguish these from knowledge. Unless

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prompted, many professionals don't distinguish between data, information, and knowledge, often using these terms interchangeably, "…if you wanted to move on to schematic design, you need to have checked off all the boxes on the predesign checklist. That's procedural because it forces you to make sure that you've gone through the entire process," (Participant P7). Those who seem to understand the difference still emphasized their efforts in providing training, "we spend a lot of time on project management training, a technical skill," or codification of information, "…transfer that information and make sure that it was codified in a way that it could be looked at in the future," but didn't share examples of their efforts to share *knowledge*. This may be because data and information are straightforward and much easier to share. Procedures and training don't ensure knowledge sharing, especially when valuable knowledge isn't available, or is available but not shared or internalized. "Knowledge management in construction can be difficult due to the industry's fragmented nature, (El Debs et al, 2018, p. 77).

Knowledge Loss is Inevitable (a) includes quotes from the pilot study participants that support three codes: a.1 Knowledge is Temporal, a.2. Knowledge Loss Prevalent - Due to Changes, and a.3. Transfer of Information Only. The researcher developed 20 of these tables to categorize illustrative quotes from the pilot study participants; these quotes were gathered to support specific codes that in turn support the seven candidate themes, the four final themes, and the summary statement. Table 4.10. was inserted into this chapter to serve as a prototype for these; the others sub-theme tables are included in Appendix C.

Table 4.10. Knowledge Loss is Inevitable (a)

Initial Code	Details	Illustrative Quotes
a.1. Knowledge is Temporal	**Knowledge is not of value after a certain period of time.**	"...then you try to give them advice... they don't care, don't want to hear it, because they know this is not the position they're going to be in for a while. So it's just a moment in time. ...They're not investing. They're not passionate." **– (Participant P1)** "maybe a decade because that's about as far as the useful knowledge goes..." **– (Participant P2)** "She also had a set up for new jobs, and truth be told, we don't do it anymore because we're in the digital age, but get a binder, different tabs, organize every single time... I tried to do it here, but it doesn't work in the same way." **– (Participant P6)**

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		"You have to be willing to reinvent yourself…" **– (Participant P8)** "It's become so computerized. I mean the onset of computers, the way we attack problems and what we do, this new world of Revit an BIM has really changed the way we approach problems. …I never was really a great computer guy. I was more of [pause] I like to site there with this, you know, it is very very, very much different. … to some extent that's almost a detriment because people are constantly running to the computer, (we) used to be able to have to imagine these things in your mind in 3D, just to make sure everything fits. Now everybody want to see it on screen. …you become more of an operator than I designer I think." **– (Participant P8)**
a.2. Knowledge Loss Prevalent- Due to Changes	**Knowledge loss occurs often due to changes caused by uncontrolled forces.**	"…then you try to give them advice… they don't care, don't want to hear it, because they know this is not the position they're going to be in for a while. So it's just a moment in time. …They're not investing. They're not passionate."**– (Participant P1)** "..as people evaporate, knowledge, their knowledge, goes with them." **– (Participant P3)** "… if they don't get something out of the relationship that is better than the unknown of where they're going, um, then we'll lose them." **– (Participant P7)** "Hit the wrong switch, do the wrong toggle in a program and, you know, it is the old thing, garbage in, garbage out. **– (Participant P8)**
a.3. Transfer of Information Only	**Only data or information is transferred or shared, valuable knowledge is not available or internalized.**	"And I picked up everything based on that, obviously it didn't fill in the blanks. It filled in enough information that I can be like, okay, I know what the intent is…" **– (Participant P6)** "Understood that she needed to transfer that information and make sure that it was codified in a way that it could be looked at in the future." **– (Participant P6)** "… if you wanted to move on to schematic design, you need to have checked off all the boxes on the predesign checklist. That's procedural because it forces you to make sure that you gone through the entire process." **– (Participant P7)** "…we spend a lot of time on project management training, a technical skill, not people skills" **– (Participant P8)**

		" [If] somebody comes to me to and asks how to do a problem, I'll get them the answer..." **– (Participant P8)**
		"There's other guys I've talked with, I've only talked period." **– (Participant P8)**
		"... we do keep the old guys around because they know what the answer is supposed to be. These other guys just have to make sure they comes out that way." **– (Participant P8)**
		"I first believed in the early stages of (firm name) that shared consciousness would be best achieved by saving a folder on a network," – **(Participant P10)**

4.3.4.1.2. Built Environment Stagnant (b)

Compensation for Acceptance of Knowledge Loss, candidate theme one, continues with the second sub-theme, *Built Environment Stagnant* (b) (see Appendix C), which indicates that some of the study's participants share a common belief that many elements of the A/E/C industry are evolving quite slowly. This is indicated in the first code, *Construction Process Stagnant* (b.1) when Participant P2 states, that the "method of building has not really changed tremendously." Although there is an acknowledgment that processes have changed, what the three participants indicated was a sense that, although the tools may have changed, there has not been a change in the actual *way* organizations conduct business. For instance, the design phases have not changed, i.e. Pre-Design, Schematic Design, Design Development, Construction Documents, and Construction Observation, otherwise known as Construction Administration, (Pelletier, 2014). This is a good point, and interesting considering the numerous technological advancements that have transformed many aspects of the industry during the last 10 years. "There was a technological sea change in 2007: innovations propelled storage capacity, cloud computing, open-source platforms, social networking, mobile data traffic, digital currency and payment systems, big data analytics, augmented intelligence, natural speech recognition, and distributed computing," (Lester, 2018b, p. 2). As Participant P3 pointed out during his interview, these changes directly impacted the design process as BIM became more prevalent and rolls of drawings gave way to designs viewed directly on iPads, which have become commonplace on job sites.

Conversely, *Knowledge Collection Stagnant* (b.2), which was specifically indicated seven times throughout the 10 interviews, evolved from more broad comments as well as the

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overall tone revealed throughout several interviews. The examples primarily focused on issues involving projects, i.e., knowledge gathered throughout the project that wasn't captured once the project was over, and that the process for capturing knowledge is left to the personal discretion of those involved in the project, thus not centrally organized nor captured in any systematic way. Also mentioned were changes in the employment circumstances surrounding key roles, such as the Job Site Safety Manager, which is a required position on any New York City project that is 15 stories tall or higher, or 100,000 square feet or greater, (NYC.gov, 2019). Once a project with those requirements is completed, the norm is that the Job Site Safety Manager's position would also be eliminated. The assumption is that the organization will be able to hire a new Job Site Safety Manager with the requisite knowledge and experience when the need again arises. Meanwhile, the project-specific safety knowledge garnered in that project was lost when the Site Safety Manager was laid off.

Lack of Formal Financial / Cultural Investment (b.3), the third code in this category, highlights several key issues, although the tone was consistent throughout many of the interviews. The participants were unconcerned about the lack of *time* and *money* invested in formal knowledge management programs or mentorship programs that increase knowledge sharing. Inherent in Participant P8's comment, "At one point we actually tried to start a formal mentor/protégé program here, and it never went anywhere," was an indication that the program was not valued by the organization's leadership nor its employees. Likewise, throughout the interviews, there were several instances where the participants referred to individuals who simply would not participate in any attempts to share knowledge. These included younger staff who, as Participant P1 pointed out, "don't care, don't want to hear it," as well as older staff such as those Participant P9 referred to, "… I can't imagine that there is any technology that's gonna get one of these old cantankerous engineers to try to store 'how have you solved an issue." In both instances, these industry leaders expressed a *lack of power* in dealing with their staff.

Even when these initiatives are valued, they don't propel the built environment forward. Turnover and leadership changes can undercut their effectiveness. Participant P9 was considering investing in a formal program, due to concerns about employee retention and knowledge management. However, he explained, "I was getting close to buying in and then I moved. I went to another company, so I never got to it." Other initiatives clearly become higher priorities. Some even consider formal investment unnecessary based on the existing culture within their organizations. As Participant P10 suggested, his organization's current

activities are sufficient, and only a "rough structure" will ensure their employees are reminded of the value of these initiatives.

The researcher considers many of these comments to be latent expressions of the participant's views of the industry. If asked directly, they might disagree with this characterization, due to their leadership roles in their organizations as well as their prominence throughout the industry.

4.3.4.1.3. Outside Forces Create Knowledge Gaps (c)

The third sub-theme under *Compensation for Acceptance of Knowledge Loss* is *Outside Forces Create Knowledge Gaps* (c) (see Appendix C), which highlights two externalities that have huge impacts on an organization's ability to retain knowledge. The first, *Project-based Teams Create Knowledge Gaps* (c.1), which seven participants highlighted, is part of the industry's long established business processes. Prevalent throughout the industry, project-based teams come together and dissolve throughout the design and construction process; these project stages typically include initiating the project, developing and implementing the design and construction process, commissioning, and project close-out, (Bell, van Waveren, & Steyn, 2016).

When the project is complete, the team members simply move on to another project which means that "…in the current environment, if it appears that the job is done, so is your job," said Participant P1. This presents multiple problems with knowledge sharing, but one key issue is, *who's responsible*? "From a project perspective, there is some ambiguity about where the primary responsibility for KM lies," (Bell van Waveren & Steyn, 2016, p. 19). This is evidenced by comments such as, "… nobody came to pick my brain or to say, 'Hey, what do you know about this or what do we do about that?' Not at all," Unfortunately, this is not unusual; when he left the organization he's referring to, Participant P5 was regional vice president in charge of all the firm's projects throughout the northeastern United States.

These circumstances persist, often due to the fast-paced nature of the industry. Even when leadership recognizes it as a concern, it's still something, "that has proved [*sic*] to be challenging because of the pace of some things," Participant P10 noted.

The second code, expressing another outside force that affects an organization's ability to retain knowledge, is *Generation Gap Creates Knowledge Gaps* (c.2). Although it was only expressed by three participants, each participant focused on it intensely. At this point, five generations of professionals are actively working in the built environment, (Burmeister & Deller, 2016; Meister & Willyerd, 2009). This is due primarily to the rise of

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the Millennials, who've become the dominant generation in the workforce, and the continuing delayed retirement of many of those affected by the 2008 recession. Thus, the differences in how individuals work have become "more extreme," according to Participant P2, which means that leaders must become even more diligent in developing processes and methods that facilitate knowledge sharing, (Sanei, Javernick-Will, & Chinowsky, 2013; Kamarulzaman, 2016). "So, I'm constantly, when I talk to people, it's like 'this is not a line,'" confides Participant P2.

4.3.4.1.4. Loss of Data / Information (d)

The next sub-theme, *Loss of Data / Information* (d), highlights the need to retain many forms of data and information throughout the lifecycle of projects in the built environment, which may not contribute to *knowledge* sharing. Three of the study's participants are Construction Managers (CMs), who often serve as owners' representatives, and are responsible for collecting and retaining all the contract related documentation for their projects. These include contract documents, owner's and designer's directives, requests for information, submittals, change orders, sustainability documents, meeting minutes, project reports and payment requests, as well as daily reports, which must be kept for up to a decade to limit liability, (Thomsen et al, 2014). Thus, everyone else on the project team should retain their copies of these documents as well.

When Participant P6 argued that "it's critical path (that's important)," he was referring to the records that were mandated on his project contributing to the continuity of management and services when his project manager was laid off during the 2008 recession. Just before this statement, he said that the documentation "obviously didn't fill in the blanks," referring to the background knowledge that was lost when that key staff member exited the organization. Consequently, as code d.1, *Transfer of Information Only*, indicates, some participants indicated that keeping track of information is so consuming that *knowledge* becomes an afterthought.

Likewise, code d.2, *Data Collection Failure*, which was highlighted by six participants, supports the same conclusion. When data and information are so pervasive, and its collection is mandatory, knowledge sharing is even more challenging. Participant P3 unconsciously supported this statement when discussing his firm's data collection process, "…we have all our projects going back maybe 20 years… We have it all written up. We know everything about those projects, so they are now (pause) just also stored in the brains of

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the partners…." Without realizing it, he was confirming that his firm didn't have *all* the information on their projects in the database, as something, i.e., *knowledge* about the projects, is only resident in the partners' memories.

4.3.4.1.5. Outside Forces Affect Business (e)

The final sub-theme supporting *Compensation for Acceptance of Knowledge Loss* is *Outside Forces Affect Business* (e), which is similar to an earlier code referring to knowledge. This code highlights the massive impact that the 2008 recession had on organizations as well as individuals. The first code, *Recessions Affect Mentoring,* which was mentioned by five participants, denotes the emotional aftereffects of the recession. When Participant P6 discussed his mentoring experience as a young engineer during the recession he became emotional, at that "point there was no more mentoring. Basically, the training wheels had gone off and now you're on your own." Likewise, Participant P9 was also emotional when discussing the recession. As an executive during the recession, he's resented post economic recovery firm culture: "I called them recession proof kids. I said, you guys don't understand what it means to be laid off, not because you screwed up something… Not because you weren't working hard… but just because the work wasn't there…." When he's tried to mentor young professionals who've entered the profession during the economic rebound, he's been rebuffed by their indifference and their lack of interest in his willingness to serve as their mentor and offer that perspective.

The five participants who mentioned code e.2, *Recessions Caused Loss of Knowledge,* were less emotional when discussing the recession. Nonetheless, its impact cannot be downplayed. As the participant's earlier comments demonstrate, there was also a large loss of knowledge due to the massive changes that occurred in the industry. When some of the participants discussed the 2008 recession, there seemed to be latent issues associated with this event. For instance, during his interview, Participant P7 asserted that "the recession didn't end up affecting me very much other than the fact that I had to make a decision to go ahead and move across the country…." Even though he moved 3,000 miles across the United States to a new office, in a new region, and acknowledged that he had developed a relationship with a new mentor, he seemed to be in denial regarding the impact the recession had made on his professional career and personal life. On the other hand, Participant P9 was aware of the impact the recession had on knowledge sharing opportunities in his firm, "… the recession holds us (up) because we have a whole, you know, five-year periods of missing talent."

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4.3.4.2. Candidate Theme Two: Compensation for Lack of Mentorship in Organization

The second candidate theme is *Compensation for Lack of Mentorship in Organizations*. This is based on the participants' appreciation for mentoring as a positive experience that is beneficial for both individuals and their organization, (Henriques & Curado, 2009).

4.3.4.2.1. Mentorship is Difficult (f)

Nonetheless, some professionals don't see the benefits of mentorship, which makes *Mentorship Difficult* (e), and openly reject attempts to encourage participation, i.e., code f.1, *Rejection of Mentorship*. Participant P9 highlighted this, "I try to explain it to them, but I see them glaze over when I talk. It's going to have to be something they're going to learn…" Others don't want to devote energy and commit to a mentoring relationship, "… it boggles my mind that they just don't realize the value of it, but I think it's even if they, if they see the value of it, they don't want to invest their all that time into it," said Participant P4.

Still, others aren't enthusiastic about sharing their knowledge. "Individuals tend to hoard knowledge rather than taking steps to convert their knowledge into a form that can be understood, absorbed and used by others," (Curtis & Taylor, 2018, p. 149). This was also expressed by participants: "…I think you got some people who are, you know, maybe protective of their knowledge and their position or their time…," notes Participant P4 in particular.

Even when employees want to participate, leaders find that *Formal Mentorship is Difficult*, (f.2). Some participants who openly supported mentorship didn't value the formation of formalized programs, "…the HR person decided that, you know, (a formal mentorship program is) what the industry does to be competitive, or there was somebody at the corporate level that really believes in it….," recalled Participant P4. "At one point we actually tried to start a formal mentor/protégé program here, and it never went anywhere," said Participant P8.

Whether an organization has a formal mentorship program or not, anyone involved in mentorship can benefit from *mentorship training*, (f.3), (Murphy, 2012; Bouquillon, Sosik & Lee, 2005). This was also challenged as it was not recognized or appreciated by the participants, "…as far as formal training, no, a lot of it is, we have staff meeting or something based on a project…," said Participant P6. They also didn't appreciate training materials,

"…there's books, and pamphlets, and brochures about how to be a mentor and I didn't read them… The program offered you support, if you chose to use it," noted Participant P5.

4.3.4.2.2. Outside Forces Affect Business (e)

The second sub-theme, *Outside Forces Affect Business* (e), ties back to the same sub-theme within the first candidate theme, *Compensation for Acceptance of Knowledge Loss.* The difference lies in the emphasis on the candidate theme itself, in this case, *Compensation for Lack of Mentorship in Organizations.* Once again, highlighting the 2008 *Great Recession,* each of the participants in the study has more than 20 years of experience; six have more than 30 years of experience. As such, they certainly remember the last four recessions, from 1980 onward, (Bachman, 2015). Participant P9 simply stated, "I've probably been through four or five recessions," when he raised the topic of the recession. Since recessions have been so prevalent throughout their careers, it's not surprising that this specific topic, *Recessions Affect Mentoring,* came up without prompting seven times throughout the ten interviews.

Likewise, *Recessions Caused Loss of Knowledge* also came up seven times throughout the interviews. Participant P3, with more than 50 years of experience, remembers the mid-seventies recession and its impact on New York City, "…the firm kind of got reduced and reduced and one day our city contracts were all canceled...," which had a huge influence on his career. As such, he certainly connects recession with knowledge loss, "…that's what happens is as a firm when, when people leave, the firm becomes very stupid, right? So, the idea is how to prevent that and, and, uh, and sometimes, and, and one way is by the transfer of a person's knowledge to others so that the firm can remain smart."

Figure 4.5. Third and Fourth Candidate Themes

| Codes: | Sub-Themes: | Candidate Themes: | Sub-Themes: | Codes: |

k People are Keys to Enduring Success

k.1 People are Competitive Advantage
k.2 Invest ment in People
k.3 Core Group is Stable

l KM/KS Understanding

l.1 KM Familiar
l.2 Ignorance about KM Benefits
l.3 Retain Data / Compile Information
l.4 Knowledge Across Strategies
l.5 Collecting Information

3 Mentorship Supports Business Success

4 KM/KS Supports Business Success

g.1 Career Pathing
g.2 Succession Planning
g.3 Communal Identity
g.4 Mentoring Communication Skills
g.5 Mentorship Good for Business

g Business Reasons to Mentor

h.1 People are Competitive Advantage
h.2 Invest ment in People
h.3 Core Group is Stable

h People are Keys to Enduring Success

i.1 Innovations Transform Industry
i.2 Mentoring Connected to Knowledge Management

i Business Theories Create Success

j.1 Trust is a Competitive Advantage
j.2 Trusted Advisors are Competitive Advantage
j.3 Mentorship Requires Trust

j Trust is Imperative

4.3.4.3. Candidate Theme Three: Mentorship Supports Business Success

Mentorship Supports Business Success is the third candidate theme found when analyzing the interviews. This theme refers directly to the numerous references in popular culture and academic research that consistently link mentorship to business success, i.e., Business Reasons to Mentor (g).

4.3.3.3.1. Business Reasons to Mentor (g)

Peer reviewed research supports that "Having a mentor has been linked to career advancement, higher pay and greater career satisfaction," (Burke, McKeen, & McKenna, 1994, p. 23). As a portion of the findings commonly linked to mentorship and business success, *Career Pathing* (g.1) was the tenth most common code found throughout the interviews. For instance, Participant P3 told a story about one of his first mentoring relationships and the dramatic results, "I helped her launch into a good career… she started out as a typist… and ended up as a manager with GSA."

Of course, *Career Pathing* closely relates to *Succession Planning* with one key difference, individuals may engage in planning their career paths, but organizational leaders must engage with succession planning. As such, succession planning stands independently as its own code, (g.2). Succession planning is one of Kram's key principles within formal mentoring programs, "…mentoring programs help organizations develop leaders, retain diverse and skilled employees, and enhance succession planning…" (Allen et al., 2009, p. XI). This was recognized by the six participants in the study who valued succession planning, "…our real next step is to create an action plan to do which begins, and part of it will be transitioning them into an ownership role by basically delegating duties out to them," proposed Participant P2. Succession planning was also directly connected to mentoring by the participants because "… it's more important than ever to mentor the young talent coming up behind us… we need to make sure that the people coming up behind us are properly trained," said Participant P5.

Both previous codes align closely with the third code, *Communal Identity*, (g.3), which was also mentioned latently throughout nine of the ten interviews. Although it was clearly important to the study's participants, literally expressing the connection between communal identity and business success, particularly in relation to knowledge and mentoring, is difficult, "while most managers intuitively recognize the importance of culture, they find it difficult or impossible to articulate the culture-knowledge relationship in ways that lead to

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action," (De Long & Fahey, 2000, p. 113). Therefore, while the participants talked around the importance of communal identity, and clearly understood its importance to ongoing success, it was challenging to find *exact* quotes that *clearly* supported this code.

Unlike communal identity, *Mentoring Communication Skills* (g.4) was quite popular among the participants; eight out of the ten participants mentioned its importance, with five mentioning it multiple times. This is not surprising as professionals in the built environment are encouraged to be good communicators. "All of these forms of information constitute the project record. As the hub for the management of all types of data flow, the CM should be capable in the fields of correspondence, technical writing, meeting recording and reporting, management information systems, business protocol, computer systems and networks, and the legal precedents regarding contract documentation," (Thomsen et al, 2014, p. 66). As such, it was directly mentioned by several participants, "…mentorship is all about communication," argued Participant P5, as a general topic and in more specific terms, "…in real time and with real listening and real articulation of, and sometimes it's more complex than people would like, but just talking through things in a very detailed, deliberate way," explained Participant P10.

The final code under *Business Reasons to Mentor*, *Mentoring is Good for Business* (g.5) was mentioned semantically and latently by all ten participants and encompasses many of the codes previously discussed with this candidate theme. As such, it serves as a connecting focus throughout many of the interviews; Participant P10 summed this code up succinctly, "…the real secret in all of this, the ability to replace yourself."

4.3.4.3.2. People are Keys to Enduring Success (h)

Sub-theme *People are Keys to Enduring Success* (h) has four codes affiliated with it. The first is *People are Competitive Advantage* (h.1), which was also mentioned by all ten participants. Their comments ranged from a strong focus on clients, "…clients know what your expertise is, they know they can trust you, you have a track record, that track record that you can deliver all the time," imparted Participant P2, to all-encompassing, "…the people make the firm," from Participant P6, to more theoretical, "highly specializing in things to give you a broad knowledge base and world class expertise," opined Participant P10. In each instance, the participant is emphasizing that the people in the firm are a competitive advantage.

This naturally ties into the second code, *Investment in People* (h.2), which focuses on the participant's recognition that investing in 'people' is the key to enduring success. Organizations that invest in their people by providing extensive social KM (knowledge management) resources, i.e., cultural and structural resources, "are able to (1) integrate the KM and business planning processes more effectively, (2) develop reliable and innovation applications that support the business needs of the firm faster than the competition, (3) predict future business needs of the firm and innovate valuable new product features before competitors." (Chuang, 2004, p. 460-461).

This was the most cited code with each participant referring to it in one manner or another and several mentioning it multiple times. In each case, the investment was referred to in a general sense, without specific examples or quantitative elements. For instance, Participant P1 said, "They're grooming their seconds so that when they leave there is a continuity..." others were more definitive, but still spoke in general terms, "I'm investing in them," said Participant P7. While most participants mentioned the investment in a positive sense, more than once there was a negative tone or a sense of frustration, "…you've spent your personal time, you put your personal effort into it, to these folks and then, you know, like, sorry… (pause) so, you know, like do you think this effort was really worth it?" asked Participant P8.

The next code, *Core Group is Stable* (h.3) is a natural outgrowth of the two previous codes. In this instance, the definition of *core group* is an essential component of this code and the participant's underlying meaning. Although the participants believe that their core group is stable, it all depends on who is in their core group. For instance, those mentors who fall into the Baby Boomer generation trust co-workers in their generational group without considering the consequences of age. Millennials – the largest generation group working today – don't trust their future when it's in others' hands and want to ascend to senior-level positions rapidly, (Lester, 2018a.)

Nonetheless, maintaining the firm's core group is an important task for any leader and one that is certainly on each participant's mind. This is due primarily to their innate understanding that… "…human competence is often tacit, and dependent on other interpersonal relationships which may take years to develop and tend to be highly local or organization specific. For example, humans are at the heart of creating organizational knowledge," (Chuang, 2004, p. 461)

4.3.4.3.3. Business Theories Create Success (i)

The *Business Theories Create Success* (i) sub-theme encompasses two codes: *Innovation Transforms Industry* and *Mentorship Connected to Knowledge Management*. The first, *Innovations Transform Industry* (i.1) focuses on the large number of technological innovations that have altered the industry throughout these participants' careers. "These changes affected the built environment too, as its competitiveness hinges on technological developments that directly impact the overall health of the industry and the economy," (Lester, 2018b, p. 1). When innovation came up in conjunction with any question, it was innately and systematically linked to technology. This may be due to the explosion in technological innovation since 2007. No one has escaped these innovations, professionally or personally. Numerous companies designed augmented or new services and products in and around 2007; Apple released the iPhone, IBM started designing Watson, Facebook became a global brand, Twitter sprung up, and Airbnb was introduced. Innovations also advanced storage capacity and cloud computing, open-source platforms, mobile data usage, digital currency and payment systems, natural speech recognition, and augmented intelligence. Additionally, Intel miniaturized and amplified the speed of chips, which directly affected the built environment, (Saini, 2015; Friedman, 2016). This was clearly understood and appreciated by Participant P8 when he pointed out that "computers don't teach personal skills. Computers don't teach project management skills." Referring to knowledge management, Participant P9 highlighted that even though assistance may be available, it's not always utilized, "...I can't imagine that there is any technology that's gonna get one of these old cantankerous engineers to try to store 'how have you solved an issue."

Mentoring Connected to Knowledge Management (i.2) concentrates on the intersection of the two key factors of this research, mentorship, and knowledge. When fully integrated and shared between two individuals, knowledge is "seen as a fluid mix of framed experiences, values, expert insights, contextual information which provide a framework for evaluation and incorporation of new experiences and information," (Raisinghani et al, 2016, p. 9), which is essentially the definition of mentorship. Whether they are familiar with the definition of knowledge management or knowledge sharing, six of the participants innately understood the connection between mentorship and knowledge management as indicated throughout many of their comments. Participant P1 summed up what most indicated, "They're grooming their seconds so that when they leave there is a continuity...."

4.3.4.3.4. Trust is Imperative (j)

Trust is Imperative (j) encompasses three codes: *Trust is Competitive Advantage* (j.1), *Trusted Advisors are Competitive Advantage* (j.2), and *Mentorship Requires Trust,* (j.3). Although *Trust is a Competitive Advantage* was only coded a few times, it is important to note the distinct difference between it and other codes. Trust between a mentor and mentee is critically important; since *Supervisors as Mentors* was the second most common code found in this study, it's easy to see the connection that the participants naturally drew between mentor and mentee and supervisor and employee. "The development of mutually trustworthy relationships is cited as being central to the success of the relationship that is established between the SMEs (small/medium size enterprises) and providers of mentoring and training services," (Chikweche & Bressan, 2017, p. 182) Participant P5 noted that, "You have to have a good relationship with the people you report up to...."

Likewise, *Trusted Advisors are Competitive Advantage* is directly linked to an organization's success in that employees who are recognized as *trusted advisors* by their clients become part of the organization's competitive advantage. As Participant P8 notes, "...the person on the other end of the table has to be sure, you know, has to feel like, wow, I can really work with this person (pause) many times that's the discriminator." This is extremely important in the built environment, as many times the client is investing millions in a project that they are not capable of executing, nor are they capable of judging the abilities of the professionals they're hiring. Thus, since a "key to the definition of trust is the notion that the trusting party is vulnerable to and relies on another party," becoming a trusted advisor to a client creates a competitive advantage, (Fleig-Palmer & Schoorman, 2011, p. 336).

Linked to, but distinct from, the other two codes *Mentorship Requires Trust* is pervasive throughout much of the study due to its integral nature in many aspects of the other codes, such as *bonding, emotional support,* and *enjoyable process.* Without trust, these other elements of the mentoring relationship would not be as effective or fulfilling. "The existence of trust in a mentoring relationship, then, allows the protégé to take risks because he/she is confident of being accepted by the mentor even if mistakes are made during the learning process," (Fleig-Palmer & Schoorman, 2011, p. 336). Thus, seven out of the ten participants in the study wove in trust as an important aspect of mentorship into their answers.

4.3.4.4. Candidate Theme Four: Knowledge Management / Knowledge Sharing Supports Business Success

Candidate theme four, *Knowledge Management / Knowledge Sharing Supports Business Success* is distinct but similar to candidate theme three, *Mentorship Supports Business Success*. Unlike the previous one, this candidate theme focuses specifically on knowledge management, which Peter Drucker defined as "the coordination and exploitation of organizational knowledge resources, in order to create benefit and competitive advantage" (Raisinghani et al, 2016, p. 9). Thus, this candidate theme centers around "The management of knowledge is not an end in itself, but a process, which is aimed at creating value, increasing productivity and gaining/sustaining competitive advantage," which is the basis of business success, (Anumba, Kamara, & Carrillo, 2015, p. 168).

4.3.4.4.1. People are Keys to Enduring Success (k)

As such, its first sub-theme, *People are Keys to Enduring Success* (k) is utilized, but within a different context. As stated previously, its first code, *People are Competitive Advantage* (k.1), was mentioned by all ten participants, but is used now with different comments. From this perspective, the participants are defining the built environment as a service industry whereby *expertise* equates to competitive advantage. Participant P7 mentions, "... their ability to get things done, their expertise, their experience that they can apply to (the) generation (of) solutions...," as a source of competitive advantage and Participant P2 states that "...in the end, it's a people industry. We have a building product that we do, but it's a people industry."

As before, the second code, *Investment in People* (k.2) recognizes that people make organizations in the built environment successful. This is true whether the emphasis is on mentoring or knowledge management. Once again, this code applies, but in another context; as such it was still the code with the highest frequency, especially in latent terms.

Core Group is Stable (k.3) takes on a different context in this usage as well. In this instance, it refers to examples where the participants referred to their "core group" as stable, while it embodies the knowledge that leads to business success. In this instance, the core group mentioned is easier to define; they're the participant's coworkers who've worked with him or her for many years, and therefore demonstrate group commitment instead of individual mobility (Ellemers et al, 1997). For Participant P3, who has been a leader in his firm for almost 50 years, his core group consists of the other principals in the firm who've each been there for more than 20 years, "We know everything about those projects, so they are just also stored in the brains of the partners…"

One latent aspect that arose throughout the interviews was an "us vs. them" mentality, directed toward staff of other generations. This was reflected in quotes that expressed frustration such as, "there's one group... ...they haven't hired a new employee in 15 to 20 years. I get people who send me kids all the time. I'll interview them or hire them, and I'll assign them to that group. I try to force it," said Participant P9. In this instance, Participant P9 expressed himself as a third party who's attempting to assimilate new staff into this *core group*.

4.3.4.4.2. Knowledge Management / Knowledge Sharing Understanding (l)

Another sub-theme, *Knowledge Management / Knowledge Sharing Understanding* (l) contains five codes, the first *Knowledge Management Familiar* (l.1) categorizes those participants who were familiar with the term knowledge management. Likewise, the second code, *Ignorance about Knowledge Management Benefits* categorizes those who were not familiar with knowledge management, nor understood its potential benefits. Both codes were low, as most participants were not one extreme or the other, but there were a few instances that merit notice. Participant P4 gave his definition of knowledge management and provided an example about a senior executive who was running multiple construction projects and had subordinates who were mentored specifically to learn from him experientially, "I don't think it's formal, but there's knowledge transfer knowledge management." Similarly, Participant P9 was nonchalant when beginning to discuss the status of his firm..."Knowledge transfer is something we're grappling with...." When asked, others considered the term, but their conclusions were limited in terms of wider KM, Participant P1 said, "I'm taking your knowledge, the knowledge that this individual has and transforming it into some kind of policy procedure document," which is extremely narrow, while Participant P2 considered it to be focused on, "the cultural side and then technical side."

The third code, *Retain Data / Compile Information* (l.3), refers to gathering information that will support or assist the knowledge management efforts, which six participants discussed in some depth. This emphasizes the fact that "...often people will write an email or text to sum up what they have learned, but that information doesn't resonate with the team member who did not attend the training... Yet today's tech based, task-focused workplaces have forgotten how to connect people and their environment (culture)," (Kamarulzaman, 2016, p.501). Some of the participants supported Kamarulazaman's comments about data; "... I still can't throw it away because I'm thinking maybe I will need it, maybe I will use it, but the reality is who knows if I ever will," admits Participant P1.

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While others were more concerned with the mechanisms of compiling the data, "…we have a server that has terabyte on terabyte of projects within it, which are like literally will say over 12,000 case studies of projects," (Participant P10).

Nine of the ten participants focused to one extent or another on the multiple strategies that were needed or that they deployed to gain access to knowledge, which was coded as *Knowledge Across Strategies* (l.4). Participant P1 focused on cataloging information for the future, but lamented what could not be captured, "… When people leave, I think they take a lot of the information with them." While Participant P9 considered his options, "…maybe I can make some fun things like the person who enters the most lessons learned and get, you know, an extra week of vacation or something like that…." Likewise, Participant P10 discussed his options, "I don't think you can have this shared knowledge through electronic means… but I think shared consciousness or knowledge comes from shared experience and storytelling and lots and lots of real conversations."

Ultimately, *Collecting Information* (i.5) was a focus for four of the participants as it came up multiple times throughout each interview. Once again, technology seemed to be the focus, "I am trying to figure out if there's a technology out there… that will help make it very easy to capture…the knowledge," mused Participant P9.

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Figure 4.6. Fifth Candidate Theme (Broken into 5a and 5b)

Candidate Themes: **Sub-Themes:**   **Codes:**

	m Mentorship is Inevitable	m.1 Mentoring is Pervasive m.2 Assumption of Mentorship m.3 Mentorship Built into the Organization m.4 Assumption of Continuity in Mentorship
	n Mentorship is Fullfilling	n.1 Mutual Bonding n.2 Enjoyable Process n.3 Social Value/Responsibility n.4 Emotional Support n.5 Lifespan of Mentorship
5a Active Organizational Strategies Not Needed	o Mentorship Occurs in a Variety of Settings	o.1 Experiential Mentorship o.2 Group Mentoring o.3 Mentoring in Communities of Practice o.4 Mentoring in Educational Settings o.5 Supervisors as Mentors
5b Active Organizational Strategies Not Needed	p Ways to Share Knowledge	p.1 Group Knowledge Sharing p.2 Informal Knowledge p.3 Training as a Form of KS

4.3.4.5. Candidate Theme Five (A): Active Organizational Strategies Not Needed

The fifth theme, *Active Organizational Strategies Not Needed* (5.a), is grounded in an understanding that mentorship is important to an organization's success, (Klinge, 2015). Nonetheless, initiating and sponsoring organizational strategies that support mentorship are often considered challenging, (Mahlangu, 2014). As a result, although the participants in this study understand and appreciate mentoring's benefits, none of their firms had active, organized mentorship programs at the time of the pilot study. To compensate for this dissonance, the participants highlighted several sub-themes that supported their organization's choices.

4.3.4.5.1. Mentorship is Inevitable (m)

The first sub-theme, *Mentorship is Inevitable* (m), is supported by four codes, including *Mentoring is Pervasive* (m.1), which expresses the participant's belief that mentoring opportunities exist throughout the firm. This belief is manifested in several ways, as an omnipresent concern, "It's something I always think about…," (Participant P2); as an unspoken assumption, "I think it's unsaid," (Participant P1); and as an entity that unites, "every problem, every question is like a mini case study," (Participant P7).

Similarly, *Assumption of Mentorship* (m.2) codes the participant's belief that mentorship is occurring naturally in their organizations. When asked if there was an ongoing knowledge retention program within his firm, Participant P4 said, no, not "a formal thing, I mean people just stick around forever and they, they teach you…" Likewise, Participant P6 said, "…we're wired to walk through the process with a guy maybe one or two times. Then the third time, it's like, all right, here you go. Here's the job. Take a crack at it." This is closely tied to the third code, *Mentorship Built into the Organization* (m.3), which focuses on the conjecture that mentorship is fused into their organization's culture. For example,

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Participant P1 noted that "the mentorship process is built into your advancement in the organization."

The final code, *Assumption of Continuity in Mentorship*, (m.4) is an outgrowth of these former codes, but emphases the *continuity* aspects of their mentoring efforts. Five of the 10 participants discussed this, with several referring to it multiple times. Participant P3 assumes that mentoring efforts are ongoing but emphasizes that particular mentoring relationships have been in place for more than 20 years. Likewise, Participant P4 also focused on the *longevity* of mentoring relationships within his firm, "People just keep going and going and so it becomes. It's not like when you turn 65 you're gone. You've got guys like [executive] who are around a long time."

4.3.4.5.2. Mentorship is Fulfilling (n)

Mentorship is Fulfilling (n), the second sub-theme, concentrates on the emotional side of the mentoring relationship. All ten participants discussed having deep relationships with mentors or mentees, some went into great detail. This is not uncommon as the most successful mentoring relationships have strong, bonded connections that "encourage the authentic expression of positive emotions to create opportunities for growth," (Murphy, 2012, p. 558).

This was expressed through the first code, *Mutual Bonding* (n.1). Multiple participants discussed their relationships at length, particularly Participant P4 who spoke at length about a mentee that he'd developed a deep, ongoing relationship with, "They (the mentee and his girlfriend) stayed in my house this last weekend while they went apartment hunting. … Maybe that's an extreme in terms of the mentorship thing but he's like a son to me…"

Inherent in this sub-theme is the enjoyment that mentoring relationships bring to the participants. Although not one participant said, "I enjoy this…" it was latent in each participant's interview. The closest anyone came to expressing that their relationship was an *Enjoyable Process* (n.2) was Participant P3 who said, "… You should ask about the gratification to the mentor." This gratification was expressed by Participant P9 who said, "I'll be her mentor for life."

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Just as fulfilling, *Social Values / A Sense of Responsibility* (n.3), concerns the larger, more abstract aspects of the mentoring process and its relationship to society. This connects to *generativity*, the concept that as an individual ages they become more concerned with societal issues and want to share their knowledge and skills with others, (Allen et al, 2009). This intrinsic satisfaction was expressed by Participant P8, who said, "for the mentor, it just makes you feel good, you know, makes you feel appreciated; (pause) in the business environment we're in, you know, it serves a greater purpose," and by Participant P3 who succinctly summed it up, "what we do is incredibly important to society...."

Another key code that relates to the fulfilling aspect of mentorship is *Emotional Support* (n.4), i.e. having someone to rely on, seek advice from, etc. Participant P5 referred to it "as a mentor you have to understand where that person's coming from. You have to understand how that and why that person feels the way they do, why they're asking the question..." while Participant P6 expressed it as "I try to kind of give them the pointers I got in life from, you know, how I helped myself. And then also how the people kind of taught me...."

When each of these aspects are present in a mentoring relationship, they tend to last for many years. Nine of the ten participants mentioned this longevity, the *Lifespan of Mentorship* (n.5) during their interviews. While most mentoring relationships progress through a series of phases and eventually diminish, (Kram, 1988), at times they remain in place for extended periods. During his interview, Participant P4 mentioned a mentor that he has been in touch with for over thirty years, "[name] is probably more than 70 years old now, but he's kind of my mentor. He certainly supports me. I don't know why, I kind of worked for him back when I first started at the company." Participant P7 was more concise, "I keep in touch with my mentors."

4.3.4.5.3. Mentoring Occurs in a Variety of Settings (o)

Mentoring Occurs in a Variety of Settings (o), addresses the wide variety of settings that the participants mentioned during their interviews. By far *Experiential Mentoring* (o.1) was the most common; all ten participants discussed it, at times assuming that it was the only *way* to mentor. This *real-world* mentoring was expressed in different ways, from Participant six's "I try to relate something to an experience..." to Participant P4, "My intent is for them to be a contributing member of the team," to Participant P2, who said, "... so what's important to us is like putting buildings together." *Group Mentoring* (o.2) was also quite

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common; it was mentioned by seven participants who described impromptu chats, informal group conversations, and formal training.

Likewise, *Mentoring in Communities of Practice* (o.3) was mentioned by five participants who had experience with mentors beyond their own firms. These included Participant P5 who discussed his experience as a mentor in a professional organization but never took advantage of the materials offered by the organization. While only a few mentioned *Mentoring in Educational Settings* (o.4), those who did were quite passionate about their experiences. Particularly Participant P2 spoke extensively about one professor who provided the vision for a multi-year design/build project adjacent to the university.

Often tied to experiential mentoring, *Supervisors as Mentors* (o.5) was quite common as well. All ten participants also referred to supervisors as mentors, either themselves as a mentor or their mentors. In each situation, the participants didn't act as though there was an alternative beyond the supervisory chain, no matter the specifics of the situation. This was also true whether their comments were positive or negative. For instance, Participant P5 was positive about the experience, "I want to make sure that their success is, um, that they succeed both for themselves as well as for the firm." Participant P8 expressed frustration, "…you've spent your personal time, you put your personal effort into it, to these folks and then, you know, like, sorry…(pause) so, you know, like do you think this effort was really worth it?"

4.3.4.6. Candidate Theme Five (B): Active Organizational Strategies Not Needed

After the initial coding process was completed, while analyzing the interviews the researcher discovered that the theme, *Active Organizational Strategies Not Needed*, referred to both *mentorship* and *knowledge*. Thus, the candidate theme was separated into two sections, 5a which focused on mentorship, and 5b which focused on knowledge. As with the former, 5b is grounded in an understanding that knowledge "has become one of the critical driving forces for business success, (Wong, 2005, p. 261). That said, as with mentorship, organizational strategies that support knowledge management and knowledge sharing have not been implemented in the participant's organizations. Even though the participants are less familiar with *knowledge* terms, they understand the basic concepts surrounding knowledge management and can ascertain the benefits. Thus, the same strategies were used to justify the actions of their firms, i.e., to not support formal knowledge management or knowledge sharing activities.

4.3.4.6.1. Ways to Share Knowledge (p)

The first code, *Group Knowledge Sharing* (p.1) under the sub-theme *Ways to Share Knowledge* (p), supports the participant's belief that groups share knowledge organically. Participant P3 highlighted this, "… periodically we'll have the whole firm… somebody will give a talk… with a slide show… that's the other way that knowledge is shared." Likewise, Participant P10 noted that "…knowledge comes from shared experience and storytelling and lots and lots of real conversations." Likewise, *Informal Knowledge* (p.2) was also stressed by most of the participants, often in conjunction with mentoring. Most comments were brief, but effective, such as, "I think people do it, but it's not a formal thing," said Participant P4. "It's not like something where you'd have an appointment on the calendar," offered Participant P7.

The third code, *Training as a Form of Knowledge Sharing* (p.3), was mentioned by six participants. Each emphasized formal training such as staff meetings or technical skills training; as such, the emphasis was always on information, not knowledge. For example, …we have staff meeting or something based on a project…," (Participant P6) and "we spend a lot of time and effort on formal training… we spend a lot of time on project management training, a technical skill, not people skills…" (Participant P8).

Figure 4.7. Sixth and Seventh Candidate Themes

Candidate Themes: Sub-Themes: Codes:

| 6 | Mentorship Supports Business Strategies |

| q | Reasons to Mentor |

q.1	Turning Theory into Action
q.2	Pursuit of Mastery
q.3	Assimilate Another's Experience

| r | Mentorship Reinforces Commitment to Organization |

| r.1 | Reciprocal Relationship |
| r.2 | Communal Identity |

| 7 | Inherent Understanding that Mentorship is Good |

| s | Reasons to Mentor |

s.1	Turning Theory into Action
s.2	Pursuit of Mastery
s.3	Assimilate Another's Experience

| t | Mentorship is Personal |

t.1	Personal Relationships
t.2	Parental Relationships
t.3	Mutual Bonding
t.4	Mentorship Requires Chemistry

4.3.4.7. Candidate Theme Six: Mentorship Supports Business Strategies

Candidate theme 6, *Mentorship Supports Business Strategies*, reinforces the connection between mentorship and an organization's strategic planning process, which includes resource development. Mentoring enables strategic change through the process of knowledge sharing, which is embodied in the relationship between the mentor and mentee. By learning from the mentor, mentees develop strategic visioning skills that allow them to contribute to their firm's strategy, (Gisbert-Trejo et al, 2018).

4.3.4.7.1. Reasons to Mentor (q)

The first sub-theme, *Reasons to Mentor* (q), is based on three codes, *Translating Theory into Action, Pursuit of Mastery*, and *Assimilate Another's Expertise*. The first focuses on the actionable items mentioned by each participant during their interview; these included real assignments, case studies, and teaching and attending professional programs.

Even though *Pursuit of Mastery* was not mentioned by every participant - only seven – this code represents the participants' comments about lifelong learning. Typically presented as a latent *strategy*, participants outlined their perspective. For instance, Participant P7 said, "every opportunity is a teaching moment… if you're not learning every day in our profession, you're on your path out of the profession."

The final code in this category, *Assimilate Another's Experience* (q.3) emphasizes the value that participants place on tacit knowledge, which is a cumulative outgrowth of experience. As individuals progress in their careers, they acquire tacit knowledge from their experience, which allows them to scrutinize and resolve situations in real-time, (Henriques & Curado, 2009). Although none of the nine participants were familiar with the term *tacit knowledge*, they consistently referred to it throughout their interviews. When discussing the number of employees who leave the firm, Participant P3 focused on the outcome, "…and the firm becomes stupider… So the idea is how to prevent that… and one way is by the transfer of a person's knowledge to others so that the firm can remain smart…"

4.3.4.7.2. Mentorship Reinforces Commitment to Organization (r)

The second sub-theme, *Mentorship Reinforces Commitment to Organization* (r) was also quite popular among participants. Seven participants specifically mentioned the first supporting code, *Reciprocal Relationship* (r.1), with two focusing heavily on it. In addition to the mutual exchange of knowledge that can occur between a mentor and mentee, this code

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also refers to the trust that's necessary for a mentoring pair to overcome the inherent risks present when they reveal their weaknesses, (Fleig-Palmer & Schoorman, 2011).

When this occurs, it directly contributes to the *Communal Identity* (r.2) of an organization; likewise, when communal identity is strong, it enhances the success of the business. Participant P10 outlines this in his comments, "I think if everyone was thinking about that idea at all times, I'm talking about even in terms (of) two months after they start, then I think it becomes a cultural, foundational element that will become formal and extremely informal way. It will just be necessary."

4.3.4.8. Candidate Theme Seven: Inherent Understanding that Mentorship is Good

The last candidate theme, *Inherent Understanding that Mentorship is Good*, encompasses many of the positive comments that occurred throughout all the interviews, but relates specifically to the *support* given to the concept of mentorship.

4.3.4.8.1. Reasons to Mentor (s)

In much of the popular, business-oriented media, mentorship is often proposed as a solution for many issues; *how* to do it is not addressed, (Meister & Willyerd, 2009; Moss, 2017; Friedman, 2016). The code *Turning Theory in Action* (s.1) addresses this, specifically noting the comments that support key theories while providing actionable examples. For example, Participant P4 summarized his mentor's experiential assignments that were intended to provide opportunities to increase his experience, which in turn increased his chances for success; "…he gave me real assignments. He gave me interesting things to do. He was willing to sit and explain things to me. He was willing to take me into situations."

The second code, *Pursuit of Mastery* (s.2) still focuses on mastering a *skill* or *concept* and augmenting them, when necessary, in a continual process of renewal. Once again, participants outlined their strategy for obtaining *mastery,* but this time in relation to the assumption that *mentorship is good*. Participant P6 explains the *mastery process* within his latent understanding that mentorship is good: "That goes through a methodical process of doing it in a way that you write it down, like especially with a calculation or count the calculation, write it out by hand first, go through the process, go look in the book, find it…. You've already kind of just assimilated that. Even thinking about it. That's something I try to instill in teaching to the, you know, the guys I work with and say everyone has their own way of doing things." The final code in this sub-theme, *Assimilate Another's Experience* (s.3),

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acknowledges that mentoring is an important component in knowledge management as it encourages an individual to accept another's experience and learn from it. Participant P3 mentioned this while lamenting a lost opportunity.

4.3.4.8.2. Mentorship is Personal (t)

The second sub-theme under *Inherent Understanding that Mentorship is Good* is *Mentorship is Personal* (t). The first code under this sub-theme is *Mentorship is Personal* (t.1). This code describes the personal aspect of mentoring that exists even in mentorships that were formulated in the work environment. Six participants focused on this aspect of the mentoring relationship, often specifically highlighting the vulnerability that's integral to the success of the relationship. Participant P3 stressed this, "the mentee can become dependent upon you... It was an intimate relationship."

The paternal aspect of the mentoring process, *Parental Relationships* (t.2.) was mentioned by eight of the ten participants. It expresses the intimacy that's often involved in the relationship as well as the hierarchical nature of the study's most common experience – supervisors as mentors. Many of the participants compared a parental relationship to their mentoring experiences. Participant P2 was philosophical, " in some ways, when I think about it, it's akin to parenting," while Participant P4 referred to it as the reasoning for specific actions, "...he's like a son to me." Participant P10 compared it to one of his familial relationships, his experiences with his grandfather.

Mutual Bonding (t.3) is similar to, but independent from, the parental aspect of the participant's mentorship experience. This code expresses a more equal, mutually beneficial relationship. Although Participant P10 mentions the inequality in his mentoring relationship, he still approached the discussion from an emotional, committed perspective, "I love so many things about the mentor, the master-apprentice relationship I have with this gentleman," As mentioned in the earlier discussion about this code, many mentoring relationships progress through several typical phases and diminish over time, (Kram, 1988). This is not the case with many mentoring relationships that fall into the mutually bonded category. Although these relationships evolve, the intimacy remains, "I'll be her mentor for life," characterized Participant P9.

The final code, Mentorship Requires Chemistry (t.4) refers to the participants' comments about having "chemistry" with their mentees or sharing a special connection. Even when this was not expressed verbally, many of the participants expressed it latently, as they could not explain why some mentoring relationships worked and others didn't, "...we just

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have that sort of personal chemistry or whatever and they're willing to listen and I'm willing to spend the time," offered Participant P8.

4.3.5. Conclusions Generated from Thematic Analysis

At this stage of the study, the researcher found it important to develop an image that included each of the 65 codes, 20 sub-themes, and seven candidate themes. She then inserted the *final* four themes and one *summary* statement into the figure. In doing so, she provided a comprehensive support mechanism for readers that clarifies the extensive descriptions in section 4.3.3 Findings Generated from Thematic Analysis.

Figure 4.8. Thematic Analysis Themes
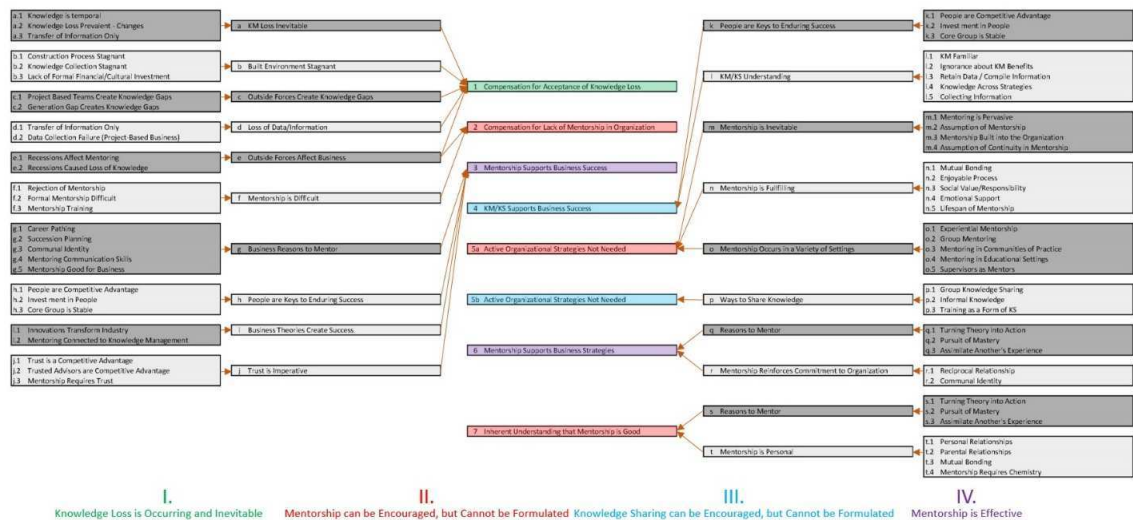
The next section provides extensive descriptions of the pilot study's key themes, as well as the summary statement. Once these were developed, they were utilized to respond to the study's research question: 'Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?'

4.4. Pilot Study Key Themes

4.4.1. Introduction

The aim of this study is to explore how to improve mentoring programs as a resource for knowledge sharing in the built environment. At this stage in the research, the researcher can describe the detected phenomenon and form generalizations about various facets of that phenomenon. These generalizations are based primarily on the findings formulated through the literature review and the thematic analysis conducted on the ten interviews, with limited use of the content analysis, as it was only useful after undergoing several iterations of *stop word* editing, which resulted in a subjective, qualitative, and basic form of word frequency analysis.

Once the data was collected, and the thematic coding process completed, a stacked bar chart was developed to visually represent the frequency of each coded theme, which resulted in some interesting observations. The most frequently represented codes are—in effect—linked and represent varying aspects of the mentoring relationship. When the results of the Version 3 content analysis word frequency list were added, a rich, contextual description of the participants' views began to emerge.

Figure 4.9. Theme Frequency Stacked Bar Chart

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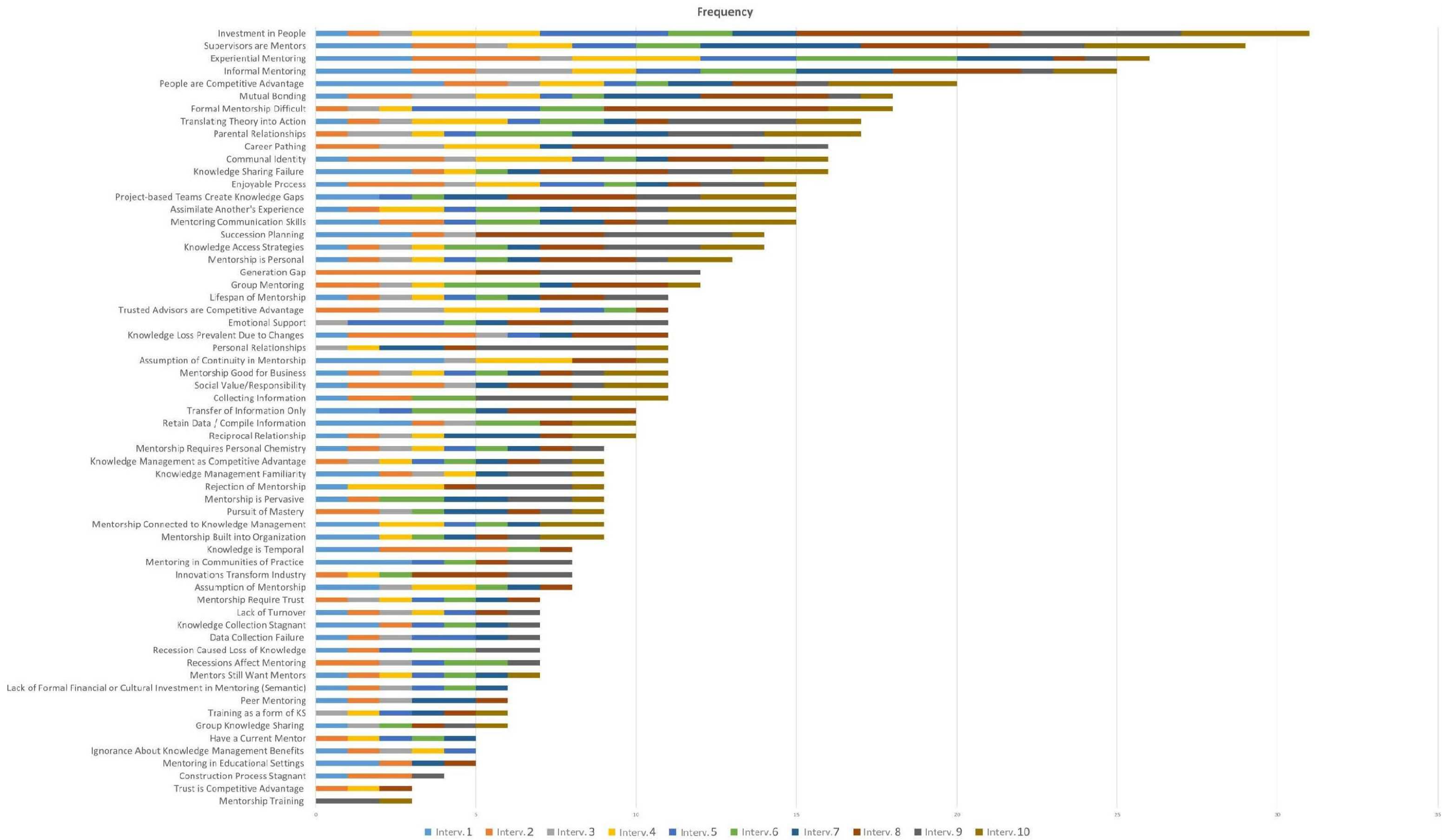
4.4.2. High Frequency Codes Developed Through Thematic Analysis

The code with the highest frequency was *Investment in People*, which relates to many aspects of the study, including organizational commitment. It also connects directly with the first five words listed in the content analysis list: works, people, firm, mentors and time. Mentoring requires a broad investment in people from a personal and organizational perspective. Mentors, particularly those who were interviewed, are often also leaders in their organizations, thus acutely aware of this intense commitment.

The second most frequently used code was *Supervisors as Mentors* reflecting the participant's assumptions about the roles found in the mentorship dyad while linking it to the hierarchical nature of an office environment. This code also links to the first twelve words on the content analysis list: works, people, firm, mentors, time, projects, job, buildings, learn, knowledge, managers, and company. All the participants assumed that the prototypical mentoring relationship was based in the work environment, which has its challenges, including issues with the time commitment. As professionals in the built environment, work explicitly involves projects, jobs, buildings, managers, and companies.

The third was *Experiential Mentoring*, which focuses on a particular type of mentorship, one based on real world experiences with real world demands. It also ties mentoring to the reality of the project-based environment and connects back to *Supervisors as Mentors.* As such, it also ties to those same twelve words on the content analysis list and once again reinforces the connection between the most prevalent codes in the thematic analysis.

Another classification of mentorship, *Informal Mentoring* was the fourth highest frequency code in the thematic analysis list. It ties specifically to the same twelve content analysis codes, as its definition in the study relates to the way the mentor/mentee relationship is formed, as well as how it is supported by an organization. Informal mentoring is independent from, and therefore may be allied with, experiential mentoring as they complement each other, which was expected, accepted, and preferred by the participants. It is the antithesis of formalized mentoring, which was not popular with the participants in the study, as none had formal mentoring programs in their firms.

People are Competitive Advantage, the fifth most popular theme in the thematic analysis list, reveals the beneficial nature of mentoring from an organizational perspective. As a *result* of the mentoring process, it also ties back strongly to *Investment in People,* as well as the twelve words, by creating a business case for its support and sponsorship. As

senior-level executives, the participants in the study are focused on building successful cultures within their organizations; this was discussed more than once during the interviews.

4.4.3. Seven Candidate Themes Developed Through Thematic Analysis

Following the same process outlined in 4.4.2 High Frequency Codes Developed Through Thematic Analysis, the 60 other codes were analyzed, synthesized, and ultimately merged into seven *candidate themes*. These were: (1) Compensation for Acceptance of Knowledge Loss; (2) Compensation for Lack of Mentorship in Organization; (3) Mentorship Supports Business Success; (4) Knowledge Management / Knowledge Sharing Supports Business Success; (5a/5b) Active Organizational Strategies Not Needed; (6) Mentorship Supports Business Strategies; and (7) Inherent Understanding that Mentorship is Good.

This evolution was outlined in 4.3.4. Findings Generated from Thematic Analysis.

4.4.4. Themes Developed

The seven candidate themes coalesced into four *themes*: Knowledge Loss is Occurring and Inevitable; Mentorship can be Encouraged but Cannot be Formulated; Knowledge Sharing can be Encouraged but Cannot be Formulated; and Mentorship is Effective. Each of these themes was generated inductively. Although they remain nascent and are based only on pilot study data, the following narratives provide initial thoughts on each.

4.4.4.1. Knowledge Loss is Occurring and Inevitable (I)

Encompassing only one candidate theme, *Compensation for Acceptance of Knowledge Loss*, this theme evolved from the personal and procedural to the theoretical as it transformed from statements by specific participants into a theme that addresses the larger research question: 'Do mentors in New York City's built environment identify mentorship as an effective means of knowledge sharing?' Based on the pilot study, there is a strong indication that, in 2018 and 2019, in New York City, industry leaders/managers, who serve as mentors, find knowledge loss in their firms to be inevitable. Regarding this, it is important to recognize that the participants of the pilot study were aligned with Mitzberg and Koontz's expanded view of *management*, i.e., that leaders/managers are involved with standard management functions such as planning, systematizing, controlling/leading and making

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decisions while providing information and interpersonal support to their subordinates, (see 2.1.2.4. Koontz's Management Schools.)

As the codes indicate, there are various reasons for this loss as well as its inevitability, which do not involve mentorship. Nonetheless, there is a sense of resignation in the Participants' tone. Further research is merited so it can be determined whether this is an anomaly or a trend, and the extent to which mentorship is involved.

4.4.4.2. Mentorship can be Encouraged, but Cannot be Formulated (II)

Evolving from three candidate themes, *Mentorship Can be Encouraged, but Not Formulated* addresses the pilot study's participants' belief that mentorship is good, but that organizational strategies to support it are not necessary. Once again, as leaders, they are aware of many of the benefits of mentorship—personal, professional, and organizational— but do not find it necessary to formalize support. This may be due to an inherent, even latent, *social exchange* view of mentoring relationships; they may view mentorship from a *cost-benefit* perspective and assume that mentoring primarily benefits the mentee, (see 2.2.7. Issues in Professional Mentoring Programs.) Based on their responses, organizational strategies are not needed because mentorship will occur anyway, and only occurs [in their experience] in a beneficial manner when approached informally. There was some indication that this may be driven by manifest and/or latent compensation; more research is needed to address this fully.

4.4.4.3. Knowledge Sharing can be Encouraged, but Cannot be Formulated (III)

As with the theme focused on mentorship, participants in the pilot study strongly indicated that knowledge sharing was important and positive, but that it could not be formulated or forced. As indicated earlier, the participants understand competitive advantage and innately understand the benefits of knowledge sharing and knowledge management (see 2.3.4. Knowledge Management,) but expressed that it must occur organically. This has not been established in academic research. Again, there is some indication that compensation is occurring both manifestly and latently, but more research is needed to verify this theme.

4.4.4.4. Mentorship is Effective (IV)

Mentorship is Effective is an overarching theme that encompasses many of the positive elements, or codes, expressed by the participants. It is supported by candidate

themes *Mentorship Supports Business Success* and *Mentorship Supports Business Strategies*, which include some of the most frequently cited codes in the study. These codes include career pathing, succession planning, communal identity, and mentoring communication skills – all part of the definition of mentorship – that benefit the organization as well as the individual (see Definition of Mentorship.) It also includes codes that support organizational strategic initiatives, but are grounded in a mentorship process that supports business success. Research supports this as studies often cite increased loyalty and job satisfaction that leads to enhanced commitment to the organization, (Rigsby, Siegel, Spiceland, 1998; Ragins & Kram, 2007; Maynard-Patrick & Baugh, 2019; Iverson, 2019; Luo, Ma, & Li, 2021; Lin, Cai, & Yin, 2021; Garg, Murphy, & Singh, 2021).

Although mentorship is routinely cited in popular and academic literature as a *good* thing for communities, it is yet to be determined whether this theme is pervasive.

4.4.5. Pilot Study Summary Statement

From these four themes, a single coherent statement was synthesized, "**Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced**." The statement represents the pilot study participants' understanding of the current state of mentorship in the New York City area. The statement is an accurate reflection of the participant's opinions, whether the statement is true or false.

The statement also aligns with the actions of the participants' firms. All the participants, as mentors with more than 20 years of experience, are *de jure* or *de facto* leaders in their firms. Most have worked for the same organization for years, thus they are heavily involved and invested in the firm's vision, management decisions, etc. As such, even when they recognize and understand their firms' deficiencies, they may still want to protect and defend what they cannot control or prioritize, manifestly or latently.

None of the 10 participants noted an active formal mentorship program or knowledge management program in their firms. Nonetheless, each was positive about mentorship as well as their own mentoring experience, some to a greater extent than others. Although most were not familiar with the terms *knowledge management* or *knowledge sharing*, most intuited the basics of both and positively discussed them as well. This was surprising as it contrasted with many researchers' commonly held belief that knowledge sharing was a commonly known definition, concept, and/or movement, (see section 2.1.2.8. Organizational Learning and Knowledge Management.)

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Why don't they invest in mentorship or knowledge sharing programs? Mentorship is pervasive in popular culture and is overwhelmingly seen as a good thing, which they acknowledged… Knowledge Management has been in popular media for 20 years; there was a movement in popular culture towards it in the mid-90s, (see section 2.1.2.8. Organizational Learning and Knowledge Management.) So, why are none of the organizations in the pilot study pursuing knowledge-related initiatives? Before attempting to answer these questions, the full study must be completed to determine whether the findings of the pilot study are valid; this will be addressed in Chapter 5.

4.5 Chapter Summary

As an under-researched area, this pilot study was conducted from an exploratory perspective, with semi-structured interviews serving as the sole data collection method to ascertain what mentors in New York City's built environment think of the mentoring process, in general, and as it specifically relates to knowledge sharing. After describing the participant selection, data collection, and data analyses processes chronologically, an extensive description of the results was shared utilizing an *inverted pyramid* writing style, which allowed the reader to determine the level of detail they wanted to pursue and/or needed to evaluate the pilot study's results.

Once the analysis of the data via Content and Thematic Analysis was complete, the 65 codes, 20 sub-themes, and seven *candidate themes* emerged, which were then synthesized into four final themes and one summary statement, "Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced." While an accurate reflection of the pilot study participant's opinions, these results can not be finalized until the completion of the final study, which will be addressed in Chapter 5.

Utilizing the same processes followed in the pilot study – except for content analysis, which was rejected due to induced bias – the final study will conduct another ten semi-structured interviews with participants drawn from the same sample with the same stratification. It will also be described in chronological order with the results delineated via the *inverted pyramid* approach. After determining the final study's outcomes, a comparison will be made between the pilot and final studies to outline similarities and differences and to determine the overall results of the complete study.

CHAPTER 5 – FINAL STUDY DATA COLLECTION AND ANALYSIS

Using the same format established in Chapter Four, this chapter chronologically addresses the final study's process, analysis, and results. The first section describes the coding process for the final study, including a description of the final study participants, the semi-structured interview process, and the resulting data. The second section includes the findings from the final study interviews, first building off the codes and the seven *Candidate Themes* established in the pilot study, then adding several new codes resulting from the analysis of the final study. The codes are then separated into four distinct categories based on the comparison between the pilot and final studies: High Frequency Codes Aligned with the Pilot Study, High Frequency Codes Not Aligned with Pilot Study, High Frequency Codes Aligned with Pilot Study: With a New Context and New Codes Emerged During Final Study. Once the final study findings are complete, they were found to be in alignment with the pilot study's thematic analysis findings. Once the conclusions were known, the researcher developed an executive summary and sent it to half the participants. Then the researcher contacted them via a phone or teleconference interview to discuss the findings. Their acceptance of the findings provided additional validation of the study.

5.1. Final Study Data Collection Process

Since the pilot study was deemed successful and the preliminary results robust, the researcher pursued the final study utilizing the same research question, objectives, and methodological framework. Following the previously determined process for selecting participants, from a representative, stratified sample of members of the New York Building Congress, ten additional participants were chosen: three engineers, three architects/designers, and four construction managers. As captured in Table 5.01, all participants self-identified as *practitioners* in the built environment, eight had actively participated in a professional community of practice, and all had more than 20 years of experience. Two of the participants were female, nine were Caucasian and one was of South Asian descent; all professionals approached for the final study accepted and participated without hesitation.

Each participant was once again sent an email with the same IRB approved Research Participation Invitation Letter, Information Sheet, and Participant Consent Form (see Appendix B). After agreeing to participate, each participant signed forms, provided contact

information and the details of their interview were logged and archived in the password-protected, encrypted server at Stevens Institute of Technology, as required by IRB protocols. From that point forward, each participant was only referred to by his or her assigned pseudonym (F1-F10).

As the interviews began, the researcher introduced each participant to the final study, emphasizing his or her anonymity and his or her ability to withdraw at any point. Nine of the ten interviews in the final study were held in the participants' offices; the tenth participant suggested a local coffee shop.

Table 5. Summary of Final Study Participants and Interview Duration

	Educational Background	Professional Experience	Title	Organization	Experience	Interview Duration	Word Count
F1	BE Civil Engineering / MBA	Engineer	Vice President	Engineering Firm	30+ years	38 minutes, 26 seconds	6,350
F2	BE Civil Engineering / MS Civil Engineering	Construction Manager	Senior Vice President	Construction Org. / Const. Mgmt.	30+ years	57 minutes, 13 seconds	10,942
F3	BE Civil Engineering / MS Management	Construction Manager	Vice President	Construction Org. / Const. Mgmt.	30+ years	35 minutes, 39 seconds	6,454
F4	BS Construction Management	Construction Manager	Vice President	Construction Org. / Const. Mgmt.	30+ years	49 minutes, 43 seconds	8,969
F5	Bachelor of Architecture / Master of Architecture	Architect	Principal	Architecture Firm	20+ years	50 minutes, 37 seconds	8,934
F6	Bachelor of Architecture	Architect	Principal	Architecture Firm	40+ years	47 minutes, 27 seconds	7,898
F7	BE Civil Engineering	Construction Manager	Senior Technical Director	Full Service Engineering / Site Planning	20+ years	54 minutes, 46 seconds	10,452
F8	BA Art / NYU SBS Initiative	Designer/Architecture	Principal	Specialty Designer	20+ years	56 minutes, 45 seconds	8,660
F9	BE Civil Engineering	Engineer	Vice President	Water/Wastewater Engineering	30+ years	39 mintues, 30 seconds	5,726
F10	BE Aerospace Engineering / MS Industrial & Systems Engineering	Engineer	Managing Partner	Simulation Analytics	20+ years	52 minutes, 24 seconds	9,243

The researcher asked between 50-70 questions during each interview, resulting in tightly clustered interview duration to word counts. Transcripts of more than eight hours of recording with over 83,000 words were analyzed.

Using the 60+ codes as a starting place, when the ten final study interviews were analyzed, the researcher determined that the majority of the codes obtained through the final study analysis were consistent with the findings of the pilot study.

5.2. Final Study Coding Process

5.2.1. Qualitative Coding Using Thematic Analysis

As with the pilot study, the researcher used thematic analysis to determine the themes of the final study. The coding process began by reading the transcript, circling and underlining key words, and writing the previously established *initial codes* in the margins. The definitions of the initial codes for the final study were those defined during the pilot study. When a new concept didn't fit within the previously established codes, it was underlined for additional consideration. This process was applied to all ten final study interview transcripts. Multiple coding in some sections required selective coding to focus candidate themes, replicating pilot study procedures.

5.3. Final Study Data Analysis

5.3.1. Introduction

To further pursue these findings, several graphs and frequency charts were created to visualize the frequency of the codes in the final study.

Figure 5. Final Study Relative Thematic Frequency

Final Study, Relative Thematic Frequency
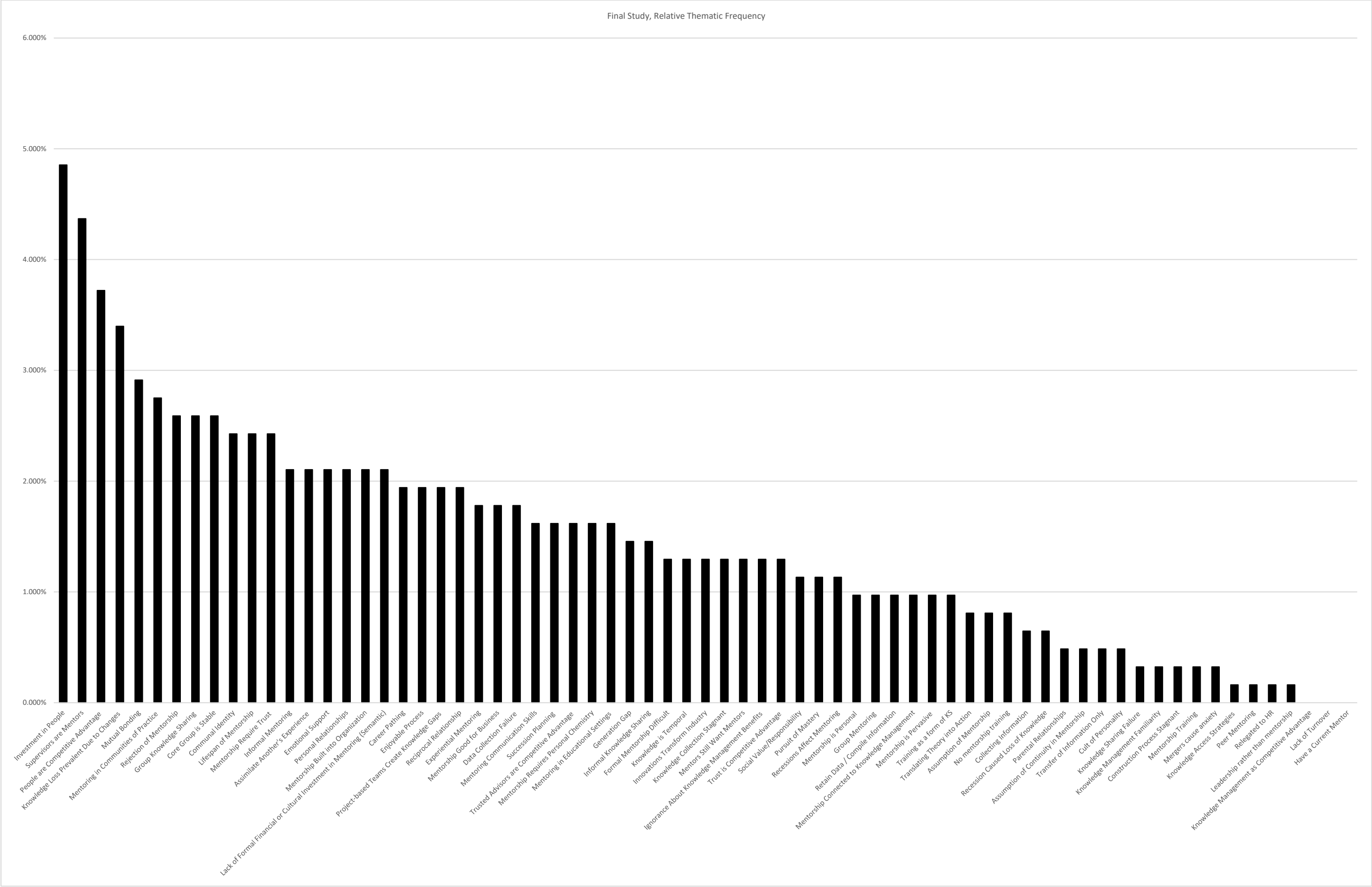
Tables were also developed that tie the codes, their definitions, and illustrative quotes to sub-themes and final candidate themes. In doing so, the connections between the various levels of thematic analysis became clear, which led to more conclusive statements that directly pertained to the research data. Table 5.1. is an example.

Table 5.1. Sub-Theme: People are Keys to Enduring Success (h)

Codes	Details	Illustrative Quotes
h.2. Investment in People	**Leaders invest in their people.**	"It's up to us, the managers, to really as being mentors and leaders of different projects to really ensure that these, that the talent doesn't come out of school and get numb," **(Participant F3)** "…we consider our people (to be) the greatest resource from a business point of view. So we understand that you can, uh, you want to hold on to your talent." **(Participant F4)** "… we're here to teach you **(Participant F4)** "…I've always wanted to give back... as architects we can't always give back financially, but we can often give back in time and professional expertise, and guidance." **(Participant F5)** "I knew we needed to keep our young ones, so I made sure I checked in frequently." **(Participant F5)** "people that kind of saw that I had talent and potential, but needed guidance and direction, and gave that to me and it was absolutely essential." **(Participant F6)** "our purpose was to do good work, to make money and to grow the team." "… the grow the team part is how we invest in people and say that people understand that, that people have a path forward…" **(Participant F6)** "I went to a seminar with some of the associates about coaching and how we should be thinking about coaching relationships between the senior people in the firm and the junior people, or even intermediate people…" **(Participant F6)** I think some companies do it better than others and I think if you do it, it takes a lot of work to make it do it right. **(Participant F7)** "We talk about it a lot because we all know as leaders it's important… … in the last year, maybe two, you know, we have more formally assigned them a coach or a mentor, I forget exactly what we call it," **(Participant F9)** "it was encouraged through the performance evaluations," **(Participant F10)**

5.3.2. Comparing Pilot and Final Study Codes

With so much data to review, the researcher gained a better holistic understanding of the participants' views by inserting key comments into sub-theme tables. After all of the final

study's interviews were analyzed, the next step was to compare these findings with the pilot study's definition of the codes, etc. to see if they were aligned. *Investment in People* serves as an example of this analysis.

Investment in People (h.2.) was the highest frequency code among final study participants; it was also the highest frequency code in the pilot study (See Fig. 5.) This is due in large part to the participants' innate understanding their employees are their greatest asset; "…we consider our people (to be) the greatest resource from a business point of view," (Participant F4). Some of the participants expressed the need to invest in people, "… the grow the team part is how we invest in people and say that people understand that, that people have a path forward…" (Participant F6).

Unlike the pilot study, the participants of the final study addressed their process more directly; one stated, "… we're here to teach…, (Participant F4), and yet another addressed the workload involved in mentoring, "… I think if you do it, it takes a lot of work to make it do it right," (Participant F7). Some even took the step to organize formal mentoring programs, which didn't occur in the pilot study, … "we have more formally assigned them a coach or a mentor," (Participant F9), or to offer incentives for the correct behavior, "it was encouraged through the performance evaluations," (Participant F10).

Also, unlike the pilot study, all spoke positively about the experience, even while mentioning the toll that mentoring takes on the organization. Participant F5 said, "…I've always wanted to give back... as architects we can't always give back financially, but we can often give back in time and professional expertise, and guidance;" which augmented Participant F7's comment about the workload necessary to mentor correctly. Participant F6 expressed thankfulness to his supervisor and other key professionals for the effort and time they spent mentoring him; the "people that kind of saw that I had talent and potential, but needed guidance and direction, and gave that to me and it was absolutely essential." In each case, the participant acknowledged the importance of mentoring.

Once each of the codes was analyzed, and alignment was determined, the researcher was able to find patterns in the data.

Figure 5.1. Pilot and Final Study Code Alignment

5.4. Findings of the Final Study Interviews

As indicated in Figure 5.1., all the codes from the pilot study remained in the final study; the majority were in alignment, but some new codes also emerged (see red codes), and some took on new meanings. Thus, four separate categories emerged: High Frequency Codes Aligned with the Pilot Study, High Frequency Codes Not Aligned with Pilot Study, High Frequency Codes Aligned with Pilot Study: With a New Context, and New Codes Emerged During Final Study. Each category will be addressed in a separate section providing additional details.

5.4.1. High Frequency Codes Aligned with the Pilot Study

After the initial coding process was complete, it was determined that 27 codes were ranked in comparable positions – within two levels of each other - in both the pilot and final study, based on their frequency. The frequency of each participant's usage indicates each code's level of importance to the participant with respect to the questions asked by the researcher. For instance, *Investment in People* was the most frequently documented code, ranked as number one (1) in both the pilot and final study, which validates its importance. Likewise, *Supervisors as Mentors* was the second (2) most frequently used code in both the pilot and final study. Identical rankings were found in four other codes as well: *Communal Identity* (8), *Assimilate Another's Experience* (9), *Pursuit of Mastery* (15), *Mentoring is Pervasive* (15), and *Construction Process Stagnant* (20).

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An additional 20 codes were ranked in comparable positions, i.e. within two levels of each other. For example, *Mutual Bonding* was ranked as the sixth (6) most frequent code in the pilot study and was the fifth (5) most frequent code in the final study, while *Enjoyable Process* was ranked ninth (9) in the pilot study and tenth (10) in the final study.

Most importantly, four of the top six most frequently used codes were the same: *Investment in People* (1) and *Supervisors as Mentors* (2) were ranked identically in both studies, while *People are Competitive Advantage* was ranked fifth (5) in the pilot study and third (3) in the final study; *Mutual Bonding* was sixth (6) in the pilot study and fifth (5) in the final study.

Table 5.2. Pilot and Final Studies: Top Six Codes Aligned

PILOT STUDY CODES	RANK	FINAL STUDY CODES	RANK
Investment in People	1	Investment in People	1
Supervisors are Mentors	2	Supervisors are Mentors	2
Experiential Mentoring	3	People are Competitive Advantage	3
Informal Mentoring	4	Knowledge Loss Prevalent Due to Changes	4
People are Competitive Advantage	5	Mutual Bonding	5
Mutual Bonding	6	Mentoring in Communities of Practice	6

This supports validity within the study as the pilot and final study codes were internally consistent, which assures integrity in the analysis of the data, the data itself, and that the methods chosen provide an accurate reflection of the data.

5.4.2. High Frequency Codes Not Aligned with Pilot Study

Forty-one percent of the final study codes aligned (within two rankings) directly with the sub-themes and candidate themes established during the pilot study and an additional 43% were closely aligned – between 3 and 8 differences in rank. Therefore, the remaining codes (16%) were not in alignment. In all three categories, the description and meaning of the codes remained consistent, but their importance to the participants was not similar.

Table 5.3. Pilot and Final Studies: Non-aligned Codes

Pilot Rank	Code	Final Rank
9	Translating Theory into Action	17
7	Parental Relationships	19
18	Group Knowledge Sharing	7
18	Lack of Formal Financial or Cultural Investment in Mentoring	9
22	Core Group Stable	7

10	Knowledge Across Strategies	21
13	Knowledge Loss Prevalent Due to Changes	4
16	Mentoring Communities of Practice	6
17	Mentoring Requires Trust	8
22	Informal Knowledge Sharing	13

When the researcher determined that these codes were not in alignment, she reviewed each instance where these codes appeared in the final study's interview transcripts. There were no significant inconsistencies in the interpretation of the data.

Afterwards, she considered the participants in the pilot and final studies and did find some differences in their backgrounds, experiences and disposition toward the questions asked. The participants in the pilot study spoke from a first-person perspective. They were more focused on actions and activities, more centered on one-on-one strategies and outcomes, and specific relationships. Mentoring was described as a more personal experience and knowledge sharing was not a formalized goal or concern. In juxtaposition, the participants of the final study answered the questions from a more global perspective, considering the questions more conceptually, and less personally. Their comments were more focused on their organization, or organizations they were involved in, past or present, discussing mentoring strategies that were more efficient and in the best interests of the community, such as mentoring from a group, or community perspective. Personal accounts were in the minority.

Thus, this section will discuss each non-aligned code to highlight its importance to study participants, both pilot and final. Their order in this section is not intended to convey a specific hierarchy.

5.4.2.1. Translating Theory into Action

In the pilot study, *Translating Theory in Action* focused on the mentor's quest to find and establish theories that increase success as well as their willingness to activate them as strategies and/or tactics within their organizations. They were described as actionable, tangible items or activities including case studies, real assignments and involvement in professional programs. This was a fairly important concept in the pilot study but was much less prominent in the final study. Although the participants in the final study also mentioned theories, they stayed at the theoretical level and didn't descend into actions or tactics.

For instance, final study participant F2 stated that he preferred leadership as a concept to mentorship; "I think you lead by example. I think that our people… …(follow) in the

footsteps of leaders." He continued with a bit of animosity, "(Senior leader) would be the closest thing to a mentor that you're gonna find at (organization) because he takes it all in that sense." The other participants were not as hostile about it but continued from a similar perspective, participant F2 mentioned "that idea to me was like you replace yourself, three, four, 10 times until you will be more successful or fulfilled in a particular field...." He said this concept was so important to his growth that it had become clear that the "cultural elements in this company are based solely around that idea...." Participant F4 made several philosophical comments and/or discussed core values including the "level of professionalism, level of integrity, taste, being a person of your word, and be serious about what you say and deliver...," but didn't elaborate on any real experiences. Likewise, F5 mentioned that mentoring is an important component of "smarter companies; they build that into their business model." Participant F10 delved into the subject quite thoroughly, stating that he was "a firm believer in the concept and philosophy of mentorship." A few minutes later he continued, "I think a lot of those textbooks might tell you that a lot of it is built on, on environmental factors that are favorable to both the mentor and the mentee...."

5.4.2.2. Parental Relationships

The code *Parental Relationships* was important in the pilot study, but barely surfaced in the final study. Eight of the ten pilot study participants expressed feelings for their mentee that went beyond the professional, such as P4's comment "he's like a son to me;" but only one mentor in the final study discussed a mentoring experience with such fondness. Participant F2 went on at length about his mentoring relationships. "I've had some extremely powerful mentorships throughout my career," he elaborated about his grandfather's role as his first mentor. He then continued describing his first professional mentor, a leader at his first firm and elaborated on his wish to become a "mentor for life" to those he considered his mentees.

5.4.2.3. Group Knowledge Sharing

Group knowledge sharing, which focused on the organic nature of some knowledge sharing experiences, was more frequently discussed in the final study. Whereas the pilot study only had two instances, the final study had multiple instances from six in ten participants. Participant F1 expressed appreciation for her first mentor, then transitioned into a description of her ideal mentoring program. Participant F2 was passionate and

philosophical, "I always dreamed about this idea of shared consciousness within an organization, which I think is very similar to shared knowledge," while F3 described his experience with three mentees, "it's really unofficial… …about once a month."

Participant F4 also met once a month with his mentors as part of a formal program, although the meetings were not necessarily focused on mentoring; he also met with the owner once a month as a mentee. Likewise, participant F6 discussed having one mentee, then, as he moved up in the firm, mentoring five to ten at once. Participant F18 elaborated on the challenges of managing knowledge from multiple team members, "I love having a place to put things and whether that's exactly knowledge or just information, I don't know, but I have trouble doing that and I'm very anal…. I'm sure other people have the same thing, and if I can't find my stuff and they can't find their stuff, how am I supposed to know about their stuff? … we have all these sharing platforms, Microsoft Teams, Slack…."

5.4.2.4. Lack of Formal Financial or Cultural Investment in Mentoring

In the pilot study, the participants shared several key issues; some were and some weren't shared by the final study participants. One key point shared by both study participants was the lack of investment in mentoring and/or knowledge sharing by their organization's leadership. Participant F5 was apologetic, "At our firm, we're not, not formally (mentoring) because we're a 70-person firm. Some people who have been with us for 25, 30 years… …I don't know how much more mentoring he needs. He can mentor others, but some people just don't have either, the aptitude, the desire." Participant F6 also made excuses, "I did not get a sense that they wanted to put forth that investment. I think they are very cost driven… I mean, if that's the way they want to go, then that's fine too." A similar feeling was expressed by F8, "…in my company, I am not at a level where I am able to promote that growth… I think that it's important. I kind of do it under the radar… …some things that one person may think is, is valuable, others may not." Participant F7 concurred, "I'm a huge proponent of the mentor program. But I also think the mentor program within companies is important, and I did propose that to my company, I didn't, it didn't really get well-received." He continued and later discussed his mentors, "I check in with them, you know, occasionally… …but it's not, it's not structured and maybe that's better, but it's not as structured as, you know, meeting weekly or monthly…."

That informality was common among the final study participants. F5 said, "we're trying to, we're working and it's on a much more informal basis…" and F1 said, "we don't

necessarily have anything that I call formal mentorship." Participant F2 sounded hopeful, "we are trying to develop a more formal process… …"because I just think it's more fluid and unique than that..." F3 said "I just selected them. I just thought they had, I forgot exactly how I did it together," and F4 echoed, "I have not experienced a lot of it… I don't have any idea to what extent that is..."

Unlike the pilot study participants who didn't seem to care about a program, in the final study participants did seem to care, but, as with the pilot study participants, they felt powerless to solve it. Another dissimilarity was the nonchalance shared by the pilot study participants regarding investments in time and money. While not a driving force in their actions, the final study participants did seem aware of investments, or the lack thereof.

5.4.2.5. Core Group Stable

The stability of the core group was important in both the pilot as well as the final study as the core group contains the knowledge that leads to business success. Nonetheless, this code was much more important in the final study than in the pilot study, ranked 7th in the final study and 22nd in the pilot study. This is due in part to the pilot study participant's focus on both sides of the dyad, i.e. the mentor and the mentee, as well as all employees from their organization, from their perspective as a mentor. In juxtaposition, the final study participants were more focused on the leaders within the organization, i.e. themselves and their counterparts, and spoke about their organization's general staff from a much more distinct vantage point; the general staff, those who were also considered mentees, were described as *the other*.

Also pointed out in the pilot study, who is in the core group depends on who's asked and under which circumstances. While pointing out the need for a succession plan, participant F4 emphasized the organization's mentoring process as a way to instill experience and create more seasoned professionals. Participant F7 discussed the process he went through pursuing new mentors as he became more experienced; as a younger member of the "core group," his willingness to be proactive played a part in his placement within the core group. Participant F10 mentioned the organization's board of directors and their talent acquisition group as part of the *core group*; as a private company, he said, "we have a culture that we call our special sauce, which I don't even really know what it is, but it is, it is sort of more [inaudible] family oriented and, and collaborative."

5.4.2.6. Knowledge Across Strategies

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Although *knowledge across strategies* was an important code in both stages, it was perceived to be much more important in the pilot study. In each case, the participants discussed various forms of knowledge sharing and expressed their comfort level with the process. Participant F1 emphasized that her boss changed her life through an invitation to a membership organization, "he was my boss and he said, you got to come hang out with us, come to the meeting tonight," which was quite compelling. Similarly, participant F2 also had candid conversations with his mentor; his mentor said, "Don't listen to that. What you need to do (is) to build your book of people that love you." Participant F3 also described another way that his mentor stressed commitment, not to clients, but to the firm; regarding mentoring opportunities in the firm, F3 said, "so (his firm), if they're investing in this and they're trying to make it more active and more full-bodied, it must be something that they value and that they see the value to young people." Participant F4 also expressed candor in his discussions with his mentor, "if one of those people are really not interested, it's not going to happen." He later added, "we have seven core values," which were discussed during the interview process to begin mentoring the new employees and inculcating them into the organization.

Another way of communicating an organization's values and path to success was shared by participant F6. When asked about the knowledge sharing experience, he mentioned several group mentoring tactics; "a lot of knowledge sharing for me has been through LinkedIn, through blogs, through a lot of newsletters I get over the internet. I receive a lot of content… …I need to get out and share what I've learned." Participants F7 and F9 were heavily invested in this subject; they provided lots of examples and circled back to the topic more than once. Participant F7 articulated several strategies, including unstructured mentoring, "we don't always like structure, but I think, you know, just helping people out, or you know, being somebody that will teach or coach is mentoring." He also mentioned using technology, sharing lessons learned through presentations, and working with a facilitator who could "pull out certain thing that I had in my head," which enabled him to focus on project knowledge by picking and choosing "the ones that were the most important ones for that project." Likewise, participant F8 mentioned several pathways to sharing knowledge, including working with an assigned mentor of her own; "we met every two weeks," she provided "complete advice in the corporate world" at their organization. After leaving that firm, she created a knowledge exchange process for her organization, "we have three verticals, education, research, and the third is hubs… …a knowledge sharing and advocacy hub." She imagined that these verticals could be accessed globally because she works a lot

internationally, but they're "not just about me, but about (kind of) groups" who can exchange knowledge.

5.4.2.7. Knowledge Loss Prevalent Due to Changes

One of the most important codes in the final study was *Knowledge Loss Prevalent Due to Changes*, which was ranked fourth. The definition of this code focuses on changes that have occurred due to uncontrollable forces. Although quite common in the pilot study (ranked 13th), the final study participants spoke in much more in depth about this code. Participant F3 demonstrated this when he described the knowledge that was lost due to not being in the same location, "it's really sometimes hard to have a solid relationship with anybody in the office…." Participant F5 pointed out that younger staff often don't do well with ambiguity; "our employees may not have strong interpersonal skills," (as they were born) after "computers really being the center of the focus in our life." When participant F6 described his firm's acquisition, the researcher asked how they handled his departure. He responded that he'd offered to be available when questions arose, but "as I was leaving they said, 'no, we just want a clean break.'" As a result, more than 30 years of history and experience in that firm "walked out the door." This was echoed by participant F9 who said, "we have vice presidents and senior vice presidents who leave; you don't necessarily lose project information, which hopefully sits in the lower level project managers, but you lose those client connections," which are priceless.

Knowledge loss was also expressed indirectly through many comments from the final study participants. The participants referred to changes brought on by recessions, retirements, etc. that were out of the control of the organization's leadership. These will be discussed in more detail shortly.

5.4.2.8. Mentoring Communities of Practice

Although mentoring in *communities of practice* was mentioned in the pilot study, it was more common in the final study. Participants openly discussed their participation, and sometimes leadership, within these "outside" membership-based organizations and often described how the organization supported mentorship and/or knowledge sharing via support materials, etc.

Participant F1 described her interactions with one organization, "I was very active at an early in my career with the American Society of Civil Engineers… … I have a very special place, you know, in my heart for all those people and we all have maintained

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relationships over the years. I worked with some of them; I still keep in touch with them."
The sentiment that participant F1 described was quite commonly expressed during the interviews. Participants F6 and F8 openly expressed their fondness for similar memberships. For instance, F8 said, "I think you would say that kind of maybe mentorship, in practice, bears fruit in a lot of different ways. It certainly has for me, as a practitioner, just in the action of going back to these women who are perfectly fine without me, you know, they're like in their world, but we can have a peer relationship (and discuss anything)."

Participant F3 provided further insight into the difference in mentoring in your place of employment vs a community of practice. In an organization, "you can talk about projects, confidentiality, you know, you can help people, learn more about the company's finances, things like that. You know, when you're doing it with the community of practices it's more theoretical…." This was also expressed by F7 who shared his introduction to the Construction Management Association of America (CMAA) through his mentor. "He just said, hey, check this out," and I did. He continued quoting his mentor, "By the way, they're going to change (the Construction Manager-in-Training, CMIT) next year so do it quick. …I did the same thing with people that I mentor with the Envision program."

Participant F6 provided an extensive description of a mentoring event at another community of practice. He described,

> It was a speed mentoring event, kind of like speed dating. They had about 15 Fellows and about maybe 15 or more young architects. We went around, the fellow sat still and the young people, young people went around and we had like a five-minute chat, 45 times. Then we've filled out, basically we kept notes about the person and um, they kept notes and then we made recommendations. I made recommendations as to which people I thought would be good for me, and it turned out that the number one person that I thought was a good fit agreed. And she put me down. So we connected, had lunch a month or so ago and are supposed to stay in touch.

This extensive description outlines the process that many formal mentoring programs follow. While the specifics may vary, the act of bringing a group of interested individuals together, on their own or as part of an institution that influences its course – to determine which individuals will form the dyads that can share knowledge – often takes longer and requires more commitment from the organizers than from the participants.

The researcher's personal experience plays into the statements expressed in the previous paragraph. As noted earlier, she has been a leader in several Communities of Practice and created, developed, and established a mentoring program at the NewSchool of Architecture in San Diego. In each of the four mentoring programs she led, participated in, or

observed, i.e., with the AIA, DBIA, CMAA, and NewSchool, each was time consuming to organize, had multiple steps including enticing volunteers to participate, and involved a "matching process." In each instance, the leaders of the organization as well as the individuals who championed the program, spent many hours developing their program, matching individuals, and conducting events; this was to make it as easy as possible for the participants, i.e., the potential mentors and mentees, to find each other and begin an ongoing relationship. The NewSchool mentoring program even established quarterly events exclusively for the mentoring group; the intent was to provide a series of events that were exclusive to the participants and provided a basis for their relationship on an ongoing basis.

5.4.2.9. Mentorship Requires Trust

Mentorship requires a mutually trusting relationship. Although research often refers to trust as a major component of successful mentoring relationships, the pilot study participants rated it relatively low (17th). Interestingly, that was not the case for the final study participants who were more focused on it as a requirement for success as evidenced by its prominence, ranking 8th, in the hierarchy of the codes. Some participants acknowledged the need for trust, but not all. For instance, participant F1 didn't specifically mention "trust," but its importance was apparent in her comments about her mentor as well as his relationships in communities of practice. In both instances, she implicitly demonstrated a deep level of trust and commitment in those relationships. Likewise, F2 discussed his mentor without mentioning trust; nonetheless, he acknowledged that only a few, specific mentees received his knowledge. He said, "You had to want to talk to him, and then he would reciprocate if he believed in you." When participant F4 was discussing his mentees, he noted the "conscious effort" it took to encourage them to be "not just men but professionals in every sense of the way;" that effort extended beyond mere professional discussions. Later he returned to the topic, "I think that mentorship is also intimacy… …it's bonding with somebody… …on a personal level." That sort of relationship requires trust on the part of both individuals. As participant F6 described his relationship with a mentee, he noted that she'd given him some good advice about his career after his firm was acquired, "mentoring can happen in both directions… …I think (its) very valuable 'cause she knows me very well and she knows the situation…" which necessitates trust.

A lack of trust can adversely affect relationships. While discussing his firm's attitude about mentoring – especially regarding knowledge sharing – participant F7 indicated that he trusted his mentees from his past, but didn't trust his current leadership. When describing his

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past relationships with a mentee he demonstrated a level of intimacy and trust, "(I) don't see them too often, but the times that we do, you know, we're able to catch up and kind of get to it...." As a juxtaposition, he brought up an intentional lack of communication when people left the firm, "they just disappear; sometimes you get an email, sometimes you don't... ...the first thing that happens is everyone stops working." Some mentors seem to develop trusting relationships easily; participant F8 mentioned several key mentees during her interview, "she was an architect... ...there's another who was an artist, etc." In each case, she endeavored to listen to and take their advice.

5.4.2.10. Informal Knowledge Sharing

Informal knowledge sharing was more prevalent as a topic in the final study; this was primarily due to the pilot study's emphasis on informal mentoring, which rendered it a non-issue as the pilot study participants assumed, and sometimes openly discussed, their preference for informal mentoring and knowledge sharing. In the final study, the participants were open to formal mentoring, as well as mentoring in communities of practice, and other formalized opportunities for knowledge sharing.

Participant F2 discussed his pursuit of mentoring opportunities early in his career as a path to knowledge sharing, "I saw some (potential mentors) that were eager to be involved at that level, which I think is a very deep, it was kind of apprentice-master level...." He later continued the discussion by describing the situation as an owner in the practice, "we will have impromptu discussions here, kind of micro conversations...." As the interview was coming to a close, he also said, "it takes many conversations, I've found, in many different ways to make sense to people." Participant F4 also described the informal nature of knowledge sharing in his practice, "the intention is to, is to *pass on the culture of passing on the culture* (emphasis added)."

5.4.3. High Frequency Codes Aligned with Pilot Study: With a New Context

Some examples of codes that fed into the same sub-theme and candidate theme were *Experiential Mentoring*, *Group Mentoring*, *Mentoring in Communities of Practice*, *Mentoring in Educational Settings*, *Supervisors as Mentors*, and *Informal Mentoring*. All remained in the final study, although their role, importance and emphasis within the participants' experiences pivoted from the pilot to the final study.

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Figure 5.2. Candidate Theme: 5a Active Organizational Strategies Not Needed

Candidate Themes: Sub-Themes: Codes:
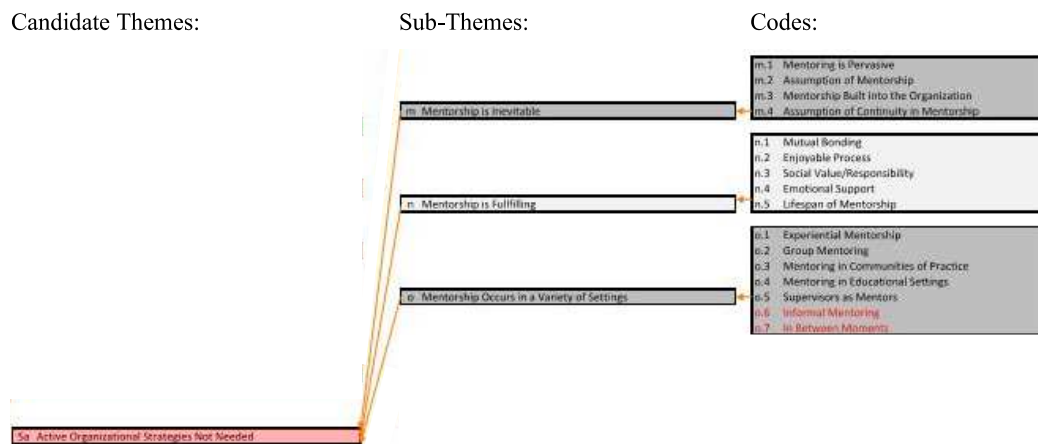
5.4.3.1. Mentorship Occurs in a Variety of Settings – New Context

      While these changes resulted in new *outcomes*, these codes could still be linked to the original sub-theme, *Mentorship Occurs in a Variety of Settings* (o). In the final study, this sub-theme, *Mentorship Occurs in a Variety of Settings* (o) still aligns with the candidate theme *Active Organizational Strategies Not Needed* (5.a), but within the final study, its meaning was altered to reflect the lack of consistency in participants' answers. Henceforth the associated candidate themes will be expressed as *Active Organizational Strategies (Not) Needed* (5.a & 5.b).

      After completing six interviews during the final study, the researcher noted that three participants mentioned active formal mentoring programs. None emphasized what members of the pilot study had emphasized; those comments became sub-code F.2 *Formal Mentorship Difficult*. Instead, they discussed formal mentoring as a *component* of the settings where mentoring occurs, i.e. on the job (experiential), within a group or community of practice, in an educational setting, or via a direct relationship with a supervisor. Each of these categories occurred in the pilot study as well and led to the sub-theme *Mentorship Occurs in a Variety of Settings* (o). Thus, the researcher categorized the final study participants' comments under these codes but noted their use within a new context.

      For instance, Participants F5 and F6 both discussed involvement in outside programs. Participant F5 mentioned his alma mater, "(University) has a formal mentorship program; it's in the second year…. …we have a mentoring agreement that we've come to, and (we've) signed the mentee's goals… and we agreed on how we communicate…."

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Likewise, F6 mentioned a mentoring program that's recently started within his profession's leading community of practice. The (specific demographic) Committee of (community of practice) "had a speed mentoring event… a five-minute chat, 45 times, we kept notes about the people, they kept notes, then we made recommendations." Once he and the mentee were matched by the committee, he elaborated, "we connected and had lunch a month or so ago; we are supposed to stay in touch." When asked whether he considered it to be a formal program, participant F6 said, "The relationship is sponsored by the (community of practice) but it's not formal in the sense of signing a contract or committing to something that has certain kinds of outputs or deliverables. We're sort of shaking hands and let's get together quarterly and track progress…." Of note, the potential or realized lack of participation from mentees was mentioned by both F5 and F6.

Conversely, F4 mentioned active participation on both the mentor and mentee sides, but since the program was managed by his firm, this wasn't surprising. When asked if it was *formalized*, he seemed unsure: "We have a formal (mentoring) program… …in the last few years it has become a real…" He then retracted the statement. "…we don't have an official program, but it is definitely conscious… …it's definitely conscious." He continued to explain, "We do meet once a month for a formal teaching and, um, and a lot of the time we go on into, you know, philosophies and whatnot, but there's no official time we meet for *mentoring*. …now every two weeks we need to call… we meet once a month for formal training too."

These findings represent a distinct change compared to the initial findings of the pilot study. Of the ten participants in the pilot study, none reported having formalized mentoring programs within their organizations, and the majority expressed strong, mostly negative opinions of formalized mentoring. Pilot study Participant P8 was very direct, "…I'm not a big believer in the formal mentoring program." As a result of this stark contrast, the researcher highlighted this area for further exploration.

During the last four interviews of the final study when a participant mentioned mentoring programs, the researcher intentionally pursued further clarification using probing, open-ended, follow-up questions such as "So how was mentorship promoted in the (organization)?" or "So how did that develop?" as well as drawing out or explanatory questions including "When did you propose the formal mentoring program to your firm?" The structured interview questions were developed in conjunction with the initial Interview Guide before the pilot study began to ensure that the semi-structured interview process aligned with the study's research question and objectives. By augmenting these questions,

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consistent with semi-structured interviewing techniques, the researcher was able to delve deeper in pursuit of additional data.

During the seventh interview of the final study, the participant proactively and repeatedly emphasized his support of mentoring, "I'm a huge proponent of mentor programs," and continued, "I also think the mentor program within companies is important," but qualified this support by stating, "I proposed that (in) my (current) company, it didn't really get well-received. I think some companies do it better than others and I think if you do it, it takes a lot of work to make it do it right." He explained that these comments were based on his previous experience in a large, international firm that actively supported a "formal mentoring program." He continued, "…they did a good job of describing your goals for the year and touching base about them and quantifying them to make sure that you were on the right track, probably to use it as a basis for raises and promotions and stuff like that. But it also worked because you had input, you could say 'I don't want to do this. I'll do this...'" He also mentioned his active involvement in two distinct communities of practice that he stated sponsored formal mentoring programs.

Participant F10's responses were similar. He was very positive about mentoring itself as well as mentoring programs, especially one program he participated in while working at a large, international, full-service consulting organization. When asked if the program was *formal*, he said, "it was sort of a 'one to many' relationship. So you'd have one mentor that probably had five, you know, five to ten maybe, people that they were mentoring at the time." He then summarized, "… (mentoring) was encouraged through the performance evaluations." As he matured in the firm, he began to "mentor as well… a number of people, five people." Overall, it was a good experience, "Good content though… Good material. So, I mean, I've carried a lot of that with me over the years." Participant F8, one of the two females in the final study, mentioned a mentor from a former firm,

> …when I was working at (a large, multi-national firm) for four years, I had a mentor. Um, and I think it's interesting, he's younger than me, but he had been there for 25 years and I had been there for like one or less. …we met every two weeks, [he was a] complete champion, [provided] complete advice in the corporate world, which, you know, in the end I had to leave... Um, and he left as well, and he's continuing to be an advisor... …that kind of maybe mentorship in practice, you know, bears fruit in a lot of different ways.

She also mentioned two specific membership-based communities of practice that helped her with key business initiatives. While serving as a mentor in her own company to a group of

women who collaborate on project-based work, she also founded an international organization. When the researcher probed to determine the status of this organization, suggesting that it was becoming a community of practice, participant F8 answered, "We hadn't named it that way, but we do get interns' inquiries all year around… I mean, I've never used that word (mentoring). I mean certainly if we're using it as a kind of give and take of knowledge… (pause) all my learning came from mentors."

As a senior leader, participant F9 also openly supported mentorship within specific circumstances that aligned with those expressed by many participants,

> I am a firm believer in the concept and philosophy of mentorship. I think in my career – and I started almost 30 years ago – it wasn't really a forced thing. It was something that naturally developed. And I think it's… …personally I think it's more real when it develops between two people that mutually developed a relationship and kind of develop that mentor, mentee relationship. We've tried in more recent years (in X firm), some more forced programs, but you're relying on, you know, two people that can get along with each other that had never met before and they've never worked together before. So that's seen some challenges in the adult environment. Um, but we do always try to align people with people that do like things or, um, personalities, if you will. We don't want to set somebody up for failure…."

Then, without prompting, he stated, I'm a "firm believer in it overall, I could not have gotten where I am without a number of people that I believe were my mentors at various phases of my career."

Others mentioned that their firms had formalized programs, but they were not directly involved in—nor had direct knowledge—of those programs. As part of the intensified focus on formalized mentoring programs after the first five final study interviews, the researcher pursued clarification from participant F7.

After describing the "formal mentoring program" in his past firm, F7 clarified that while he was aware of one of his past firm's mentoring programs, he had not participated;

> … they had a mentor program too but I don't remember how structured it was, but you definitely, you know, got a chance to pick somebody that you wanted to be your mentor. You know, I think there was a relationship there that you could build. … I'm not sure if it's because of the size of (the firm, that they) were able to do that and maybe smaller firms are able to do that, but I think it doesn't take much, probably to figure it out.

Participant F3, a vice president in his organization, also made it clear that while he was supportive of a formalized program, he had not participated directly, nor was aware of the details of his organization's mentoring program. When asked how the program was

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supported, he said, "She's in HR (and) very actively reports to (the CEO); (She's a) real breath of fresh air…. (Pause) I mean she does what they do, they try to match somebody from a different division, like somebody from CM with somebody within Transportation…."

The lack of personal participation on the part of F3 and F7 is telling. If such programs were active and truly woven into the culture of their respective organizations, senior leaders would likely participate, or at least have direct knowledge of the programs. Thus, the researcher concluded that these programs may not be fully integrated into the participants' firms, nor into their respective organizational cultures.

5.4.3.2. Informal Mentoring (o.6)

Unlike the five previously described codes, *informal mentoring* stood alone, apart from the new context generated by their connection to formal mentoring, which was found in the final study. Still considered a *high frequency* code, *Informal mentoring* was quite popular with both the pilot and final study participants, ranked fourth (4) in the pilot and ninth (9) in the final study. In each portion of the study, the participants described various forms of *informal mentoring*, but in the final study, *informal mentoring* was in juxtaposition to *formal mentoring*. Formal mentoring was not a factor in the pilot study as it was not a part of the participants' described experience; it was therefore not considered independently in the pilot study analysis. In the pilot study, the only code that related directly to formal mentoring was *formal mentoring difficult*. This was due to a unanimous neutral to anti-formal mentoring mindset from all pilot study participants. As a result, *informal mentoring* (o.6) became another high frequency code that aligned with the pilot study but was understood within a new context in the final study. Nonetheless, *informal mentoring* (o.6) still aligned with *Mentorship Occurs in a Variety of Settings* (o) and *Active Organizational Strategies (Not) Needed* (5a).

Fundamentally, references to various forms of informal mentoring were found throughout eight of the ten final interviews. For instance, participant F1 stated that she shares her experience in an informal way whenever possible, "I kind of purposely did that this morning… …I actually had coffee with him because I know he's going to be one of the next generation coming up." Pointing out the distinction between formal and informal mentoring, she elaborated from the mentee's perspective "you kinda just sit down and say, 'oh, I want to know where you've been and how you got there.'"

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Participant F7 also pointed out this difference, "My career was never founded on a formal mentorship program, which I would say is capital M, but more of an informal, people that kind of saw that I had talent and potential, but needed guidance and direction, and gave that to me and it was absolutely essential." Even though Participant F3's organization has a formal mentoring program, he also mentioned this distinction and his preference, "I think it's important for us to do these things informally because we can't rely on them and follow their prescription because we're in the field with the staff every day." Participant F8 was more direct about preference too, pointing to the word itself, "*mentor* just gives you the impression that it's a structure, too much structure. If people kind of shy away from that, we don't always like structure, I think it's just helping people out or being somebody that will teach or coach, that's mentoring."

Whether she knew it or not, participant F9 was also shying away from the term *mentor*, "I started hiring predominantly young women in my firm and realized later that I had been a mentor. I acknowledged it when those young designers started thanking me, saying 'you have been my mentor.' It's very informal, but it's teaching and coaching...." Afterwards, participant F9 described her personal experiences in seeking a mentor, "I would find mentors, people that have something I was interested in. I would gravitate there and say, 'Hey, let's, uh, let's go do something new together.'" These comments align with previous research that defines informal mentoring broadly, without a specific impetus from an organization.

Often these informal mentoring opportunities occur within the confines of a working relationship, but outside the participant's physical *work* environment. This was true in both the pilot and final study. As firms tend to hire from specific academic programs repeatedly, sometimes both the mentor and mentee are graduates of the same academic program. Participant P2 fondly recalled alumni events that both his mentor and he attended, "At the conclusion of the lecture, we'd walk them down to the house (a campus location specific to the architecture program), and have dinner together, and then talk architecture through the night." Participant P4 expressed his ongoing mentoring relationship, which expanded beyond their work relationship, becoming an ongoing, long-term friendship, and participant P5 described his experience with firm-sponsored mentoring, (you) "grabbed lunch with your mentor once a month, that kind of thing."

Likewise, Participants F1 and F5 mentioned going out for coffee, F1 to escape the constant interruptions that occur in the office and F5 because it's a *low-pressure* environment that can introduce mentoring to a prospective mentee, "they'll accept the cup of coffee

because it's not lunch or dinner or a night out on the town, but it's just a cup of coffee." Participants F4, F6, F7 and F9 mentioned going out to lunch and participant F2 mentioned dinner.

These off-site encounters provide an opportunity to get away and explain or elaborate on a subject. Participant F4 provided an example; he took a group of young professionals out to lunch, "I get to spend time with the guys, I'm trying, I mean, we were just having lunch together. We were talking about the Christmas party and you know, what was going on there…." In doing so, F4 was able to clarify some of the office politics that are revealed during such events.

5.4.4. New Codes and a Candidate Theme Emerged During Final Study

Four new codes emerged during the final study, 1) *Champions Support Mentoring Initiatives, 2) Mergers and Acquisitions Cause Loss of Knowledge*, 3) *Mergers and Acquisitions Affect Mentoring,* and 4) *In Between Moments*. Each is aligned with several sub-themes. The mergers and acquisitions codes map onto established and new sub-themes, established candidate themes, and ultimately, a new candidate theme, candidate theme number eight, *Contraction in Personal Investment*. After the analysis was complete, the researcher circled back to the earlier final study transcripts and the pilot study transcripts to adjust frequencies and/or validate previous results.

At this point, the researcher generated a revised Thematic Map with the new elements designated by red text or a red outline (see Fig 5.3.)

Figure 5.3. Revised Thematic Map
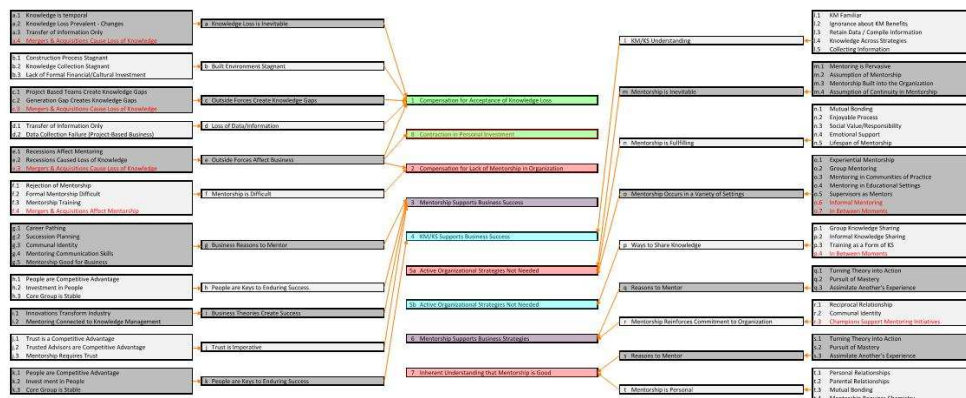
The first new code, *Champions Support Mentoring Initiatives*, mapped onto the Mentoring Reinforces Commitment to Organization sub-theme, the Mentorship Supports Business Strategies candidate theme, and ultimately onto the Mentorship is Effective theme (Theme IV.)

Figure 5.4. Code r.3 Champions Support Mentoring Initiatives

Candidate Themes:	Sub-Themes:	Codes:
		r.1 Reciprocal Relationship
		r.2 Communal Identity
	r Mentorship Reinforces Commitment to Organization	r.3 Champions Support Mentoring Initiatives
6 Mentorship Supports Business Strategies		
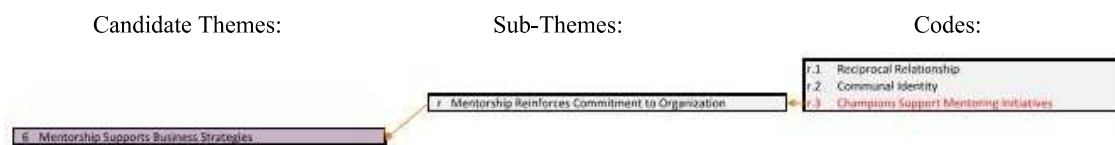
5.4.4.1. Champions Support Mentoring Initiatives

In several cases, mentoring was directly associated with a specific leader. Participants F3 and F4 repeatedly referenced specific leaders who were personally advocating for 'mentoring as a means of knowledge sharing'. When asked to elaborate, F3 said, "I think it was a lot to do with (CEO) and just his personality because he's so well known in the industry, that, believe me, he knows people." In their firm, although no formal mentoring program had been established over two years, there had been some forward movement as the CEO had designated someone in human resources to be an advocate to establish mentoring pairs, etc.; F3 elaborated, "…they're not really focusing on it, they're trying to, but it's like, like anything, trying to push a rock up the hill, it's up to the individual managers. …it's just going to take a long time. But at least (CEO)'s thinking in the right way.…"

Similarly, F4 stated that the organization's president had established and was managing a formal program that was supported and fully integrated into the culture of the organization. Throughout the interview, he mentioned the organization's "seven core values" and stated that "our intent is to have to bring people into alignment with those core values." He also highlighted several initiatives, "we do meet once a month for formal teaching…", the (president's) calling plan, "you need to call them every two weeks," and "you need to sit with them for (at least) a half hour. Although "there's no official time we're meeting for mentoring… he's made it more formal on his part." He suggested that the organization's president be interviewed to truly get a sense of his vision for the mentoring program.

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Participant F6 mentioned the mentoring program he established, before his firm was acquired, and actively lamented its demise. "We instigated a mentorship program (in my former firm) with designated individuals who were mentor and mentee, and who got together, chatting on a regular basis with annual reviews, but also informal chats." He elaborated on his commitment to the mentoring process, "you're administering to their needs, helping them through difficult times, and helping them to celebrate good times, helping them build their skills and career path, then mastering their professional skills." Since that opportunity no longer exists, he is now invested in the success of a formal mentoring program offered by his *community of practice* and is heavily involved in a committee that mentors and shares knowledge with others in their market focus, "…we've written things that are not so much about individual projects, but more emerging trends or different kinds of insights and connections or things that have happened that are shared widely through the profession."

As with participant F6, F9 champions mentoring within his organization, "I've never really had any formal training or program with my company, (pause) and nothing was ever assigned to me and I've never assigned people mentors. I just, I tried to build an environment where it can occur naturally." In contrast, participant F8 does not see herself as a champion for mentoring, "You know, I'm incredibly difficult. Yeah. I mean, if you go after that, I mean, I've always, much to my own chagrin shied away from pain, people…" although her descriptions of her work say otherwise.

At times, as the champion supported the mentoring initiative it became personal for the participant. This was true in both the pilot and final study. Participant F10 described this, "I was a young fella, you know, he really put himself out and wound up spending a lot of time with me. So, that project basically fostered that relationship." Likewise, participant F4 said, "He gave me real assignments. He gave me interesting things to do. He was willing to sit and explain things to me. He was willing to take me into situations." He later continued, "…there's a senior project executive at (firm name)… …(name) is probably more than 70 years old now, but he's kind of my mentor. He certainly supports me. I don't know why, I kind of worked for him back when I first started at the company (32 years ago)."
While reviewing the pilot study participant's interviews, it became clear that they also had "champions." Participant P4's champion has been consistent for more than three decades. Likewise, participant P7 mentioned several mentors throughout various stages of his career, but one truly stood out. He discussed that individual in detail, including several examples of how that mentor supported his efforts. Similarly, participant P8 spoke about his "service" as a

champion for his mentees; he'd invested professional and personal time in them and was frustrated when they didn't always respond positively.

Figure 5.5. Codes a.4, c.3, and e.3 plus New Candidate Theme
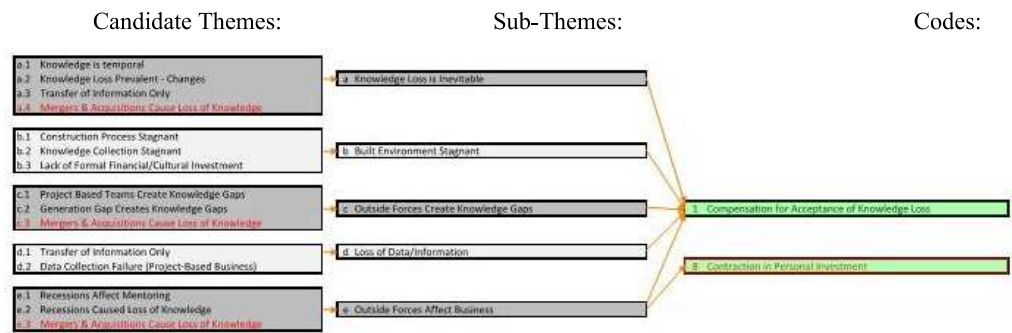
5.4.4.2. Mergers and Acquisitions Cause Loss of Knowledge

The second code to emerge from the final study was *Mergers and Acquisitions Cause Loss of Knowledge*, which was first noticed when final study participant F6 shared his experience with his firm's merger. During the interview, participant F6 began sharing his experience when his firm was acquired by a larger organization. As mentioned previously, his significant knowledge of the firm's projects, as well as his client relationships, etc., was not appreciated by the new organization; they wanted a "clean break." His comments were so strong, they made this issue extremely salient. At that point, the researcher began incorporating a new, specific question, "What has been your involvement with mergers and acquisitions?" If they answered with an affirmative statement of any kind, the researcher followed that question with a probing question, "What did they want when they acquired your organization?"

Participant F8 noted, "Well, there are more mergers and acquisitions now than ever in our world. I guess I don't follow that too; I mean, I used to…," She continued wistfully, "I do see the big ones, the (firm name) and all those people... …Others will take over the reins…." As an experienced professional with large firm experience, she'd been a part of previous mergers earlier in her career. Even so, as with many of the study's participants, she was focused on her present situation, i.e. leading a small, boutique firm with a well-defined specialization. Inherent in her statement, however, is an understanding that employees will leave, the culture will change, and knowledge will be lost. When asked the same questions,

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participant F10 had a unique perspective, "I've never been on the other end of it, we've acquired other firms." He continued,

> My observation has been that those people, maybe half of the people stay long term. That's a tough notion on both ends. (As an) employee of the other, you just can't, can't get over it. You know you're going to leave. Even if you don't, you just can't see the upside. Some people can't ever get there. So that's usually half the people in my observation. And then, you know, the others are, (pause) it's a whole new ball game and they're on board. But we definitely ended up with some good people with new relationships and new clients and it helps us expand, expand our business.

As someone who'd participated in acquisitions, albeit from a distance, he also understood and accepted that many employees leave due to massive changes. In each instance, knowledge was lost.

Likewise, participant F7 also participated in a merger, but was not "directly affected." In a previous firm, while he was a project manager, the firm joined forces with another to broaden its portfolio and expand its reach. Even though he was a "lower level manager," he felt many of the feelings that participant F10 mentioned in his interview, "it was a challenging time, for sure. Everyone was concerned about the upcoming changes and no one knew what would happen." One of the senior-level leaders in his firm reassured him that nothing would change on a project level, but they would benefit from the increased marketing efforts and HR benefit efficiencies. When asked if those benefits occurred, participant F7 said, "things did become more efficient, over the course of the next year many people lost their jobs due to redundancy including the HR staff and accountants in the regional offices. Many were laid off as the new, larger organization centralized support services." As he had worked closely with some of those individuals, he understood what was lost, "when this occurred, things became more efficient, but the way we'd worked was gone. Many others left, including me – eventually – so I'm not sure what they gained." As his statements imply, he also understood that knowledge was lost.

After completing the final study interviews, the researcher reviewed the final study's previous interviews looking for other instances of mergers and/or acquisitions, or other significant personnel transitions. Participant F1 didn't explicitly mention mergers or acquisitions but did discuss the changes that occur when individuals leave an organization. Throughout her career, she'd transitioned into new firms several times and even changed roles as her interests waned in one area and grew in another. In one

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firm, in particular, she advocated for training, which she received, "I learned a lot from those seminars and have applied those skills to my last several positions." As the interview progressed, she brought that comment up again, "The training I mentioned earlier, that firm's investment was lost during the leadership transition. After I left, and the president retired, no one benefitted from it."

It was also important to reexamine the pilot study interviews to determine their attitude regarding mergers and acquisitions. Interestingly, none of the pilot study participants mentioned mergers and/or acquisitions; instead, they focused on recessions (another outside force). Recessions were mentioned by five of the ten pilot study participants; in each case, whether the mentoring experience is successful or not was not their focus, no matter what they were discussing, the participants became emotional. For instance, P6 became emotional when his mentor left abruptly and P9 expressed his annoyance at the younger staff members who rebuffed his mentoring attempts. In both cases, the result was the same; an outside force prompted the loss of critical knowledge.

Figure 5.6. Code f.4 Mergers and Acquisitions Affect Mentoring

Codes:	Sub-Themes:	Candidate Theme:
		2. Compensation for Lack of Mentorship in Organization
f.1 Rejection of Mentorship f.2 Formal Mentorship Difficult f.3 Mentorship Training f.4 Mergers & Acquisitions Affect Mentorship	f. Mentorship is Difficult	
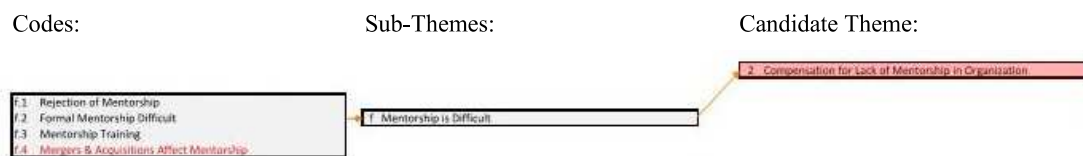
5.4.4.3. Mergers and Acquisitions Affect Mentoring

At times the same questions elicited responses that pertained directly to the mentoring relationship. As with the previous code, *Mergers and Acquisitions Affect Mentoring* was first noticed when final study participant F6 shared his experience with his firm's merger. Participant F6's abrupt departure shortly after his firm was acquired left some of his mentees adrift. He elaborated on this when discussing the new leadership team's desire for a clean break, "…one told me that he would miss me and miss our talks, another let me know that he would happily change firms once I determined what I was doing..." In both instances, the relationship with their mentor was stronger than their loyalty to the firm. Given that he was participating in group mentoring, these statements were probably just the tip of the iceberg, i.e. indicative of how other mentees felt, but didn't express. This loyalty was expressed

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during participant F10's interview as well. Participant F10 described his decades long relationship with his mentor, "…we worked together more than 20 years ago, he left first, then I left, after a significant merger changed the organization's culture. A few years later, I started working with him again." He continued, "…he took me under his wing and has given me all of the knowledge he had in (a specific market)..."

Some participants felt that mentoring was more difficult after a merger or acquisition. When changes were implemented, such as the centralization of support services, the creation of new teams, and the closing of entire offices, stress increased and mentoring decreased. As participant F7 described his experience, not only was loss of knowledge an issue, but the reduction in mentoring was also a factor. The senior-level leader who tried to reassure him was also his mentor, "…during that time our conversations tended to center around the changes that were occurring, but it became more difficult to get together afterwards because he was dealing with new issues, and I was dealing with a new team." He continued, "…he had to go to some of the offices that were consolidating or closing, which wasn't easy, so our time became more limited."

At the same time that the researcher was reviewing the previous interviews obtained earlier in the final study – before mergers and acquisitions became a factor during the interviews – she also searched for instances that affected mentoring. Participant F5 has worked at several firms throughout his career; he mentioned one that merged with another firm, "…earlier in my career I had an opportunity to lead a sector during massive changes, it was quite the experience. I knew we needed to keep our young ones, so I made sure I checked in frequently…"

As with the previous code, *Mergers and Acquisitions* was not an area of focus for the pilot study participants. Thus, the researcher again extrapolated from the pilot study's *recessions* discussion; by aligning mergers and acquisition with recessions, as both were outside forces, she found participant P9's comments about recessions affecting the loss of talent as another point of alignment for these new codes.

Figure 5.7. Codes o.7 and p.4

| Candidate Themes: | Sub-Themes: | Codes: |
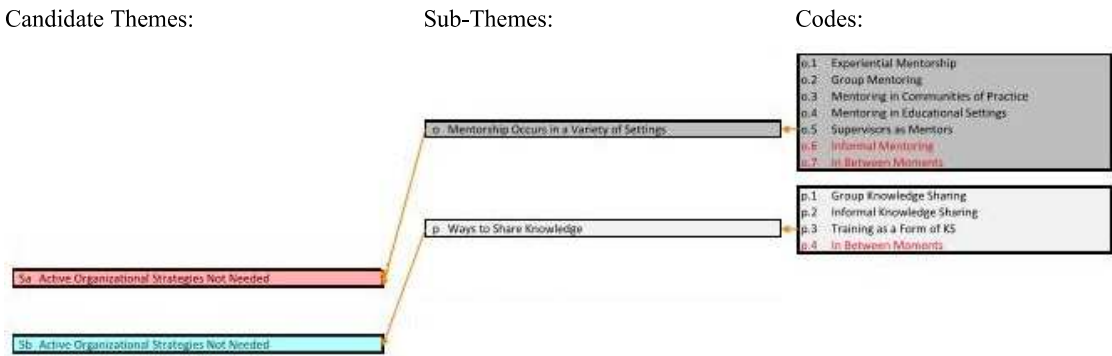
5.4.4.4. In Between Moments

When informal mentoring opportunities arise spontaneously and aren't part of a longer term, informal mentoring relationship, they are considered *spot* mentoring, i.e., *just-in-time* mentoring, *episodic,* or *situational* mentoring. These opportunities arise due to circumstance as a by-product of a larger initiative such as James, Rayner and Bruno's 2015 librarian study in which the librarians agreed to answer questions without preparation, or Abbot and Natkin's legal industry initiative; his study focused on lawyers who agreed to be available to answer questions about their expertise on an *ad hoc* basis. Neither of these is traditional mentoring, they are closer to strategic knowledge sharing, nor are they examples of mentoring during 'in between' moments.

Many of the examples highlighted under informal mentoring are more specific examples of mentoring that occurred during 'in between' moments. Although it sounds similar, this type of mentoring is different from the typical definition of mentoring, and more specifically from the practices known as *spot, just-in-time, episodic*, or *situational* mentoring. Those mentoring practices are focused on experienced professionals sharing knowledge on an *ad hoc* basis with those who *actively* pursue it.

That is not the case with mentoring that occurs during 'in between' moments. Although scholars have identified numerous examples of informal mentoring, none have focused attention on mentoring that occurs during 'in between' moments. Unlike mentoring that is *actively* pursued, proactively organized – or not – these are examples of mentoring that occurs during 'in between moments' when two individuals share knowledge spontaneously.

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For example, when participant F5 walked around the office with their mentor or F1 grabbed a coffee with their mentor, it was not proactively planned or even actively pursued by either individual. Likewise, when participant F9 described her pursuit of a mentor, it was impromptu, she simply took advantage of an opportunity. Participant F7 demonstrated this when he elaborated on his mentoring process,

> You know, you might want to look and try this way instead, or you know what you're doing, you're going down the right path. Keep going. I don't even think about it as being a mentor. Just, you know, pulling somebody aside, 'Hey, say you're doing a good job' or 'listen, I, you know, I thought I saw what you did and maybe, you know, you want to try something else…'

'In between' moments can occur in or outside the office, at any point, and be initiated by either the mentor or mentee. Participant P2 had mentoring experiences with professors after a lecture, P5, F4, F6, F7 and F9 "grabbed lunch," F1 and F5 escaped constant interruptions at the office by going out for coffee, and participant F2 went out to dinner. Even briefer encounters can be characterized as 'in between' moments. Pilot study participant P5 mentioned "…giving somebody a pat on the back, um, helping somebody set a path or correct the path, um, giving somebody a boost when they needed to, some cases to bring somebody back down to reality…" as examples of these momentary, informal mentoring opportunities.

Likewise, F1 described distinct instances of 'in between' moments, "(it's) starting to happen more naturally because people are just coming around to talk to me…." Participant F2 echoed the unprompted nature of these interactions, "I can just tell and it turns out, you know, those people tag along for the ride and you just (find), it's mutual…" as did participant F3, "the teaching moments sometimes, you know (are) right there, we can't wait for things."

Taking a walk was also mentioned as an opportunity for an *'in between' moment.* Participant F4 described their ad hoc nature, "… when I'm with the guys, we're in the field, I'm just, as we were walking along, I'm asking them, what do you see?" Taking a small break in a design office can also be an opportunity; F5 said, "…oftentimes I'll invite them just to have a walk around the office..." Participant F9 summed up the mentee's perspective, "I learned something new every day from some people that I consider my mentors now and they don't, they may not even know that I consider it [sic] my mentor." Also speaking from the mentee's perspective, F7 said, "I see my mentor's metaphors and often bounce ideas off of them as I, as needed, but it's not, it's not structured and maybe that's better."

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Interestingly, a distinct characteristic of each of these moments was the *face-to-face* nature of each interaction. In addition to their spontaneous nature, each occurred when the mentors and mentees were nearby, i.e. in the office, at the job site, immediately following a meeting, etc. The importance of these direct interactions was acknowledged in studies focused on organizational learning and knowledge management/transfer, including Karkoulian, Halawi, & McCarthy, 2008; Newfeld, Wan, & Fang, 2010; Tsouri, 2019, Hollenberg, 2020. Participant F8 described it this way, "…it's being somebody's trusted advisor, if somebody *came in here* and asked me for career advice and they felt comfortable enough to do so…" as did participant F10, "…and so he and I together, *in a room*, in a project, we can deliver really quality results."

Additionally, since these '*in between*' mentoring moments aren't planned or organized, they often aren't captured by knowledge management systems. For instance, of the numerous '*in between*' *moments* mentioned throughout this study, none of the participants described capturing the knowledge shared with their mentees in a knowledge management system. Even so, this does not diminish the worth or effectiveness of the knowledge. While investigating mentoring's role in knowledge management, Karkoulian, Halawi, & McCarthy, 2008; Newfeld, Wan, & Fang, 2010; and Hollenberg, 2020, found that individuals learned more by interacting with others, especially in situations where they could create new meaning from contextualized, experiential opportunities. Project-based, construction meetings and job site visits are prime examples of these experiential opportunities. When asked *how* he mentors, participant F10 said:

> That's a great question. It's a matter of just having them first of all,
> observe and learn the way. I think that's how I did it with (his mentor).
> By just watching him and listening to him and what he was saying, and
> you know, after a while you kind of pick it up and say the same things,
> hopefully… …and once you get it, then you get it. You start to see it.

Answering a follow-up question, P10 added, "I don't think you can have this shared knowledge through electronic means… …but I think shared consciousness or knowledge comes from shared experience and storytelling and lots and lots of real conversations.

5.4.4.5. Contraction of Personal Investment: A New Candidate Theme

As a new candidate theme, *Contraction of Personal Investment* (8.), encompassed the sub-theme *Outside Forces Affect Business* (e.), which is an outgrowth of three codes,

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Recessions Affect Mentoring (e.1.) and Recessions Caused Loss of Knowledge (e.2), and a new one, which was discovered during the final study, Mergers & Acquisitions Affect Mentoring (e.3.). From the perspective of the study participants, each code emanated from an "outside force," or exogenous shock, beyond their control, e.g., a recession or a merger/acquisition – or a decision that was made by someone else.

In each case, the participants had an emotional response to the exogenous shock that affected their perspective regarding future events. The after effects of the exogenous shock were personal – from participant P6's response to feeling abandoned and overwhelmed after he was left employed after others were laid off or resigned, to P9's response to "recession proof kids," to P9's to his "missing talent." Likewise, the after effects of a merger or acquisition were personal, as described by F6's abrupt termination after his firm was acquired, to F10's loyalty to his mentor years after they'd worked together before a merger separated them.

The results of the exogenous shock affected the study participants' perspectives at work too. Due to these experiences, they were less inclined to invest in current employees, team members, and even in firms, and were less inclined to share their knowledge, i.e. to mentor others, which is the opposite of generativity, (see 2.2.6. Kram's Mentor Model Relationship).

Figure 5.8. Final Thematic Analysis
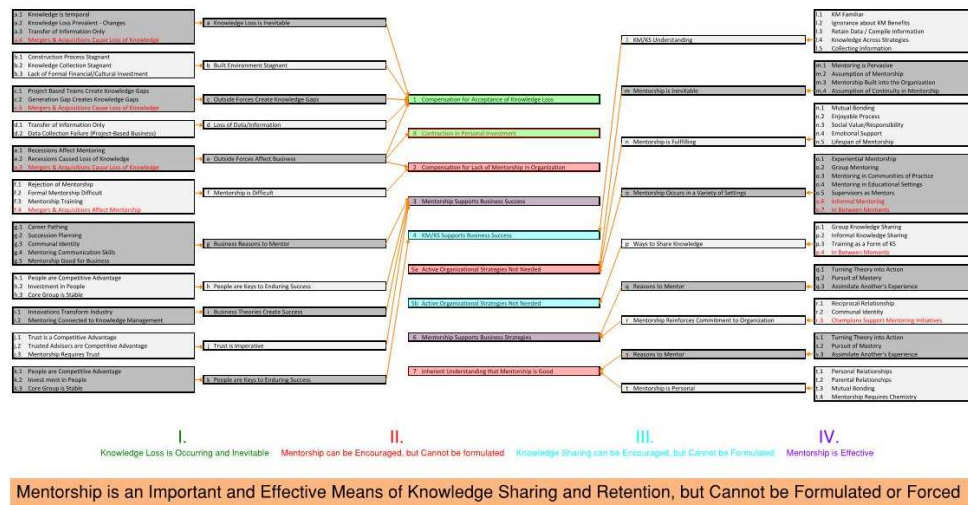
After adding the new codes and the new candidate theme, a more defined, holistic view of the themes found during the pilot and final study emerged; nonetheless, the four final themes established in the pilot study remained, as did the final statement.

5.4.5. Final Study Findings versus Pilot Study Content Analysis Findings

As referenced in Chapter Three Methodology and the Chapter Four Pilot Study Data Collection and Analysis, Content Analysis was found to be skewed through introduced bias and was therefore no longer a purely quantitative approach. However, it was helpful when viewed from a *qualitative* perspective in both the pilot and final studies, and as a form of validation for the results obtained through Thematic Analysis.

The most frequently used codes in the final study aligned with the findings from the pilot study's content analysis.

Table 5.4. Plot Study Final Content Analysis Frequency Word Tables (words 1-20)

	Word	Count	Similar Words
1	works	286	work, worked, working, works
2	people	238	people, peoples'
3	firm	203	firm, firms
4	mentors	151	mentor, mentored, mentoring
5	time	144	time
6	projects	139	project, projected, projects
7	job	132	job, jobs
8	buildings	93	build, building, buildings
9	learn	91	learn, learned, learning
10	knowledge	87	knowledge, knowledgeable
11	managers	77	manage, managed, management
12	company	76	companies, company
13	started	68	start, started, strarting, starts
14	talk	65	talk, talked, talks
15	new	59	new
16	mentorship	58	mentorship, mentorships
17	program	57	program, programs
18	help	49	help, helped, helpful, helping, helps
19	experience	47	experience, experiences, experiment
20	school	47	school, schools

	Word	Count	Similar Words
1	works	286	work, worked, working, works
2	people	238	people, peoples'
3	firm	203	firm, firms
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14	talk	65	talk, talked, talks
15	new	59	new
16	mentorship	58	mentorship, mentorships
17	program	57	program, programs
18	help	49	help, helped, helpful, helping, helps
19	experience	47	experience, experiences, experiment
20	school	47	school, schools

Although the researcher found Content Analysis problematic and dropped it from the final study, she noticed that the five most frequently found individual words recorded in the pilot study's Content Analysis findings, i.e. *works, people, firm, mentors* and *time* directly aligned with *Investment in People*, the most frequently used code in the final study (1st), and *People are Competitive Advantage*, which was ranked third in the final study (3rd). Likewise, *Supervisors as Mentors*, the second most frequently used code in the final study (2nd), was linked to the first twelve words in the Content Analysis List: *works, people, firm, mentors,*

time, projects, job, buildings, learn, knowledge, managers, and *company.* This further confirms the validity of the final study's results and the importance of these topics to the participants.

5.5. Study Validation

As the last step in the study, the validation process is necessary and provides an alternate view to confirm the data's results. The methods used to validate qualitative studies are many and varied; thus, many approaches were considered, including a mixed-methods approach to the research. When Content Analysis was abandoned after the pilot study, validation became even more necessary and challenging. Numerous options were considered, but the researcher finally settled on sharing an executive summary of the aggregated data (Appendix A) with the participants to obtain their feedback. The researcher obtained consent from 10 randomly selected participants of the original study (nine Caucasian and one South Asian.) Each was sent the executive summary via email, followed by a phone call or teleconference. Five open-ended questions were asked:

1. What did you think of the Executive Summary?
2. What sections did you find compelling?
3. What stood out as particularly accurate or inaccurate?
4. What would you add or clarify at this time?
5. What might you add at this point?

The participants' responses were very informative. Eight of the ten participants expressed overall satisfaction with the executive summary; one participant said it captured the basics, but "would have liked more details to determine its accuracy" and the other took issue with the definition of knowledge management and stated that "databases weren't bad."

Two participants found the knowledge sharing section compelling as they were not familiar with the concept before the study. The other eight didn't call out that section directly but didn't dispute the findings. Instead, they focused on the informal mentoring section, particularly the section about *in between moments.* Overwhelmingly, this section was deeply considered and found to be truthful; one participant mentioned that it was well-thought-out," while another said it was "gripping" as they'd "always taken those conversations for granted." No one mentioned any inaccuracies. As to points of clarification, none of the participants mentioned areas that needed clarification apart from the request for additional details. Three indicated an interest in reading the entire study and requested a copy once it

was finalized. The researcher said she was happy to oblige but warned them that it would be a lengthy document. All said they had nothing to add to the document; one stated that they "didn't know what they might be missing," in a warm, jovial tone. The study's intent of capturing the perspectives of industry leaders in NYC during 2018 and 2019 seems to have avoided errors or omissions while generating additional interest among participants.

In summary, the feedback from the executive summary was generally positive and validated the researcher's analysis and the results of the study *in toto*.

5.6. Chapter Summary

This chapter began with a chronological review of the final study's data gathering process, analysis, and results, then transitioned into the findings, adding several new codes, which were distinct from the pilot study's results. Even though four new codes were found while analyzing the final study data, they aligned with several established sub-themes and candidate themes, only establishing one new candidate theme, *Contraction of Personal Investment*. Afterwards, the Thematic Map was revised to address these changes (see Fig 5.8.)

The codes were then separated into four distinct categories based on the comparison between the pilot and final studies: High Frequency Codes Aligned with the Pilot Study, High Frequency Codes Not Aligned with Pilot Study, High Frequency Codes Aligned with Pilot Study: With a New Context and New Codes Emerged During Final Study. Afterwards, the final study's findings were compared to the pilot study's content analysis findings to further validate the overall findings of the entire study. To finalize the results of the study, the validation process was completed utilizing the semi-structured interview process to engage the mentors in a follow up discussion of the study's results as expressed in an executive summary. Results were generally positive and confirmed the validity of the study's results.

The next chapter – chapter six – will address the findings of the entire study and extrapolate those findings to discuss the advantages of and testing of mentoring plans as well as the mentor's perceptions of mentoring and knowledge sharing success. The key attributes of mentoring programs will also be discussed in juxtaposition with the three leading mentoring programs, i.e., Kram, Allen, and Leonard. After, the researcher will share the participants' responses to the Covid-19 crisis, which occurred while the final study was being analyzed, thus affecting the validation process and findings.

CHAPTER SIX: FINDINGS AND DISCUSSION

Having thoroughly explored the data in the previous chapters, this chapter outlines the key findings of the research—considering the pilot and final studies in aggregate and from a more generalized perspective. After reintroducing the eight candidate themes, an extensive discussion of the four final themes and the summary statement occurs, which then transitions to the study's overall findings and an extensive discussion of the resulting research findings. Additionally, follow up interviews completed after the Covid-19 crisis address the impacts of this massive exogenous shock.

6.1. Introduction

The aim of this study was to explore how to improve mentoring programs as a resource for knowledge sharing in the built environment. After completing the analysis of the pilot and final studies, the researcher was able to describe the detected phenomena and form generalizations about various facets of these phenomena. These generalizations are based primarily on the findings formulated through the literature review and the thematic analysis conducted on the ten initial interviews from the Pilot Study as well as the ten concluding interviews of the Final Study.

Using the 60+ codes as a starting place, when the ten final study interviews were analyzed, the researcher determined that the majority of the codes obtained through the final study analysis were consistent with the findings of the pilot study. As such, the basis for the final analysis of this research was the combined codes (see fig. 6.)

Figure 6. Frequency Bar Chart (Pilot and Final Study)

Pilot and Final Study Code Frequencies
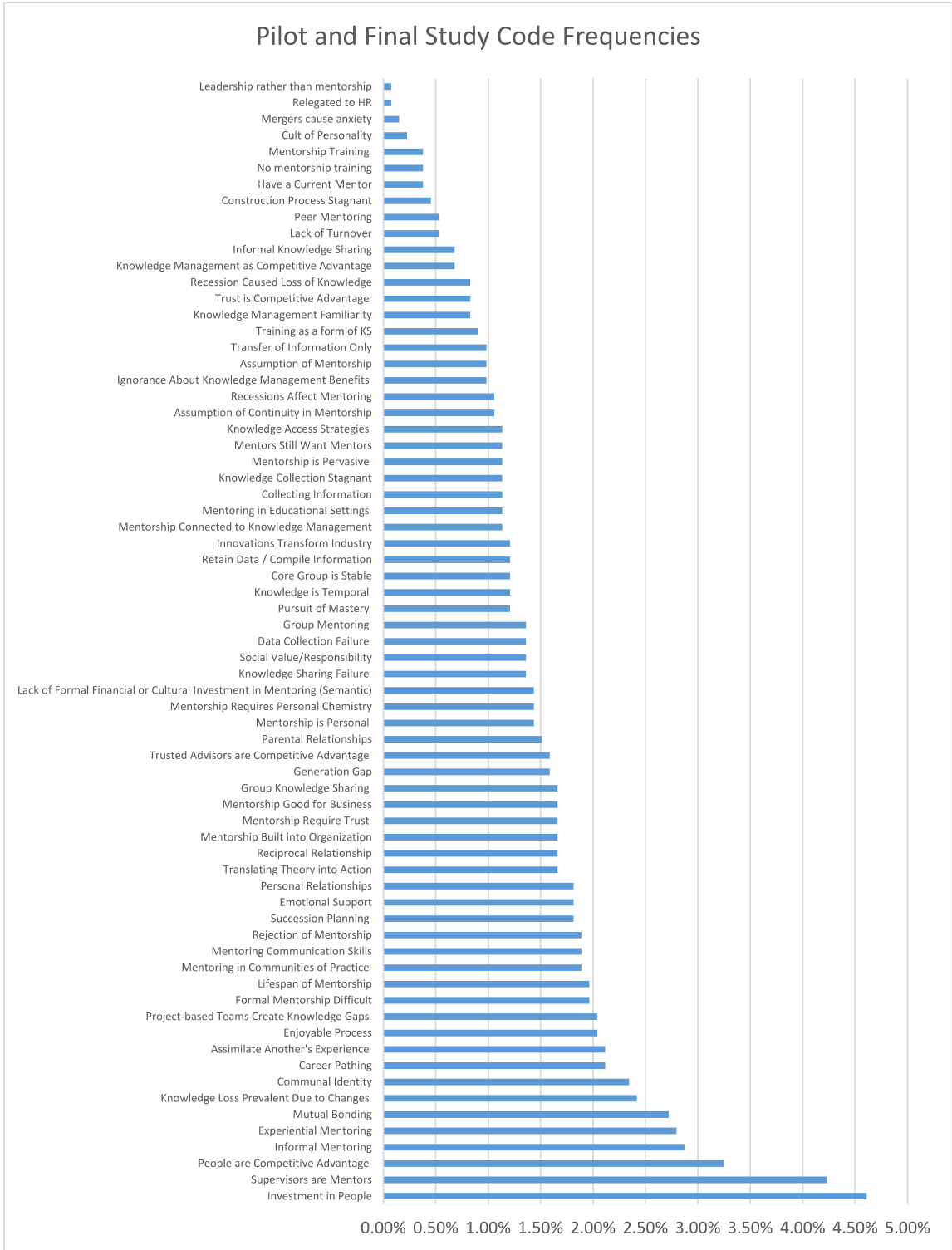
6.2. Final Eight Candidate Themes

Following the same process outlined in chapters Four and Five, the 60+ codes were analyzed, synthesized, and ultimately merged into eight *candidate themes*. These were: (1) Compensation for Acceptance of Knowledge Loss; (2) Compensation for Lack of Mentorship in Organization; (3) Mentorship Supports Business Success; (4) Knowledge Management / Knowledge Sharing Supports Business Success; (5a/5b) Active Organizational Strategies (Not) Needed; (6) Mentorship Supports Business Strategies; (7) Inherent Understanding that Mentorship is Good; and (8) Contraction of Personal Investment. Since the definitions of the first seven candidate themes were discussed in Chapter Four, and Contraction of Personal Investment (8) emerged during the Final Study, it alone will be addressed in more detail in this section.

The seven original themes were reinforced by the final study, although the emphasis on specific codes and themes was augmented. As defined during the Pilot Study, *Compensation for Acceptance of Knowledge Loss* was founded on the participants' appreciation for knowledge as a resource that has value and can directly affect an organization's profitability, but that hasn't been a pragmatic pursuit in their organizations. Leaders are directly responsible for the knowledge processes in their firms. When asked directly, none of the participants related proactive, organized processes to address knowledge loss. When asked to consider knowledge loss and compensation thereof, these leaders responded with negative or negating comments.

Likewise, participants clearly understood that mentoring was a beneficial process. When asked to consider mentoring in their organizations, these leaders clearly emphasized informal mentoring and downplayed formal mentoring, even in the final study. When the final study participants mentioned formal mentoring programs, they weren't negative about the programs but didn't have examples of long-term success or viable outcomes. They also never mentioned processes that would capture the knowledge shared within the mentoring dyads. Instead, they downplayed mentoring interactions, thus, the second candidate theme was also retained, *Compensation for Lack of Mentorship in Organization.*

Despite these outcomes, *Mentorship Supports Business Success* was found to be an important candidate theme, as the majority of the participants actively tied mentoring to business success; in parallel, *Knowledge Management / Knowledge Sharing Supports Business Success* was also determined as a contributing factor to their overall belief in the

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mentoring process. It was clear that all participants found mentoring and knowledge sharing to be important components of a successful organization.

Also retained from the pilot study, candidate themes 5a and 5b, both named *Active Organizational Strategies Not Needed,* were still valuable in the final study but were augmented to address the importance that final study participants placed on formal mentoring. In the pilot study, participants acknowledged that mentoring and knowledge sharing were important while admitting that none of their organizations had programs to support those efforts. In the final study, participants recognized their importance and openly discussed their familiarity and involvement with formalized mentoring programs. They also connected formal mentoring to knowledge sharing within these programs. Even so, the participants admitted ignorance of the details regarding these programs. This led the researcher to question their existence as *integrated programs* within their organizations. After all, as leaders in their organizations, the participants would have been aware of and involved in *active* programs. As such, the candidate themes were retained but were tweaked to acknowledge these differences through the addition of parentheses around the word 'Not" in these candidate theme names.

On the other hand, they were aware of the processes involved in the sixth candidate theme, *Mentorship Supports Business Success.* As defined by the pilot study, this theme encompassed participants' comments that reinforced the link between mentorship and their organization's strategic planning efforts. As the participants of both studies were familiar with the processes and details about their organizations' business plans, this was a clear, straightforward theme throughout both studies. The seventh candidate theme, *Inherent Understanding that Mentorship is Good*, referred specifically to the perceived *support* that participants mentioned regarding mentorship and the mentoring process. The participants were overwhelmingly positive about mentoring and openly discussed their support of mentoring processes, real or perceived, within their institutions.

Nonetheless, after finishing the analysis of the final study interviews, a new candidate theme emerged: *Contraction of Personal Investment*. Upon additional review of the pilot study, it was solidified as a candidate theme that was evident throughout the entire study. During the pilot study, the *recessions* codes were established; while recessions were briefly mentioned in the final study, much more common were comments that focused on *mergers and/or acquisitions*. After reviewing these codes holistically, it became clear that these codes led to a broader, more pervasive issue, the participants' observations about *disruptions* that occurred due to *outside forces* that directly affected themselves, their organizations, and the

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industry. These *disruptions* could lie outside their organization, such as recessions, or simply be outside the participant's control, such as mergers or acquisitions. In each case, the outcome was the same; when an organization was stressed, *contractions in personal investments* were a clear outcome.

This was a latent outcome that was expressed in the study by comments such as "(documentation) obviously didn't fill in the blanks" when a key staff member left their organization, or "at that point there was no more mentoring" when one of the participants described his mentor's departure. These *contractions* were also evident when one of the participants described his 3000-mile move – which led to a new office, in a new region, and a new mentor. Another described his feelings of resentment when rebuffed by younger staffs' lack of interest and indifference to his attempts to share knowledge. *Contraction of investment* was also expressed when one participant wanted to stay involved in his firm after an acquisition, but the firm just wanted "a clean break." In his words, 30 years of experience and firm history just "walked out the door."

Contractions in personal investment also affected informal mentoring, particularly the mentoring and knowledge sharing that occurred during 'in between' moments. When a disruption occurs, no matter the impetus, the "impromptu discussions" and "micro conversations" that occur spontaneously between a mentor and mentee during 'in between' moments are greatly diminished or completely quashed, intentionally or unintentionally. When negative stressors affect office culture, *trust* is reduced, and in-depth conversations and *relatedness*, i.e., feeling connected to others and having close relationships, are diminished, (Fleig-Palmer & Schoorman, 2011; Saini, Arif, & Kulonda, 2018; Tsouri, 2019; Burmeister, Wang, & Hirschi, 2020). Both lead to a contraction of personal investment on both the mentor and mentee sides, which reduces mentoring opportunities and knowledge sharing and makes the organization less effective and viable in the long term.

6.3. Final Themes

After the final study analysis was complete, these eight candidate themes coalesced into the four *themes* that originated in the pilot study, which were generated inductively and aligned based on the study's finalized themes:

I. Knowledge Loss is Occurring and Inevitable;
II. Mentorship can be Encouraged, but Cannot be Formulated;

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III.   Knowledge Sharing can be Encouraged, but Cannot be Formulated; and

IV.   Mentorship is Effective.

6.3.1. Knowledge Loss is Occurring and Inevitable

Initially encompassing only one candidate theme, *Knowledge Loss is Occurring and Inevitable* now includes (1) *Compensation for Acceptance of Knowledge Loss* and (8) *Contraction of Personal Investment*. As discussed earlier, this theme is based on numerous codes that denote the participants understanding that *knowledge itself is important* and that knowledge management and knowledge sharing are important. Even so, none of the participants, as leaders in their organizations, have led or been directly involved in programs that address these important issues. As a result, participants were resigned, and at times somewhat defensive and/or negative, about their organization, their role, and/or their staff's interest in engaging with these important initiatives. Some of their responses demonstrated a resignation about the situation; none left the interviews with a clarion call to address these important topics.

Throughout the study it was also evident that *generativity* – an awareness that their career was coming to an end, which led to a desire to share knowledge and skills – was supported by the participants' responses, (Levinson et al., 1978; Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021). This was also supported by research, particularly by Kram (1998) and Allen, Finkelstein, and Poteet (2009) who determined that *generativity* facilitated intrinsic satisfaction, which is also a benefit of mentoring programs, (Fleig-Palmer & Schoorman, 2011; Maynard-Patrick & Baugh, 2019; Burmeister, Wang, & Hirschi, 2020; Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021). Participants also expressed resignation about *outside forces* that directly affect the industry. Some of these *forces* occur cyclically—such as periods of boom and bust — and felt completely outside of participants' control. Each participant had experienced at least two—and up to five—boom and bust cycles in the economy; with each successive cycle further feeding their resignation. In the final study, participants also mentioned *mergers* and *acquisitions* as an additional outside force. As such, participants expressed an innate understanding and acceptance that, when such events transpire, *knowledge loss will be accelerated*.

These elements, expressed by the participants, align with literature focused on project-based, organizational learning, which states that knowledge and knowledge sharing are important, especially those face-to-face interactions that promote idea generation and the

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resolution of issues, (Tan et al, 2010). When these interactions occur within knowledge networks, especially dyads, (Karkoulian, Halawi, & McCarthy, 2008; Tan, et al, 2010; Tsouri, 2019) they are often described as mentoring opportunities, as mentorship is most commonly described as an act whereby a more experienced person shares their knowledge with a less experienced individual, (Dougherty, Turban, & Haggard, 2007; Raabe & Beehr, 2003; Ghosh & Reio, 2013; Scandura & Pellegrini, 2007; Eby, Rhodes, & Allen, 2007; Allen, Finkelstein, & Poteet, 2009; Gettman, 2008; Gruber, 2020). Therefore, at its most basic, when knowledge isn't being shared, mentorship does not exist.

Even so, none of the participants had active knowledge sharing programs within their organizations. Thus, it became apparent that the participants, and their colleagues, were not prioritizing knowledge management within their organizations, which led to the study participants' resignation that knowledge loss was inevitable.

6.3.2. Mentorship can be Encouraged, but Cannot be Formulated

An outgrowth of three candidate themes—(2) Compensation for Lack of Mentoring in Organization, (5a) Active Organizational Strategies (Not) Needed, and (7) Inherent Understanding that Mentorship is Good—*Mentorship can be Encouraged, but Cannot be Formulated* evolved throughout the study. Originally, it addressed the pilot study participants' expressions that mentorship was good, but that organizational strategies to support it were not necessary. These mentors/leaders discussed the benefits of mentorship, but didn't find it *necessary* to provide organizational support to formalized programs; thus, organizational strategies weren't needed as *true* mentoring only occurred in informal situations.

These beliefs were not the norm in earlier research as leading mentoring researchers advocated for organizational strategies that supported formalized mentoring programs. Both Kram's seminal research on mentoring, as well as Allen et al. and Leonard, Swap, & Barton who expanded the research, designed standardized training processes and implantation programs that promoted knowledge sharing through mentoring, (2.2.8. Professional Mentoring Programs and Knowledge Transfer.) Extensive industry-focused research has also determined the benefits of having a formal mentoring program; it is now used as a criterion for attracting job seekers and increasing an organization's ranking on "best organization" lists, (Hoffmeister, et al, 2011.)

This juxtaposition between the pilot study's findings and established research, i.e., its corresponding conclusions and their resulting precedents, continued in the final study. Although this theme remained part of the overall study, it evolved during and after the final study. Even though some of the final study participants were *positive* about formal mentoring, they did not address or have direct knowledge of their programs' procedures, effectiveness, or outcomes. As indicated previously, this is counter to much of the research on mentoring programs and associated leadership. Iverson (2019) discussed the need for an organization's leaders to be involved in the development and execution of formalized mentoring programs.

The participants also indicated that their organizations' formal mentoring programs were formulated as top-down models, typically focused on resources and outcomes, which was also confirmed by research conducted by Kram, Allen et al. and Leonard, Swap, & Barton. In alignment with her earlier findings, Iverson (2019) found a need for leaders to be supportive, as successful programs need significant monetary investments to achieve their defined metrics. Thus, even when participants expressed an understanding of the importance of formal mentoring, and mentioned specific, firm-sponsored, formalized mentoring programs, their inability to provide details about these programs indicates a lack of support for these programs, if they exist (other than "on paper" or in press releases.)

This incongruence is significant, as it has not been recognized by previous studies. The few studies that have focused on mentors accepted the mentors' statements and didn't ask probing questions about program details. As an exploratory study, designed to determine how to improve mentorship programs as a resource for knowledge sharing in the built environment, this theme is significant, as is the juxtaposition between these results and previous research. Additional research needs to determine whether formal mentoring programs exist within these organizations and why or why not their leaders were not aware of the details.

6.3.3. Knowledge Sharing can be Encouraged, but Cannot be Formulated

In alignment with the previous theme, *Knowledge Sharing can be Encouraged, but Cannot be Formulated* focused on the participants' responses that indicated knowledge sharing was a benefit to individuals as well as their organizations, but cannot be formulated, mandated, or forced. Throughout the study, all participants aligned knowledge sharing with mentorship but addressed them as separate entities. They expressed an understanding that

knowledge sharing supports employees holistically, enhancing their abilities while boosting their organization's competitive advantage.

Thus, this theme developed from two candidate themes, (4) Knowledge Management / Knowledge Sharing Supports Business Success and (5b) Active Organizational Strategies (Not) Needed. All of the participants demonstrated an understanding of the intent of knowledge sharing and knowledge management, whether or not they'd been exposed to these technical terms previously. Those few who were aware and had been exposed to the terms through business articles, etc., mentioned attempts to capture knowledge through databases, etc. Even in those instances, their attempts were passive. None mentioned active, organized systems for knowledge sharing or knowledge capture. There was also no evidence of any organized attempts to codify the knowledge shared between mentoring dyads.

These findings are in alignment with established research that focused on knowledge sharing in the built environment. Most of the knowledge shared across the industry is tacit, which is much harder to capture, (Egbu & Robinson, 2005; Wong, Cross, & Mueller, 2018; Saini, Arif, & Kulonda, 2018.) Likewise, projects are so complex that challenges arise continuously that must be addressed immediately; as such, professionals must concentrate on solving the issues at hand, not the knowledge management process, (Tan et al, 2010.) When attempts are made to capture knowledge, via databases, etc., they often capture forms of explicit, quantitative knowledge, while missing the tacit aspects of the issue, project, etc., (Yang et al., 2020.)

Even though knowledge has been studied extensively in the built environment, and the benefits of knowledge sharing and management are known, (Egbu, 2000; Egbu, 2004; Pathirage, 2007; Chen & Sherif, 2010; Bakar et al., 2016; Schropfer, 2017; Hoffmeister et al., 2011; McGettingan & O'Neill, 2009; Nkomo & Thwala, 2013; Nkomo, et al., 2018a; Nkomo et al., 2018b; Aigbavboa et al., 2016; Bashouri & Duncan, 2014; Egbu & Robinson, 2005; Lundberg, Lidelöw & Engström, 2017; Saini, Arif, & Kulonda, 2018), the effects of the project-based, fragmented, and decentralized nature of the work is only now being studied in relation to mentoring. As such, this research fits into this established body of research while extending the understanding of this important group's preferred ways of learning how to *work* in conjunction with how information flows between stakeholders, organizations, and industry.

6.3.4. Mentorship is Effective

Mentorship is Effective is an all-encompassing theme that directly relates to the candidate themes (3) Mentorship Supports Business Success and (6) Mentorship Supports Business Strategies but could also integrate all of the mentoring-themed codes, sub-themes and candidate themes. The participants overwhelmingly supported the concept of mentoring and saw mentoring as a path to knowledge sharing, professional and business success, and personal fulfillment. These manifest as competitive advantage, investment in people, and a stable core group, etc. Even when the codes could be perceived as negative, i.e., rejection of mentorship (f.1) and formal mentorship difficult (f.2.), the participant's intent was not negative but simply an expression of frustration when individual attempts to mentor were rebuffed or organization initiatives to mentor were less than successful.

From the participants' perspective as leaders in the built environment, mentoring practices, i.e., developmental interactions, have been ingrained into their culture since the beginning of their education. For example, architects are trained – via the studio model – to expect and to positively receive ongoing feedback from their instructors; after graduation, this continues in most office cultures as they receive feedback from studio leaders, principals, etc. Likewise, in construction, the apprenticeship model dates to the guilds of the Middle Ages. Thus, it is not surprising that when asked about mentoring, they would respond with supportive statements.

These findings aren't *novel,* as many researchers have arrived at these findings. For example, it's known that mentors find intrinsic satisfaction throughout the process, (Fleig-Palmer & Schoorman, 2011; Maynard-Patrick & Baugh, 2019; Burmeister, Wang, & Hirschi, 2020; Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021). The business reasons to mentor are also well documented, (Anumba, Kamara, & Carrillo, 2015; Gisbert-Terjo, et al. 2019b; Dalal & Akdere, 2018,) as are mentoring processes' facility at sharing knowledge, (Egbu, 2000; Egbu, 2004; Pathirage, 2007; Chen & Sherif, 2010; Bakar et al., 2016; Schropfer, 2017.)

What is interesting though, is the lack of actual organizational support for the mentoring process. Since Kram's seminal research in the late 1980s, many researchers have referred to formal mentoring programs as the basis of their research (Kram,1988; Ramaswami & Dreher, 2007; Allen et al, 2009; Leonard, Swap, & Barton, 2015) by assumption, as a by-product, or as an integrated part of their research, (Allen, Finkelstein, and Poteet, 2009; Fleig-Palmer & Schoorman, 2011; Saini, Arif, & Kulonda, 2018; Tsouri, 2019;

Urick, 2020; Burmeister, Wang, & Hirschi, 2020; Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021.)

Despite the thorough understanding that *mentoring is effective*, this was not the case for these leaders of the built environment, nor for their firms, as none of the 20 participants described their formal mentoring programs. Why this is the case, and what it means for the industry is compelling, and should be the basis for further research.

6.3.5. Study Summary Statement

The four themes listed above in section 6.3 Final Themes, which were initially developed during the pilot study, were found to be consistent after holistically analyzing the pilot and final studies. Thus, the initial final statement remained unchanged:

"Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced."

This statement represented the participants' views regarding the current state of mentoring in New York City's built environment during 2018 and 2019.

As leaders with more than 20 years of experience, they had positive views about mentorship, especially as it relates to knowledge sharing, and saw the two as appropriate support mechanisms for employee retention and therefore competitive advantage and business success. Nonetheless, informal forms of mentoring and knowledge sharing were predominant in their responses and within their organizations. Even though some were receptive to formal mentoring initiatives, none were actively involved in formal mentoring within their organizations. Also, in response to questions about their specific situation, none had processes to capture the knowledge that was shared formally or informally, and none were prepared for externalities that routinely impact the built environment.

6.4. Study Findings and Discussion

Although the results of the study itself can be summarized in the Final Themes and Summary Statement, the findings of this exploratory study reach beyond its boundaries and serve as indicators that can be extrapolated into much broader aspirations, goals and even tactics that will support mentoring as a means of knowledge sharing in the built environment.

Acknowledging the advantages and challenges of mentoring that were discussed in the literature, the researcher reviewed the findings to determine whether they aligned with the participants' views. After determining that they did, the researcher realized that some advantages and challenges went beyond the confines of previous research. They are in the following two sections.

6.4.1. Advantages of Mentoring

The advantages of mentoring were well established in previous studies, including those found in the literature review:

1. instrumental to organizational learning, (2.1.2.7. Organizational Theory and Organizational Learning),

2. considered an important tool of human resource management, (Buck, 2004; Klinge, 2015),

3. capable of advancing organizational socialization and professional development, (2.2.2. Definition of Mentorship),

4. associated with professional development, unlike other work relationships, (2.2.5. Mentorship versus Coaching), and

5. occasionally the impetus for moments of clarity and breakthroughs on the part of mentees, (Section 2.2. The Mentorship Process).

While these are well established and supported by the results of this study, by exploring how mentors within the built environment in New York City perceive mentoring and its relationship to knowledge sharing, new findings emerged and were considered by the researcher. These features of mentoring were not universally represented as *advantages* in previous studies. Likewise, as the mentoring process had not been studied as a direct means to knowledge sharing from a mentor's perspective, within the confines of the built environment, these features of mentoring have not been defined in previous research. Even so, the study participants clearly intended for them to be considered as such (Section 7.3. Summary of the Research Findings). They include a/an:

- Investment in people as perceived by employees, an
- Understanding that people are the key to enduring success, thus enhancing competitive advantage, an
- Acknowledgement that long-term relationships keep core groups stable, an

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- Understanding that it enhances knowledge sharing and supports knowledge management, and a
- Demonstration that organizations are actively pursuing positive outcomes.

In each case, these advantages have not been found nor explicitly stated in research relating to mentoring and knowledge sharing, particularly within the built environment. Even if considered as refinements of previously established findings, they have specialized significance within the unique nature of the industry. For instance, *investment in people* could be considered as a subset of *considered an important tool of human resource management,* but this would not fully outline the study participants' views. Throughout the pilot and final studies, participants emphasized their belief that *investment in people as perceived by employees* was an advantage to the mentoring process. This is a subtle but important difference; the participants acknowledged that the employee's *perception* of the investment was their focus, not the actual investment, which is a key finding of the study. Similarly, they emphasized the need to *demonstrate* their organization's dedication to pursuing positive outcomes, which focuses on the intent and action rather than on the actual results.

As discussed in section 1.1.1 Performance Challenges, the built environment has been challenged by many factors including specialized new technology, rapidly changing business models, and a massive loss of human capital over the course of the last four decades. Each of these must also be considered within the confines of the project-based and tacit knowledge-focused culture of the built environment. As such, a loss of intellectual assets has been occurring over the last few decades and was exacerbated by the Covid-19 crisis. The three other advantages found throughout the study,

- Understanding that people are the key to enduring success, thus enhancing competitive advantage, an
- Acknowledgement that long-term relationships keep core groups stable, and
- Understanding that it enhances knowledge sharing and supports knowledge management

are focused responses to these performance challenges. As demonstrated in their responses, the study participants clearly understood the important role that their employees play in organizational success. Additionally, by cultivating the advantages stated above via the mentoring process, the mentors expressed their belief that knowledge sharing could be enhanced to mitigate these challenges.

When taken within the context of the built environment's status as a major driver of the world economy, these advantages, which the participants in the study believe that mentoring provides, cannot be overlooked.

6.4.2. Challenges of Mentoring

There are several identified "challenges" to mentoring that were mentioned in existing research (Section 2.2.7. Issues in Professional Mentoring Programs). According to research, mentoring is challenging when there is/are:

1. Mentor/Mentee Incompatibility – for example, personality conflicts and counter indicative perceptions of mentees' attitudes by mentors,
2. Insufficient Trust – research shows that millennials are generally less loyal and trusting than their predecessors, and seek constant feedback and rapid career progression; these two characteristics, in combination, can be anathema to effective dyads,
3. Project-based relationships – after a project ends, informal mentoring becomes more difficult to maintain as teams vary with each project, and an
4. Understanding that tacit knowledge is shared experientially – thus, the knowledge gained during a project is often disjointed and dispersed.

Additional challenges were mentioned or implicitly expressed by the participants, including:

- Knowledge loss is inevitable – participants expressed this sentiment in various ways, through comments focused on retirements and churn within organizations, etc.; their statements focused on explaining or justifying knowledge loss,
- Tacit knowledge is not captured – nor shared, as the knowledge shared via the mentoring process is not captured nor codified by the organizations,
- Contraction of personal investment – individuals within the organization reduce their commitments, retrench into their billable work, and retain their knowledge in an attempt to survive a perceived or real crisis, and
- Exogenous shocks – unexpected disruptions due to outside forces, i.e., performance challenges, etc. that have a dramatic effect on an organization and result in a cessation of any non-essential projects or programs, which include those focused on mentoring

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These challenges were not found, nor were they explicitly stated in research relating to mentoring and knowledge sharing, particularly within the built environment. As with the advantages (see above), even if these challenges were considered to be refinements of established research findings, they'd still hold specialized significance within the industry as the study participants' *emphases* have not been reflected in previous research. For example, the participants expressed an *understanding* and *resignation* that knowledge loss was inevitable, which has not been noted in previous research. Likewise, no studies have focused on the lack of knowledge *capture, management*, or *codification*, when knowledge is shared during the mentoring process. Also, due to the volatile, cyclical nature of the built environment's economic cycles, the study participants focused frequently on a *cost-benefit analysis* of the mentoring process. Even though this was found in earlier research (Raabe & Beehr, 2003, Janssen et al, 2016, Mohtady, et al., 2019; Maynard-Patrick & Baugh, 2019), the connection was more direct in these studies as mentors reduced, eliminated, or simply pulled away from their mentoring relationships. These *contractions of personal investments* were instigated as a way to maintain their specialized knowledge and expertise during times of crisis; when an organization is financially insecure, they hoard their knowledge. This was also true of the challenges presented during the Covid-19 crisis; this exogenous shock also placed pronounced stress on the mentoring process.

To create mentoring programs that encourage knowledge sharing in the built environment, all of the advantages and challenges to mentoring should be fully considered; in doing so, this research can contribute to the mentoring and knowledge sharing body of knowledge.

6.4.3. Mentors' Perceptions of Mentoring and Knowledge Sharing Success

After determining that mentors in New York City's built environment identified mentoring as an effective means of knowledge sharing, the researcher identified several key factors that the mentors intuitively or explicitly said affect mentoring and/or knowledge sharing success. When their statements were analyzed holistically, these factors emerged as ways to improve an organization's ability to leverage mentoring as an effective means of knowledge sharing, particularly in the built environment. They include:

- **Instilling Champions:** As indicated in the existing literature (Section 2.1.2.9. Mentorship within an Organizational Learning Context), as well as in this study, (Section 5.4.4.1. Champions Support Mentoring Initiatives) having a champion who

supports mentorship within their organization is critical to continuing success. Thus, officially identifying at least one champion who will support and defend mentoring, manage its scope while educating others, and aid in supplying skilled resources should be addressed proactively within the organization.

- **Investing in People:** As the participants were senior-level professionals, they understood that investing in people was a critical criterion for their organization's long-term success (Section 5.3.2. Comparing Pilot and Final Study Codes.). As the participants indicated, mentoring can serve as an important element that helps achieve this goal. Many key issues can be categorized within this initiative, such as seeking *deputies*, i.e., mini-champions, who believe in mentoring to extend the program's reach. Simply addressing mentoring and knowledge sharing as an important topic that requires attention signals to employees that the organization is interested in investing in them. This study indicates that these topics would be received positively by the employees as several study participants mentioned their enjoyment in discussing these topics.

- **Promoting Organizational Learning:** An organizational learning culture encourages the learning process, not only the introduction of new information, but also the progression of internalization, reflection, and experimentation, that turns data into information and information into knowledge, (Section 2.1.2.7. Organizational Theory and Organizational Learning). By encouraging this process, an organization can engage in knowledge management and its employees can obtain, develop and share knowledge more easily. Thus, training at all levels is needed to foster this process and to negate negative assumptions that knowledge loss is inevitable, (Section 4.3.4.1.1. Knowledge Loss is Inevitable).

- **Cultivating Communications:** Communication encompasses a variety of interactions including oral, visual, kinesthetic, and audible forms of information transfer. Effective communication was described and discussed throughout the literature review but was not emphasized in one specific section (Kwok, 2014; Das, J.K. & Gaurav, J., 2021). Likewise, communication was commonly referred to as knowledge sharing within the confines of this study and acknowledged as an exchange of information, experiences, and expertise through a wide range of interactions (4.3.4.3.1. Business Reasons to

Mentor). To support the mentoring process, communication between the organization and an employee, as well as between employees who have formed a mentoring dyad, must be clear, have consistent pathways of interaction to enhance trust, and be effective so knowledge is shared and internalized for future use, (Kram, 1988; Urick, 2020)

- **Encouraging Relationships:** As discussed in the literature review, (Section 2.2. The Mentorship Process), there are many ways to encourage mentoring relationships, yet only a few participants mentioned any tactics pursued by their organizations, (Section, 5.4.2.4. Lack of Formal Financial or Cultural Investment in Mentoring). Overwhelmingly, the participants preferred informal communication and informal mentoring relationships, (Section, 4.4.2. High Frequency Codes Developed Through Thematic Analysis); even the final study participants who were more accepting of formal mentoring programs, preferred *informal mentoring*, (5.4.3.2. Informal Mentoring). This preference challenges organizations that want to promote mentoring, since informal means are much more challenging to create and manage.

- **Mandating Agility:** The rate of change in organizational life has accelerated considerably in recent years. As accelerated change continues, it puts pressure on individuals to adapt quickly and be flexible while consuming information, internalizing it, and integrating it with their knowledge so it can be applied to new collaborative situations – all while remaining healthy and in good humor, (Friedman, 2016; Garvey, Stokes, & Megginson, 2018). Although not explicitly stated by the study's participants, several indicated that having the ability to understand *how* to respond and *what* actions to take were key factors in maintaining positive relationships with mentoring dyads, etc. It can also hasten responses to exogenous shocks (5.4.4.2. Mergers and Acquisitions Cause Loss of Knowledge).

6.4.4. Attributes of Mentoring Programs that Enhance Knowledge Sharing

After identifying the advantages and challenges, as well as the positive attributes that enhance mentorship programs in the built environment, this study contributed to the body of research, as well as industry, by exploring how to not only improve, but to create and find ways to sustain mentorship programs, and how to utilize them as a resource to enhance knowledge sharing within organizations and throughout the industry. In doing so, the

researcher is not negating the mentors' preferences for informal mentoring but is integrating their input into a formal mentoring process, which will be noted in each element. Thus, to enhance mentoring programs, specifically and as a standalone program, leaders should:

- **Develop Board Level Support** – Establishing mentoring programs, that will informally and formally be implemented, requires board-level support from the institution. If an organization has no board, then a C-suite level individual has to take the lead and be responsible for the program's outcomes. As noted in previous research and throughout the mentors' comments, bottom-up, informal mentoring doesn't have the level of support needed to maintain the initiative when challenges arise. Additionally, financial support is needed to create or purchase knowledge management programs; all senior-level managers need to understand the value of such programs as they insure and preserve the organization's competitive advantage.

- **Create a Strategic Plan** – Senior-level support is not enough to build a successful mentoring program. As Kram pointed out in her seminal research, mentoring programs must have learning objectives to establish a basis for measuring success, need to seek constructive feedback, and must evaluate their progress (1988) – all elements of a strategic plan. Organizations also need to codify their goals, document who is responsible, include deadlines for implementation, and develop criteria to measure success. After the plan has been created, it must be distributed throughout the organization to obtain understanding and buy-in at all levels and minimize knowledge gaps. Then, a review process must be implemented to identify potential key points of failure and communicate justifications and arguments to everyone, especially champions, as well as mentors and mentees. Allen, Finkelstein and Poteet (2009) and Leonard, Swap, & Barton (2015) agreed with Kram's approach but moved beyond it. Leonard et al. created a well-defined series of *mini-practice experiences* focused on knowledge transfer that was to organize and accelerate the mentee's movement through their programs. Those who develop the mentoring program and the *mini-practice experiences* should understand that mentoring in the *in between moments* occurs naturally and incorporates strategies that encourage and accommodate these events while promoting processes that capture the knowledge that is shared for the organization.

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- **Change Business Models** – Many firms have established criteria that maximize the number of hours that employees are billable. Those wanting to enhance knowledge sharing through mentoring should reprioritize and invest in their employees by allowing more non-billable time. By lowering the percentage of billable hours that must be completed weekly, they are creating *soft time* that provides informal opportunities for mentoring dyads to interact spontaneously at opportune moments.

- **Build Supportive Cultures** – Organizations can build supportive cultures that encourage mentoring by establishing key tactical initiatives, including pathways to open communication such as open discussions or events about specific topics. For instance, the organization could highlight cell phone use, emphasizing to their employees that something that small can drastically affect how mentoring dyads communicate. Leaders could use cell phone usage as a metaphor to discuss generational differences. Likewise, leaders could develop physical props that support interaction between the mentor and mentee or even multiple dyads, such as office locations, break areas, discussion nooks, etc. Dyads can be co-located within the office so it's easier to share knowledge. These interventions create opportunities for building trust, *mutual bonding* and spontaneous interactions that encourage *in between moments* to share knowledge. They can also hold meetings with the mentors and mentees, mentors alone, and mentees alone to discuss research on numerous topics including trust and emotional maturity, as well as ways to nurture committed relationships.

- **Motivate Correct Behaviors:** Through positive reinforcement, a firm can motivate individuals to become mentors and mentees; they can also find ways to incentivize continuing the relationship, sharing knowledge, and entering knowledge into a knowledge management system, (Kwok, 2014; McNally, 2018; Das & Gaurav, 2021). One caveat: as all 20 mentors preferred informal mentoring, organizations must support mentoring in indirect ways, such as holding lunch and learns, e.g., paid lunches with presentations that catalyse mentoring and knowledge sharing. Or, as a few participants mentioned, the organization needs to find ways to incorporate measurable goals into employee reviews and create rewards that induce respect and diminish rejection, e.g., bonuses, etc., (Section, 5.4.4.1. Champions Support Mentoring Initiatives).

- **Plan for Exogenous Shocks:** By definition, exogenous shocks are unforeseen circumstances that affect organizations, which are beyond their control and are extremely challenging to predict. Even so, the study's participants – as leaders with more than 20 years of experience – have dealt with multiple instances that would qualify, including the great recession of 2008, various mergers and acquisitions, and the Covid-19 crisis. While there is no way to prepare for *all* exogenous shocks, it is possible to create a generic, proactive, and agile plan to address events beyond the firm's control in a holistic manner. For instance, how will the organization work remotely if another healthcare crisis occurs? How will the organization handle a natural disaster, such as flooding? For those whose offices are in New York City, which included everyone in the study, this is a real concern – based on the experience of Super Storm Sandy. When employees feel prepared and things are addressed proactively and openly, stress is reduced and informal and formal opportunities for mentoring and knowledge sharing can continue, which is especially helpful to mentees. By sharing their past experiences, and reinforcing the positive aspects of the organization's past responses, mentors can provide mental support to the mentees.

Although these attributes may be mentioned as "norms" when discussing many organizations, none of the study participants, who are leaders in their respective organizations in New York City's built environment, mentioned any of these attributes in conjunction with a mentoring program. Likewise, the three leading Mentorship Training and Program Design systems, i.e., Kram's, Allen's, and Leonard's programs, do not mention these attributes. One possible exception was that all three authors mention "action plans," but after careful consideration, the researcher determined that this did not apply either.

6.5. Mid-Covid Reflections and Analysis of the Research Results: An Addendum to the Study

While the data was being analyzed, during the first quarter of 2020, it became clear that an outside force, a global pandemic that was eventually named Covid-19, was greatly affecting the built environment and anyone working within the architecture, engineering, and construction industry. As time went on, it became clear that this outside force would affect

the participants directly, and quite possibly change their thoughts regarding knowledge sharing and mentoring.

6.5.1. The Covid-19 Crisis

To gain a better understanding of the magnitude of the crisis, it is important to understand the pervasive and swift moving nature of the situation. At the end of the first quarter of 2020, as COVID-19 spread throughout the world, New York City and the northeastern region of the United States—especially New Jersey and New York—proved especially vulnerable. On March 1st, New York City reported its first case, (Axelson, 2020). On March 11th, the first death was reported in New Jersey, (Porter, 2020), Governor Andrew Cuomo declared a State of Emergency throughout New York State, (Axelson, 2020), and the World Health Organization (WHO) issued a "global pandemic warning," (News10, 2021). Days later, New York City went into *lockdown*, closing schools and government buildings, forcing business closures and a mass exodus from the city. President Trump declared a State of Emergency and banned European travel to the US on Friday the 13th (News10, 2021); on that same day Stevens Institute of Technology, the researcher's former employer, switched to fully online teaching *literally* overnight, (Stevens, 2020).

The following week, the entire northeastern region of the US was in unprecedented circumstances, including enforced curfews, "stay-at-home orders," and the closure of all non-essential businesses, including those in the built environment. These mandates resulted in record-high unemployment, extensive food bank lines, and growing mental health issues, (Choi, 2020; Panchal, 2020). Construction sites were shut down as *non-essential businesses*, then as March turned into April, "essential" construction sites were allowed to resume their projects, (Spivack, 2020). Countless built environment organizations proactively sent reassuring emails to their employees, affiliated organizations, and even the public, (Lowy, 2020); many would not return to their offices for the next seventeen months.

By the Fall of 2021, as the pandemic continued, everyone, including the study participants and the researcher, had dealt with multiple outbreaks in the US and around the world, (Yurkevich, 2021). Depending on the participants' roles in the built environment, they were still working from home, working on a part-time basis at home and in an office, or working full-time in an office or at a job site.

6.5.2. Participants' Responses to the Covid-19 Crisis

By the summer of 2021, every aspect of the socio-economic situation that existed during the original interviews had been directly affected by Covid-19. Consequently, while the researcher was writing her thesis, she determined that the built environment had gone through so many unprecedented changes that reaching out to the participants once more was necessary. She felt strongly that this was a unique opportunity to gain additional understanding about several key findings of the study: to determine how the participants dealt with the pandemic and how the pandemic affected their mentoring and knowledge sharing beliefs and actions. Thus, she reached out once again via email to ten randomly-selected study participants; of the ten, one respondent was a woman and one was a south Asian man; the rest were male Caucasians. Seven of the interviews were phone calls and three were online, video conversations. Four open-ended questions were asked:

1. What happened to you and your organization during the pandemic?
2. How did you respond?
3. What has happened to your mentoring?
4. How have you shared knowledge during the pandemic?

The participants' responses were complex and revealing. All of the ten participants were still working in industry, although two had moved to new organizations during the pandemic. Of those, one of the two was working in a New York City-based office part-time and the other was working from home the majority of the time and only interacting with her fellow employees in person on job sites. When asked a follow up question about their engagement with their new organizations, one was quite positive, mentioning the firm's "minority-owned status" and "forward thinking approach to hiring the best and brightest no matter where they worked." The other seemed to be detached from her new firm, not in a negative sense, but not engaged; she mentioned that she worked at home "as did her (significant other,) which was nice." The other eight were still with their pre-pandemic firms in their established roles, but working in much more flexible situations, "due primarily to the pandemic." All eight worked at least part-time from home, going into the office or job site when necessary; at first, they expressed no regret about their situation.

When asked what had happened to their organizations during the pandemic, there was a wide variety of answers. One said they'd gotten busier during the pandemic, another mentioned the PPP loans, the federally-sponsored Paycheck Protection Program that gave loans to organizations that kept their employees working during the pandemic, and another

who worked as a sub-consultant mentioned strategically reaching out to those firms that were working on public projects for additional work as public projects were deemed "essential projects." The participant who mentioned the PPP loans also volunteered that he'd "been put on furlough 50% of the time for a couple of months," while the principals waited for the "PPP money to come in, or the project to come back." The rest of the participants were a bit vague and noncommittal about their organizations; not defensive, just a bit disengaged.

When asked how they responded to the pandemic, everyone was positive, at first. One participant explained that he'd been happy to stay home, but with young children at home, it was challenging. As a result, he spent long hours in his home office. When the conversation began, he was upbeat and happy, mentioning that he was lucky, but as he continued talking to the researcher, his positive attitude broke down, he became emotional and mentioned that he'd lost so many people during the pandemic. After the researcher expressed her condolences, he regained his composure and changed the subject.

Likewise, another participant said his life was exactly as it had been pre-pandemic. He'd been going to the job site daily pre-pandemic and, after a few weeks at home, had returned; other than the increased safety measures – social distancing, masks, and increased hand washing at newly installed stations – everything was normal. He also emphasized that he and his family were supporting their favorite restaurants, traveling, and "going on with life." Nonetheless, those last few statements were strained, as his voice became more emotional. This proved to be a trend; even in these short interviews – approximately 20 minutes each – the participants seemed to be struggling a bit to keep their composure. As long as they were discussing their organization, the projects, etc. everything seemed fine; when asked how they were, their professionalism quickly disintegrated.

As the conversation turned to mentoring, most were unable to recall mentoring moments with any specificity. One explained that he tried to mentor a novice architect who was providing design support on a project, but that it was "really hard." He continued, "we spend so much time discussing the details of the project, what needs to happen to the drawings, that there's not much time to explain *why* we're doing this or that." When asked about knowledge sharing, he mentioned that just "trying to get the specifics shared is exhausting, the rest needs to wait until later." Another participant mentioned wanting to reach out, but there never seemed to be time; "when I'm in the office, it's a bit of a ghost town, and when we're both there, we have to stay away from each other and wear masks." Later he mentioned, "even if we wanted to get lunch, most of the restaurants are closed, and those that

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are open are only doing takeout. Since we can't eat together in the office, there's really no point..."

An additional participant said that he'd spent more time with his mentor working remotely than he ever had in the office. Although he felt it was going well, they rarely talked outside project-centered Zoom calls; sometimes they had momentary exchanges before or after the meeting. The researcher asked a follow up question as to whether he felt the relationships were closer now; the participant responded "no, it's about the same, but I value those moments more now." These responses were typical as the rest of the participants made similar comments about ongoing relationships, mentoring opportunities, and knowledge sharing. One statement stood out, "everything is harder, everything takes longer, and the Zoom calls are exhausting."

After collecting the interviews and analyzing them, the researcher concluded that this additional outside force, the Covid-19 global pandemic, was in alignment with other outside forces such as recessions and mergers and acquisitions. As such, these interviews also validate the findings of the study as they actively confirm that when stressed by an outside force, individuals *contract their personal investments* by reducing their commitments and concentrating primarily on their work. As such, sharing knowledge and the mentoring process was significantly diminished.

6.6. Chapter Summary

This chapter thoroughly explored the findings of the pilot and final study, in aggregate. After addressing the eight candidate themes and reducing them to four final themes, a final statement was developed: *"**Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced.**"* Thus, the researcher determined that the study was an accurate reflection of the views of mentors in New York City's built environment in 2018 and 2019.

Next, a discussion of the study's overall findings occurred including the advantages and challenges of mentoring as well as the mentors' perceptions of mentoring and knowledge sharing success. After their perceptions were established, the key attributes of mentoring programs that leaders should use to enhance knowledge sharing were discussed; although they may seem familiar, none of the attributes discussed were similar to the key attributes of the three leading mentoring programs, i.e., Kram, Allen, and Leonard.

After the Covid-19 pandemic occurred, while the researcher was writing the final chapters of this thesis, she determined that another set of interviews would be beneficial as several key findings could be further validated. In response, the augmented study evolved into a *cohort longitudinal study*, i.e., a study that follows the same group of subjects over an extended period, in this case, the pre- to mid-Covid-19 pandemic. After interviewing another ten participants from the study about their personal experiences including their mentoring and knowledge sharing experiences during Covid-19, the researcher determined that the results further validated the findings of the study. The participants in the Covid-19 interviews also confirmed one of the candidate findings from the final study, *contraction of personal investments*, which revealed the diminution of knowledge sharing and mentoring during events or forces outside the firm's control.

In chapter Seven, conclusions and recommendations will be discussed including a summary of the research process – a personal reflection of the researcher's experience throughout the PhD Journey – and a summary of the research findings including the research question, the aim and key findings of the study, as well as the project objectives. In the final section, the thesis concludes with the contributions to knowledge in theory and practice, the limitations of the study, and future research directions.

CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS

7.1. Introduction

The aim of this research was to explore how to improve mentorship programs as a resource for knowledge sharing in the built environment. This chapter presents the key research findings, summarizes the results of the aims and objectives, and answers the study's research question. It also considers the conclusions drawn from the results of the semi-structured interviews and interprets these conclusions in light of the unprecedented events that occurred while the data was being analyzed, i.e., Covid-19 and its aftermath.

As such, Chapter Seven is structured into specific sections. After the introduction in section 7.1, section 7.2 summarizes the research process and describes the researcher's PhD journey. Section 7.3 summarizes the findings that resulted from both the pilot and final study and integrates them via a holistic analysis of the entire data set. Special emphasis is placed on new trends and theories that result from the combined studies. Section 7.4 discusses the contributions to knowledge in theory and practice, leading to Section 7.5, which addresses the limitations of the study. Finally, section 7.6 identifies some future research directions and provides a path for further exploration, which leads to 7.7, the chapter summary.

7.2. Summary of the Research Process

As outlined in the University of Salford's doctoral study materials, the researcher enrolled in the PhD program in the Built Environment and embarked on a "postgraduate research journey" that included training and development, documented meetings with her supervisor, and specific milestones to measure progress and success, (University of Salford, 2020). These progression points are encased in a series of processes, each with deadlines tailored to the selected method of study. The journey results in a thesis and Viva Voce, or defense of the research, which culminates the PhD journey with the doctoral student graduating, (University of Salford, 2020).

Since the journey was a multi-year process, when reviewing the data and support materials to address the conclusions of the study, the researcher determined that a section addressing the research *process* would be beneficial. Additionally, due to the need for reflexivity in phenomenological research—to address the researcher's perspective,

interpretations, and her role throughout the study—she determined that reviewing the research journey holistically might contribute to both openness and willingness to iteratively consider how the researcher's approaches and/or interpretations might affect the study's conclusions. These efforts all contribute to the validity of the study, (Saunders et al., 2016; Lazard & McAvoy, 2017; Creswell & Creswell, 2018; Creswell & Poth, 2018).

7.2.1. The PhD Journey: Year One

As a novice researcher beginning the PhD journey, each month the researcher met with her advisor, Prof. Will Swan, who consistently required additional research and writing for review and discussion. Although challenging at first, the researcher found this to be an excellent approach. The first step toward formulating the research question was the literature review, which was straightforward, e.g., numerous searches to find peer reviewed material on mentorship, knowledge sharing, and the built environment were completed utilizing key words as well as synonyms, key authors, etc.

Next, a variety of *research approaches* were reviewed; this was more challenging, due to the learning curve. After broad consideration of the spectrum of philosophical assumptions, social constructionism was selected, as it most closely aligned with the researcher's belief that situations are viewed from multiple perspectives and inductively generated from each observer's vantage point. On this basis, to gain a thorough survey of the current state of mentorship in the NYC area, an iterative, inductive approach—semi-structured interviews—provided insights into the participants' perspectives. The researcher selected Braun and Clarke's Thematic Analysis to analyze the data from the interviews, based on initial recommendations from fellow researchers and a thorough review of their 2006 article, which included an outline of their process. After nine months, with the bulk of the literature review completed, the methodology chosen, and Salford's Learning Agreement approved, the researcher was hopeful that the selected approach would inform on multiple levels.

Few studies of mentoring *within the Built Environment* existed, and those that did focus on mentees. This suggested that a foundational study of the *mentor* experience, specifically whether mentorship is an effective means of knowledge sharing, was an appropriate first step. The phenomenological study pursued sought a *common meaning* for mentorship from the mentors' perspectives of "what they experienced and how they experienced it," (Creswell & Poth, 2018, p. 75). After summarizing the study in an

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introductory chapter and presenting at the Interim Assessment (IA), it was informative to receive feedback from academics who'd had limited exposure to the project until that point.

7.2.2. The PhD Journey: Year Two

After the IA, a pilot study consisting of 10 semi-structured interviews of mentors was conducted. Participants were selected from a representative, stratified sample of organizations belonging to the New York Building Congress, to which almost all major NYC firms belong. Although there were some initial challenges in the interview process, including the scheduling of such busy participants, last minute changes to interview locations, and the relative newness of conducting structured interviews – the initial 10 interviews were successfully conducted.

While reviewing the interviews, the researcher's advisor suggested that an alternative to Thematic Analysis, Interpretative Phenomenological Analysis (IPA) should be considered. IPA is "a rich source of ideas about how to examine and comprehend lived experience," (Smith, Flowers & Larkin, 2012, p. 11), as it focused on the participant's experience and perceptions, similar to thematic analysis of the type pursued, however, the proposed research focused less on highlighting the specific experiences of individuals or fleshing out individual differences, and more on patterns across a broader data set in search of shared qualia. This was reinforced by the adoption of a constructionist/social constructionist perspective which emphasizes garnering a view of reality from the subjective perspectives of numerous participants, (Easterby-Smith, Thorpe & Jackson, 2012). Aggregation is better aligned with Thematic Analysis.

This need to pursue data over a larger data set is primarily due to the research question, *"Do mentors in New York City's Built Environment identify mentorship as an effective means of knowledge sharing?"* and the aim of the study, *"...to explore how to improve mentorship programs as a resource for knowledge sharing in the Built Environment."* To gain a deeper understanding of the mentorship process in NYC's Built Environment, this research needed to incorporate as many observations on mentorship and its connection to knowledge sharing as necessary to understand the phenomena.

Additionally, since very little previous research focused specifically on mentorship in the built environment existed, this research needed to be exploratory in nature to help generate a baseline understanding of this milieu, while vetting the postulated communal structure of mentorship. Thus, the aim of this research did not align as closely with IPA,

which focuses on "personal meaning and sense making in a particular context, for people who share a particular experience," (Smith et al, 2012, p.45). Conversely, thematic analysis "can identify the concepts and ideas that underpin the explicit data context, or the assumptions and meanings in the data," (Braun & Clarke, 2013, p. 178). It also helps develop themes *inductively* through collection of data from observations, which allows the researcher to explore theoretical ideas in concert with data collection in an iterative, recursive manner (Braun & Clarke, 2013).

After confirming these conclusions in conversation with another PhD candidate at Salford who employed IPA, the researcher elected to continue with thematic analysis. Accordingly, exploration of the research question proceeded holistically along the inductive continuum. The goal remained to discover how mentors perceive mentorship in relation to knowledge sharing more broadly, to establish critical success factors for mentorship (as a pathway to knowledge sharing,) as well as to potentially generate recommendations for improving knowledge sharing in the built environment.

The most challenging aspect of the pilot study was grasping Braun and Clarke's thematic analysis *procedures*; the researcher read their highly cited 2006 article several times. Once a working understanding of their approach was gained, a few attempts to analyze the first interview failed. After some frustration, and a conversation with her advisor, the researcher determined that manually coding each interview, although more time intensive, would provide the most comprehensive analyses. After the analyses were complete and preliminary conclusions had been drawn, the researcher submitted and passed the Internal Evaluation (IE).

7.2.3. The PhD Journey: Years Three and Four

After passing the Internal Evaluation in July 2019, the researcher began pursuing the 10 participants for the final study. Due to her experience with the pilot study, the researcher's confidence grew; since the pilot study was successful, she maintained the same data collection process. Thus, the final study interviews were conducted efficiently throughout the fall, from September to December of 2019. During the break between the fall 2019 and spring 2020 semesters, she transcribed the interviews and began analyzing the transcripts in January 2020.

As analyses take some time, the researcher was still conducting the final study data analysis when Covid-19 was discovered in New York City. Within days everything in the

researcher's life was altered. The university where she worked transitioned to completely online teaching, stay-at-home orders and curfews were instituted, and even going to the grocery store became a harrowing, potentially life-threatening experience. At first, the transition to online teaching was tremendously time-consuming. With multiple roles at the university—as the instructor of three courses, the primary advisor for more than 100 mostly international students, the director of three programs and the associate chair of graduate studies for a department with seven programs—the transition was an exhausting distraction. As the months progressed into summer, her plans to complete the research study, travel to the University of Salford to conduct her Viva Voce, and graduate disintegrated. Instead of having the summer off, which was needed to finish the research, her work for the university continued with multiple hours spent each day dealing with students, decisions regarding online vs on-ground courses for the fall semester, and the department's graduate schedule for all seven programs, which was altered six times between July and August. As this situation continued for months, anxiety turned to depression, which halted the PhD process. Of course, there were spurts of work on the research, but the final push to finish the thesis finally occurred throughout the Fall/Winter of 2021 instead of in the Summer of 2020.

As a result, this research has extended much longer than originally anticipated, which had both negative and positive ramifications. Each time work on the study recommenced, the researcher had to reconsider the work. Although time consuming, this resulted in multiple rounds of reflexivity, in which minor, but consequential, insights and additional perspective on the research were gained. For example, one of the key points that emerged from the study was not seen holistically until some time had passed and the global pandemic was well underway. Instead of focusing on recessions or mergers and acquisitions, which emerged during the pilot and final studies respectively, after the global pandemic, it became clear that these *outside forces* should be seen collectively as exogenous shocks, i.e., factors that affect an entire industry, are beyond any organization's control, and are difficult to predict, (Asamoah, et al, 2019). Personal experience of an exogenous shock provided the perspective necessary to synthesize this aspect of the study.

7.3. Summary of the Research Findings

This section considers the findings and the research question, aim, and objectives of the study, originally defined in Section 1.1.3.

7.3.1. The Research Question

After analyzing 20 interviews in the pilot and final studies, as well as another 20 interviews validating the results and addressing the Covid crisis, which encompassed more than 17 hours of recordings and over 166,000 words, the study produced a deep understanding of the mentoring experience. What emerged is a complex and comprehensive view of knowledge sharing in the context of the mentorship experience within the built environment. By using thematic analysis as an iterative, inductive/abductive form of theory development—more than 65 individual codes combined into eight candidate themes, four summary themes, and one summary statement—the process that demonstrated that mentors, i.e., leaders with more than 20 years of experience who practiced in New York City in 2018 and 2019, believe that knowledge sharing is integrally linked with the mentoring experience. The result, an aggregated summary statement, *"Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced,"* answered the research question, "Do mentors in New York City's Built Environment identify mentorship as an effective means of knowledge sharing?"

7.3.2. Aim

The aim of this study is to explore how to improve mentorship programs as a resource for knowledge sharing in the built environment. Throughout the study, this exploration was a primary motive. The semi-structured interview process provided key insights into the challenges and deficits that exist in built environment mentoring processes. The researcher's precursor belief that mentoring programs needed improvement to become resources for knowledge sharing proved accurate; thus, the aim of the study was achieved through a combination of the study's findings and five objectives.

7.3.3. Key Findings from the Study

After thoroughly identifying the key attributes of mentoring and knowledge sharing as well as key tangential concepts, which were established and shared in the literature review, then conducting the research and analyzing the results, this section presents the study's main findings:

- To fulfill the aim of the study it was important to connect the three key elements, namely knowledge sharing, mentorship, and the built environment, which had not been explicitly linked in earlier research. An outgrowth of organizational learning,

first referenced in the mid-60s, the connection to knowledge management was codified in the early 2000s by the seminal works of Polyani, Nonaka and Takeuchi, Penrose, and Drucker. By the mid-2000s, knowledge management became a focus of study within the built environment, as evidenced by *Knowledge Management in Construction* (2005), but mentoring was emphasized in this research, (Egbu, 2000; Egbu, 2004; Pathirage, 2007; Chen & Sherif, 2010; Bakar, Yusof, Tafail, Virgiyanti, 2016; Schröpfer, Tah, & Kurul, 2017). Similarly, when mentoring within the built environment was the focus, knowledge management was not integrated into the research, (Hoffmeister et al., 2011; McGettingan & O'Neill, 2009; Nkomo & Thwala, 2013; Nkomo, Thawala & Aigbayboa, 2018a; Nkomo, Thawala & Aigbayboa, 2018b; Aigbavboa, Oke & Mutshaeni, 2016).

By gathering empirical evidence from previous studies, the researcher confirmed that it was strongly implied or directly correlated with knowledge sharing in numerous seminal studies on *mentoring*, including Allen et al, Leonard et al, and Kram. The results of the study also revealed a similar explicit and implicit linkage between mentoring and knowledge sharing. Additionally, as all 20 participants were employed within the built environment, the third key element – the built environment – was also confirmed within the confines of this study.

- Previous research also confirmed that the most intuitive form of social learning, i.e., socialization, is knowledge sharing, especially within the project-based, built environment. (Chen et al., 2019; Karkoulian et al., 2008). This form of knowledge sharing was connected to face-to-face interactions (proximity) through real-time, ongoing continuous feedback loops, often referred to as mentoring, (Karkoulian, Halawi, & McCarthy, 2008; Tan et al., 2010; Tsouri, 2019). As mentoring became an independent subject of academic research, Kram's seminal work on formal mentoring programs became the basis of numerous studies, (Allen et al., 2009; Leonard, et al., 2015). Although informal mentoring has been the focus of a few studies (Raabe & Beehr, 2003; James et al., 2015), *formalized* mentoring became the accepted framework for mentoring research, (James et al., 2015; Janssen et al, 2016; Mohtady et al., 2019).

Due to the qualitative nature of this study, and the chosen approach, i.e. semi-structured interviews, the participants responded to the researcher's questions from their perspective and within the confines of their experience. When asked about formal mentoring programs, the majority of study participants responded negatively; they strongly emphasized their preference for the *informal* nature of their interactions. One key aspect of this type of learning that has *not* been emphasized in previous research was the *informal* nature of these interactions. In counterpoint to previous research, the participants in this study emphasized their preference for the *informal* nature of their interactions. In stressing their preference for sharing knowledge via *informal* mentoring, another key finding was discovered: in between moments.

- Informal mentoring is not specifically defined nor are the actions or expectations of informal mentors; it occurs outside of organizations, (James et al., 2015; Karkoulian et al., 2008; Mohtady et al., 2019). Although various forms of situational mentoring have been defined in previous studies, including spot mentoring and episodic/situational/just-in-time mentoring, these forms do not address the sort of mentoring mentioned by the participants in this study, (Abbot and Natkin, 2016; Gregory and Terzakis, 2017; Sparkes et al., 2016).

The participants in the study described "*in between moments,*" which are spontaneous, impromptu conversations that arise due to circumstance. They can occur at any point, in any location, and when initiated by either the mentor or the mentee. Although they seem similar to "spot" mentoring, etc., *in between moments* are *not* focused on proactively planned experiences or exchanges between an experienced mentor and someone seeking their knowledge or expertise. They arise on an ad hoc basis and are often not acknowledged as mentoring experiences. This emphasis on *in between moments* was also confirmed by the semi-structured interviews that were conducted during the Covid-19 pandemic as the participants confirmed that the *lack* of *in between moments* due to working from home, etc., diminished both mentoring and knowledge sharing.

- Knowledge management systems that capture knowledge are difficult to use in the built environment. The tacit knowledge shared during a project is often fragmented and decentralized, (Arbabi, Salehi-Taleshi, & Ghod, 2020; Yang et al., 2020).

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Likewise, the processes preferred by built environment professionals, i.e. "learn by doing" and "conversations/discussion," make knowledge capture even more difficult, (Saini, Arif, & Kulonda, 2018; Yang, 2020). To date, built environment research has focused on how to capture knowledge shared within the mentoring relationship.

Thus, the knowledge shared during *in between moments* defined by participants and/or other forms of mentoring isn't captured in knowledge management systems. Even when participants described the act of mentoring as successful and the relationship continued, the knowledge they shared didn't extend beyond the two individuals. Thus, there is no codification of knowledge for others to benefit from, a fact that was not acknowledged by the mentors interviewed for this study.

- Some studies have mentioned challenges to successful mentoring relationships including generativity (Lin, Cai, & Yin, 2021; Krahn, Johnson & Galambos, 2021; Allen, Finkelstein, and Poteet (2009). If mentors find intrinsic satisfaction within the mentoring relationship, they are more likely to share their knowledge and skills, (Fleig-Palmer & Schoorman, 2011; Maynard-Patrick & Baugh, 2019). Likewise, trust can be an issue in mentoring relationships and can affect every step of the process, (Johnson & Ridley, 2008; Bouquillong, Sosik & Lee, 2005) and is critical to success in the mentoring relationship, (Saini et al., 2018). When these do not exist, mentors may not share their technical or organizational knowledge, Fleig-Palmer & Schoorman, 2011; Tsouri, 2019).

After analyzing both portions of the study, i.e., the pilot and final studies, a final statement emerged, *"Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced."* Although the first part of the sentence –the independent clause – was addressed in earlier findings, the dependent clause, "but cannot be formulated or forced," has not been addressed. As such, it captures one of the overwhelming sentiments of the study participants, an anti-programmatic attitude towards formalized, forced mentoring. Although some participants espoused support for formalized mentoring programs, none participated in or were aware of, any formal programs that were successful long-term programs. Likewise, although they readily agreed that knowledge sharing was an integral part of the mentoring process, and some even put forth their belief that mentoring enhanced

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competitive advantage, etc., none ever discussed *how* the knowledge that was shared in the mentoring dyads was captured or shared beyond the mentoring pair. Its overwhelming absence points to it *not* occurring.

- After finalizing the analyses of the interviews, an additional candidate theme emerged, *Contraction of Personal Investment*. Although similar to the previous finding that emerged from the final statement, i.e. the subordinate clause "cannot be formulated or forced," this lack of participation from the mentors emanates from other sources. This theme joins the *recession* codes established in the pilot with the *mergers and acquisitions* codes from the final study to become a broader, more comprehensive issue. Together these codes can be generalized as disruptions due to performance challenges, i.e., outside forces, (see section 1.1.1. Performance Challenges), which are also known as exogenous shocks, (Egbu, 2000; Choi, Gad, Shane & Strong, 2015; Leonard, Swap, & Barton, 2014; Lemmens & Luebkeman, 2016). When exogenous shocks cause uncertainty across the built environment, such as economic downturns and/or global pandemics, mentors can become less cooperative and withdraw, conserving their knowledge to retain their competitive advantage, (Urick, 2020).

  As expressed by the study participants, when these situations – exogenous shocks – stress a built environment organization, the individuals within the organization reduce their commitments, retrench into their billable work, and retain their knowledge to survive the crisis. Each of these actions collectively results in a *contraction in personal investments* within their work relationships as well as within the organization.

7.3.4. Project Objectives

This section considers the project objectives, which led to the aim of the study being achieved.

7.3.4.1. Objective 1. To define current mentorship theories and practices, in general, and specifically within the built environment

To begin to research the role mentoring programs play as a resource for knowledge sharing in the built environment, it was important to understand mentorship's leading theories

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and practices. Thus, an extensive literature review was conducted to develop a complete definition of mentorship, particularly in relation to the built environment. In conjunction with this research, three seminal mentorship training programs were compared to determine the theoretical underpinnings and professional practices that are common in mentoring programs, in general, and specifically within the built environment (see Table 2.8. Comparison of Mentorship Training and Program Design). Then, once the final study was complete, the data was compared to the established training initiatives and program designs to determine whether the definition of mentorship, as well as the theories and practices commonly referred to in academic research and business, were consistent with those experienced within the built environment.

The established definition of professional mentorship is "a relationship between two individuals whereby the more senior is committed to providing guidance and support to the more junior for organizational socialization, career advancement, and professional development purposes," (section 2.2.2. Definition of Mentorship). This aligns with the basic definition that all the participants in the study shared; only one participant mentioned group mentoring. Likewise, all the participants referred to mentoring as an "internal initiative" within their organization, although a few mentioned other circumstances, such as mentoring within a *community of practice*.

Mentoring theories often center on career advancement (Kram, 1988), by enhancing succession planning, organizational socialization (Chun, 2010), and the retention of diverse and skilled employees. These join with counseling, advocating, modeling, and accumulating human capital, i.e., knowledge, skills, and abilities (Ramaswami & Dreher, 2007) to encompass the entirety of professional development, (Kram, 1988; Levinson, Darrow, Klein, Levinson, & McKee, 1978; Ragins & Kram, 2007; Wanberg, Welsh & Hezlett, 2003). Again, the participants mentioned many of these elements throughout their interviews. Some participants mentioned actively pursuing *advocates*, while others mentioned *modeling* as a process to convey specific techniques that share knowledge. Likewise, each participant revealed *counseling* experiences throughout their career.

However, the principles of The *Mentorship Training and Program Designs* from Kram, Allen et al, and Leonard et al., were mentioned by participants but the planned infrastructure was not discussed by most participants. Likewise, training, which was an integral part of all three of the mentoring researchers' programs, was only nominally mentioned during the interviews.

Further, the *execution* described by the participants was uneven and often non-specific. Thus, it was revealed to span from *checking off boxes* and/or *going through the motions* level of engagement to actual *trust* and *relationship building* that transcended the arrangement. Revealing in this regard were the ties to performance evaluation mentioned by some participants in the final study. By this measure, programs viewed as 'formal' were nominally legitimate, but the level of actual execution or outcomes varied widely among participants.

7.3.4.2. Objective 2. To examine theoretical frameworks of knowledge sharing in the context of mentorship programs

As with mentoring, a thorough understanding of knowledge sharing theories and practices was required to pursue this research and analyze the resulting data. After an in-depth review of the evolution of knowledge as a construct, studying its history, and the established theoretical frameworks, the researcher focused on knowledge sharing in relation to the mentoring process. The established literature on knowledge, including knowledge capture and dissemination, revealed that knowledge sharing was an established implicit or explicit goal. When considering knowledge sharing in the context of mentoring, this was also true, particularly in the three seminal mentoring programs mentioned in the previous section. Kram, Allen, and Leonard's theoretical frameworks each considered knowledge sharing as an absolute goal and/or as intertwined within the intended outcomes. Likewise, the participants of this study also expressed that knowledge sharing was, at a minimum, intertwined and often the goal of mentoring.

Interestingly, even though knowledge sharing had been studied extensively in relation to the built environment, almost no research existed on mentoring and its relationship to both subjects. Only two studies were found that encompassed all three elements: mentorship, knowledge, and the built environment. Neither focused on mentors' perspectives of knowledge sharing. This gap in the literature provided additional impetus for this study.

7.3.4.3. Objective 3. To identify the benefits and challenges of mentorship programs in the built environment

As indicated in the literature review and this study, mentoring programs are not the norm in the built environment. Little research exists on mentoring in the built environment. Likewise, none of the participants had direct knowledge of their organization's mentoring programs and little knowledge of mentoring programs in communities of practice. Nonetheless, mentoring is referred to in a positive light in existing research, including as a benefit to organizational learning and as a support mechanism to human resources, which are extensively detailed in this study's literature review, (Section 2.2. The Mentorship Process). In addition to the known benefits of mentoring programs, the study participants considered other more complex features as benefits, including understanding that people are the keys to enduring success, (Section 6.4.1. Advantages of Mentoring). There are also known challenges to mentoring, especially in mentoring programs, including incompatibility within the dyad, trust issues, and the project-based nature of relationships, (Section 2.2.7. Issues in Professional Mentoring Programs). Interestingly, in addition to those issues, the participants mentioned insightful challenges, including that tacit knowledge isn't captured within their organizations. Their view was that knowledge loss was inevitable due to retirements and exogenous shocks such as the 2008 Great Recession, etc., which also led to contractions in personal investment, (Section 6.4.2 Challenges of Mentoring).

By fully considering the benefits of mentoring, and amplifying them, while mitigating the challenges and/or liabilities of mentoring, leaders/mentors in the built environment can create mentorship processes or a mentoring culture that will enhance knowledge sharing.

7.3.4.4. Objective 4. To determine the critical success factors (CSF) for mentoring and knowledge sharing as identified by mentors

As elements that are necessary for an organization to achieve its mission, critical success factors are the fundamentals, or tactics, that are essential to ensure success. As identified in this study, these include the realization that champions must be identified to serve as literal endorsers and advocates of mentoring and as *known* leaders who can be turned to when challenges arise. Investing in the organization's people and promoting organizational learning are also critical success factors as they provide ongoing support systems for the mentoring process and can proactively mitigate some issues before they arise. Likewise, cultivating communications via various channels increases the likelihood that mentoring will be adopted throughout the organization, as individuals receive cues to engage with mentors/mentees via typical communication media. Explicit communications that encourage

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relationships are great, but statements aren't enough. By employing multiple channels and methods to encourage mentoring relationships (Section 2.2), including tactical elements that become part of a pervasive culture, mentoring can become an inherent aspect of daily life within the organization. Despite all this, even when these are implemented and mentoring becomes pervasive in the organization, leaders must emphasize the need for agility. Change has become a constant in the 21st century-built environment; this must be acknowledged and accepted by the organization's leaders who must seek out even more mentoring opportunities as they search for alternatives and solutions within the problem space.

7.3.4.5. Objective 5. To generate recommendations for mentorship programs that will enhance knowledge sharing in the built environment

After identifying the benefits, challenges, and critical success factors of mentorship programs in the built environment, this study contributed to the industry by providing several key recommendations for mentorship programs. They include developing board-level support for the mentoring initiative including financial support, educational initiatives and cultural changes that explain and encourage knowledge sharing through the mentoring process. To successfully do this, senior management must create a strategic plan that specifically addresses the implementation of a successful mentoring program with the understanding that established business models may need to be updated or changed, including the reprioritization of "billable hours" and the acknowledgment that mentoring occurs spontaneously. These changes will only work if the organization has a supportive culture that encourages mentoring in numerous ways and motivates supportive behaviors through positive reinforcement. Even then, unforeseen circumstances, such as exogenous shocks, may arise that tax the system. Although it is impossible to plan for a specific exogenous event, senior-level managers can utilize their previous experience with past events and proactively project and plan for actions that support mentoring initiatives as a critical part of business continuity, despite what may occur in the future.

7.4. Contributions to Knowledge in Theory and Practice

As the research question and all objectives have been explored and satisfactorily resolved and the main conclusions of the study addressed, this section discusses this study's contribution to knowledge as well as its implications for theory and practice. As such, this study provides a direct correlation between mentoring and knowledge sharing within the built environment, which was not extensively studied until now.

By providing a greater understanding of the connection between mentoring and knowledge sharing, specifically from the mentor's perspective, as well as the mentor's expectations of mentees and disappointment when those expectations aren't met, it has generated a path for discussion within mentoring dyads, within the organization, and within the industry as a whole. It also provides a greater understanding of the role and importance that mentoring can play as a form of social learning within project-based organizations and in the sharing of tacit knowledge within the built environment.

Also not previously highlighted in prior studies was participants' distinct anti-programmatic attitude toward formal mentoring practices. Likewise, *in between moments* had not been defined nor documented in academic and/or industry publications. It fills gaps in the existing literature and provides a basis for further exploration into mentoring as a means of knowledge sharing in the built environment during both a stable/growing economy as well amid an exogenous shock. Finally, the study provided critical success factors for mentoring and knowledge sharing and generated recommendations for mentoring programs in the built environment.

7.5. Limitations of the Study

Although the study answered the research question, achieved its aim and objectives, and contributed to theories and practices in the built environment, there were some unavoidable limitations to the study, which are addressed in this section. Though it began as a mixed-methods study, after the pilot study it became solely a qualitative study, which has specific limitations including its time-intensive nature, smaller sample size, and potential for bias. To negate these limitations, the researcher proactively used stratification sampling to determine the participants for this study; nonetheless, to decrease the novel nature of this research as well as the specificity of the study location, New York City, future research should replicate it in another geographic location to determine the extent to which these findings might be NYC-specific.

She also used several validation strategies to verify the integrity of the data, including using multiple methods (triangulation) of the pilot study, gaining feedback from participants by asking their opinion of an executive summary of the research findings, and introducing reflexivity into the thesis to address biases. Even so, by using the entire New York Building Congress' membership list as the sample frame, which would provide a larger sample size, a survey that would quantitatively verify the data could be conducted. Since this exploratory

study provided the framework for such a survey, it has a greater chance of being properly designed and ultimately valid.

Another limitation of the study was the two-stage approach – the pilot and final study structure. In an attempt to proactively address any issues that arose from the semi-structured interview and thematic analysis processes, the researcher chose to conduct a preliminary pilot interview and conduct the analyses, then proceed to the final interview after verifying that her proposed methodology was successful. Despite this attempt to negate biases, the two-stage approach may have fomented unconscious biases towards interesting codes. As the researcher was aware of this challenge, she focused heavily on the thematic analysis process of finding codes in the data, then assigning meaning to them at a later time. As there's no way to address the potential for bias from the researcher's perspective, by sharing the original interviews with another researcher and asking them to employ the same methodology, the results could be compared and induced biases identified or controlled for, allowing this limitation to be overcome.

In every study there are limitations, thus, the researcher needs to face these limitations early in the research and proactively diminish their potential for compromising the study. After the study is complete, it's important to look back and consider those limitations to determine if they were resolved; if not, the limitations should be addressed via future research.

7.6. Future Research Directions

Although the study was successful in determining the current state of mentorship and its relationship to knowledge sharing in the built environment during New York City's booming economy at the end of the second decade of the 21st century, further research is recommended to determine whether the research findings are an anomaly or represent a norm. Specifically, the recommendations for future research include:

- Explore furthering the research to investigate whether the findings of this study are supported by a wider survey of the original data set (mentors) as well as a new data set (mentees) in the built environment.

  Utilizing another stratified sample from the New York Building Congress' (NYBC) membership list, sample additional mentor participants to expand the original study.

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To incorporate the mentees' perspective, employees of organizations whose representatives are selected by this sampling process could be recruited to participate in the study. In this way, multiple members of the same organization, who would share the same experiences from the culture and policies of their organizations, could be interviewed, which would provide additional insight into the mentoring ecosystems that exist and substantiate the study's findings. Additionally, as these findings might be New York City-specific, the study could be replicated in another geographic location using analogous techniques.

- Conduct a focus group to address outcomes from the study and confirm its results by breaking down each category into distinct elements and addressing them individually to create additional depth and validate this study's findings.

This could also be accomplished using the NYBC membership list as the basis for a new sample organized into focus groups. Determine whether the focus group participants share the study participants' belief that there's a direct link between knowledge-sharing and mentoring. Each of the study's findings should be addressed individually. For example, using open-ended questions, ask about *the informal nature of mentoring interactions*, then ask about *in between moments*, etc. If possible, record the sessions so the researcher can participate in these focus groups as moderator without the pressure of having to record the findings in real time -- allowing later analysis.

- Investigate the impact of implementing the critical success factors determined by this study on organizations within the built environment.

As established in chapter six, there were several key factors for successful mentoring determined by the pilot and final study analyses. The participants expressed them, explicitly or implicitly, as ways to improve their organization's knowledge sharing capabilities through mentoring relationships, organically or through their inclusion in a *mentoring plan*.

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By determining these key critical success factors, organizing them, and integrating them into the culture of the organization, their efficacy can be determined in real time by *testing* them over a defined period. To begin actively implementing a *mentoring culture*, the organization must have at least one *champion* who consistently rallies support for the mentoring process. As mentioned in existing literature (see section 2.1.2.9. Mentoring with an Organizational Learning Context), such a champion must share his or her passion for the mentoring process, educate others on the benefits of mentoring, and help provide resources and suggestions to those engaging in the process. He or she should represent the mentoring process in a manner that represents the work as an investment in the long-term success of the organization. They thereby create/support organizational learning and introduce a learning culture that directly connects mentoring to knowledge sharing within the organization. This can be accomplished by the implementation of several key communication processes that support various learning styles. The champions should encourage mentoring relationships by numerous means, both informally via ad hoc conversations and formally through continuing ed such as Lunch and Learns. No matter the means chosen, the organization's leaders and champions must proactively address the need to remain agile. The rate of change in organizations is ongoing and pervasive; therefore, remaining *ready to pivot* to an allied strategy or process, although challenging, is necessary for the survival of the initiative.

- Examine the preliminary results obtained by interviewing ten of the study participants during the Covid-19 pandemic to determine if their statements reflect the actions and opinions of new participant mentors following an exogenous shock.

  This can be accomplished by integrating the Covid-19 pandemic questions used in the *update to the final study* into the interviews of new mentors and mentees, as mentioned in the first suggestion for future research.

- Further the research by testing the application of the recommendations for mentorship programs that will enhance knowledge sharing in the built environment.

To do this, the organization's mentoring champions should develop a *mentoring-focused strategic plan* that implements ongoing support systems to proactively address issues and mitigate them; the plan should include a multi-dimensional communications plan that encourages mentoring via both strategic and tactical elements. In addition to developing the mentoring plan, the champions should seek board level support within the institution. This support is especially important, as formalized mentoring programs in the built environment are rare, and senior-level managers need to be convinced of their value. Champions should also build supportive cultures that incorporate *mini-practice experiences* while remaining sensitive to *in between moments,* so these can be encouraged and will become valued within the organization.

They should also advocate changing their organization's business model to support the mentoring process if necessary. This can be challenging when many organizations mandate a certain number (or an overall percentage) of billable hours. By lowering the number of billable hours, champions create soft time that will support interaction between mentoring dyads. Co-locating mentoring dyads so they sit next to each other can increase opportunities for unplanned interactions, mutual bonding, and resulting knowledge sharing. They can further induce through positive reinforcement, such as paying for continuing education and product information lunches, etc.

Champions also need to plan for exogenous shocks, such as the Great Recession of 2008 and Covid-19. One way to address these is to prepare a set of generic questions to address "How to respond" and "What actions to take" under such circumstances. Using these will help the organization get prepared and remain agile during challenging times. When employees are prepared, their stress is reduced, and they can participate more fully in the mentoring experience, as well as perform better in their roles in the firm.

These recommendations are just the start of an entire research program to enhance fundamental understandings of mentorship in the built environment, both as it exists contemporaneously, and how it might be improved through initiatives designed to bolster it in a way acceptable to the participants and that allows growth and sustainability from both the

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bottom up (inducements to meaningful participation) and the top down (appropriate resourcing from top leadership.)

7.7. Chapter Summary

The impetus for this study began with the researcher's long-term interest in knowledge sharing as a response to many of the challenges within the built environment, particularly the loss of intellectual capital that occurs when professionals leave the industry, retire, etc. As her research progressed, it became clear that those involved in built environment project-based work over the last four decades had also dealt with numerous sequential challenges arising from performance issues, i.e., outside forces. After completing the literature review, the researcher determined that mentoring—previously determined to be an effective response to these issues —was rarely emphasized in earlier research, especially from the mentor's perspective. As such, this study engaged with these key issues as the researcher explored how to improve mentorship programs as a resource for knowledge sharing in the built environment.

After completing the study and analyzing the results, she determined key research findings, extrapolated from the data, summarized the results of the aims and objectives, and answered the study's research question. Afterwards, she reflected on the study's contributions to theory and practice and the limitations of the study. At this point this study is complete, but there are numerous options for future research; as such, this study represents a jumping off point for an entire body of future research.

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Appendix A: Study Validation Participant Responses and Mid-Covid Reflections

Executive Summary for the Study Validation Process

Introduction

Once both the pilot and final studies were completed, and the data was analyzed, an Executive Summary was written and emailed to 10 randomly selected participants from the complete study. After they confirmed receipt of the summary, the researcher scheduled an additional interview (phone call or teleconference) to seek feedback on the Executive Summary, i.e., the results of the study. Five open-ended questions were asked:

1. What did you think of the Executive Summary?
2. What sections did you find compelling?
3. What stood out as particularly accurate or inaccurate?
4. What would you add or clarify at this time?
5. What might you add at this point?

The Executive Summary:

Email Introduction:

As a thank you for taking the time to share your experiences within this research, attached you will find an Executive Summary of the Mentoring Study. After reading the summary, I'd like to reach out once more to ask some follow up questions about the research findings. Thus, I'll be in touch next week to set up a time to chat again.

Executive Summary of the Research:

After interviewing 20 self-identified built environment professionals from a stratified sample of members of the New York Building Congress, the researcher used thematic analysis to analyze the data, finding patterns and producing themes, then determined the following summarized results:

During the first round of data analysis, in both the pilot and final study, 60+ codes were found inductively, analyzed, and synthesized into eight candidate themes, which were then reevaluated and reduced into four final themes and ultimately one summary statement.

Knowledge Loss is Occurring and Inevitable

Knowledge loss is occurring and inevitable, the first final theme, is based on a number of codes reflecting the participants' beliefs that knowledge, knowledge management and knowledge sharing are important to an organization's success. Many participants also expressed a desire to share their knowledge and skills with upcoming leaders, which aligns with established research and supports the connection between knowledge support and mentoring activities. Even so, when asked for specific actions that supported knowledge-focused initiatives, very few were mentioned as none of the participants were directly involved in leading a program that emphasized these results. When this became the focus of the discussion, several outside forces were mentioned including the cyclical economy, and mergers and acquisitions, which they acknowledged often meant that knowledge loss would be accelerated. Then, a range of emotions was typically displayed – from indifference to defensiveness to resignation. Nonetheless, the participants didn't mention any definite actions that would be incorporated into their organizations.

Mentorship can be Encouraged, but Cannot be Formulated

The second of the four final themes, *Mentorship can be Encouraged, but Cannot be Formulated* emerged from initial statements expressing that mentorship was a positive experience, but didn't need organizational support as *true* mentoring only existed in informal settings. The theme pivoted after the final study as some of the final study participants were positive about formal mentoring programs. Even so, when probing questions were asked, it became clear that these participants had very little or no direct experience with formalized mentoring programs. They did, however, indicate that any program experience was "top-down" and transactional, based on resources allocation and outcomes, and not fully integrated into the culture of the organization. This is a significant outcome as it is in juxtaposition to the results from previous research.

Knowledge Sharing can be Encouraged, but Cannot be Formulated

Similarly, *Knowledge Sharing Can be Encouraged, but Cannot be Formulated* focused on the participants' positive responses to *knowledge processes*, and acknowledged that although beneficial to organizations and individuals, these processes cannot be designed, regulated nor mandated. The participants aligned knowledge sharing with mentorship, but

also referred to them as separate concepts that enhanced employees' abilities and the organization's competitive advantage.

Even so, none of the participants spoke of current knowledge-related programs. A few mentioned the collection of quantitative information in databases; one, in particular, mentioned his organization's database, but recognized that it was almost impossible to retrieve key information as there was too much data in the system.

Mentorship is Effective

A significant majority of participants clearly supported mentorship and found it an effective means to share knowledge with others, as well as a way to enhance professional experience, personal fulfillment, and business success. Thus, the theme *Mentorship is Effective* encompassed many codes and preliminary themes throughout the study as most participants mentioned mentoring as a pervasive part of their organization's culture – albeit without mentioning any examples of organizational support. One key outcome of the research focused on spontaneous mentoring that occurs in the *in between moments*, before and after meetings, walking around the office or jobsite, getting a coffee, etc. Participants mentioned those occurrences as some of the most effective mentoring opportunities.

Study Summary Statement

The four final themes listed previously were developed in the pilot study and remained consistent throughout the final study. As such, a final statement was developed to summarize the results:

> *"**Mentorship is an important and effective means of knowledge sharing and retention, but cannot be formulated or forced**."*

As leaders with more than 20 years of experience in New York City's built environment, the participants had positive views about mentoring particularly in relation to knowledge sharing. They also saw both as ways to buttress employee retention, which reinforces competitive advantage and ultimately business success. While informal forms of both were predominant throughout the interviews, some were receptive to formal mentoring initiatives, although none had active processes in place for either knowledge sharing/capture/retention nor mentoring.

Key Factors to Mentoring and Knowledge Sharing Success

After summarizing the data gathered during all of the interviews, the researcher identified several key factors to leverage mentoring as a path to knowledge sharing. They include:

- **Instilling Champions:** Whether supporting informal or formal mentoring, install champions proactively to support and manage initiatives, including funding and resource allocation.
- **Investing in People:** Positioning mentoring and knowledge sharing as investments that support employees' success, encourages participation, commitment, and long-term success.
- **Cultivating Communications:** Developing clear and consistent pathways of interaction enhances trust and provides support when uncertainty arises.
- **Encouraging Relationships:** Encouraging relationships between mentoring dyads, interorganizational groups, etc. and providing support mechanisms to those relationships can overcome challenges to the process.

Attributes of Mentoring Programs that Enhance Knowledge Sharing

The following are ways to improve and sustain mentorship programs and utilize them as resources to enhance knowledge sharing within built environment organizations:

- **Develop Board Level Support –** Leaders are able to provide support when challenges arise; thus, senior-level managers need to understand, insure and preserve mentoring programs and emphasize their knowledge-sharing properties.
- **Create a Strategic Plan –** To ensure that everyone's efforts are aligned, and to achieve maximum success, leaders should create strategic plans that include mentoring and knowledge sharing strategies and distribute them throughout the organization.
- **Change Business Models –** By proactively addressing and incorporating *soft time* into an organization's culture, leaders can encourage and support spontaneous opportunities between mentoring dyads.
- **Build Supportive Cultures** – By integrating tactical initiatives such as co-locating mentoring dyads and constructing office areas that encourage interaction, such as small break areas and discussion nooks, etc., organizations actively support mentoring and knowledge sharing. These support mentoring in the *in between moments*.

- **Motivate Correct Behaviours** – Using positive reinforcement and by incentivizing certain behaviors, firms can motivate their employees share knowledge, use a management system, etc.

As none of these were mentioned by the 20 participants, nor were they included in the seminal mentoring research, their implementation should be integrated into a longitudinal study to seek validation.

Study Validation Participant Responses

The participants' responses the executive summary and the researcher's follow up questions are listed below:

Validation Question	Participant Responses
1. What did you think of the Executive Summary?	"It seemed very thorough. I recognized some of my comments." "I'd not realized that I was emphasizing informal mentoring, but I guess I was." "Are you going to do more research on this topic? I'd like to know more about this…." "Mentoring is definitely effective; you've got that right. I agree with your statements about spontaneity; I'm at my best just walking around the office." "Your recommendations are very broad, I would have liked more details to determine its accuracy." It's good. I think it's true." "Really interesting and thought-provoking. I'd not thought about knowledge management the way you discuss it and am not sure that's what we were trying to do with our database. Databases weren't bad, they served a purpose…."
2. What sections did you find compelling?	"I didn't know that knowledge sharing was a thing until we talked. The way you explained it makes sense and I can see that its important. I'm interested in learning more." "The attributes section was the most compelling. That needs additional thought and consideration. These things sound easy but can be hard to implement."

		"The knowledge sharing statement. That's something to consider."
		"Your recommendations are well thought out. Culture is important."
		"Your right about your *in between moments*, I've always taken those conversations for granted. I won't anymore."
		"I know this is an executive summary, so its high level, but I'd like to see the finished product. I found some of the statements absolutely gripping and would like to understand how you came to your conclusions. This is a fascinating subject."
3.	What stood out to you as particularly accurate or inaccurate?	"Nothing. It seemed truthful."
		"It was a cohesive argument. The summary statement is a bit challenging, but I wouldn't say inaccurate."
		"I didn't take issue with anything."
4.	What would you add or clarify at this time?	"I don't have anything to add."
		"I know this is an executive summary, so its high level, but I'd like to see the finished product."
		"I'd like to read your dissertation once you're done."
		"Nope."
		"Can you send me some suggestions to read more on this topic? I'd like to learn more."
5.	What might you add at this point?	"Nothing."
		"I don't know what I might be missing so I'll leave it."
		"I think we're good."

Participants' Responses to the Covid-19 Crisis

After the Covid-19 pandemic occurred in 2020, the researcher determined that the affects were so widespread that to ignore this event was impossible. Thus, she reached out again to ten randomly selected survey participants to ask four open-ended questions about their experiences during this unprecedented event. The data is provided below.

Covid-19 Questions:	Participant Responses
What happened to you and your organization during the pandemic?	"Thankfully, we've been busier during the pandemic. Our work was deemed 'public,' so were could keep on working."
	"I always work from home now; I don't even have an office. I just travel to various job sites, have Zoom meetings, occasionally meet in one of the (organization) offices. (Relationship Partner) also works from home now, which is nice."
	"A bunch of us had been put on furlough 50% of the time, for a couple of months. The principals were extremely open about their financial situation. We filed for unemployment one week, then worked one week, then filed the following week as they pursued a PPP loan. During that time, the principals 'waited for the PPP money to come in, or the project to come back.'"
	"Nothing changed. I was home for about three weeks, then my project ruled 'essential' and I was back on site. There were increased safety measures, but other than that, live went on… …We were forced to distance ourselves from others, wear masks, and we installed hand washing stations on site, that's it. Our lives have continued; we're going on with life."
	"My work situation is much more flexible now, due primarily to the pandemic."
	"Since we're both working remotely, I've spent more time with (Relationship Partner) than when we were in the office. Sometimes was get a chance to chat before or after a meeting, but most of the time we're focused on the project."
	"Everyone works from home 1-2 days a week, which was unheard of before. The pandemic forced everyone to figure out *how* to work remotely. Even if the principals wanted everyone in the office five days a week, I don't think the staff would comply…."
How did you respond?	"We were all sent home and I never went back. My new firm has a forward-thinking approach to hiring the best and the brightest no matter where they worked."
	"I was glad to stay home, as I felt more safe not having to go into the city. It was a challenge too. My kids are little, so trying to find a quiet place to work was painful."
	I've lost so many people: family, friends, and people from my home town. It's incredible (voice trailing off)….

	"When I'm in the office, it's a bit of a ghost town, and when we're both there, we have to stay away from each other and wear masks." "There's more meetings now. It's so easy to get together (online), that it's overused. It used to be 30% meetings/collaboration time and 70% production, now it's about 60% meetings and 40% production, which forces everyone to work during meetings – not productive. Then it's onto the next meeting." "…everything is harder, everything takes longer, and the Zoom calls are exhausting."
What has happened to your mentoring? -and- How have you shared knowledge during the pandemic?	"…even if we wanted to get lunch, most of the restaurants are closed, and those that are open are only doing takeout. Since we can't eat together in the office, there's really no point…" "trying to get the specifics shared is exhausting, the rest needs to wait until later." "no, it's about the same, but I value those moments more now." "there's no time to chat anymore; we spend all our time on the project and get off the call as soon as possible." "It's really hard to mentor anyone now. I tried really hard with a young guy who was helping me, but we spend so much time discussing the details of the project, what needs to happen to the drawings, that there's not much time to explain *why* we're doing this or that."

APPENDIX B: INSTITUTIONAL RESEARCH BOARD

In Alphabetic Order:

Draft Interview Guide

Management Consent Letter

Participant Consent Form

Research Participant Information Sheet

Research Participation Invitation Letter

Thank you for agreeing to participate in this study. The information you provide will assist in advancing research focusing on mentorship in the Built Environment. As such, it will be completely anonymous and all information provided with be strictly confidential. It will also be used for academic purposes exclusively; there will be no commercial benefit.

Interview Details:

Date: _____

Organization: _____

Job Title / Position: _____

Years of Experience: _____

Potential Questions:
The Current State of Mentorship in the Built Environment in New York City -
- Do you have experience with mentorship? What is your opinion about mentorship in the Built Environment?
- How did you become involved in a mentorship situation?
- Do you promote mentorship in your organizations? If so, how?

Mentorship as a Vehicle for Knowledge Sharing in the Built Environment in New York City -
- How do you define knowledge management and knowledge sharing?
- Is mentorship a means of knowledge sharing? If so, how?
- Is mentorship-driven knowledge sharing a differentiator for yourself or your firm? Is it a competitive advantage?

Date

Dear Sir/Madam,

As you know, the Built Environment is a primary driver of the US economy, thus it is critically important to address ongoing industry challenges. One such challenge is the loss of *experience* and *knowledge* as professionals leave the industry. I believe that mentorship is a potential response to this challenge.

Since there has been relatively little scholarship in this area, I am currently undertaking a research project titled "An Exploration of Mentorship as a Resource for Knowledge Sharing in the Built Environment" as a portion of the requirements for my doctoral degree in the School of the Built Environment at the University of Salford, in Greater Manchester, UK. This study will develop critical success factors for mentorship as a pathway to knowledge sharing, as well as recommendations to improve knowledge sharing in the Built Environment. This will result in an exploration of how to improve mentoring programs as a resource for knowledge sharing in the Built Environment.

Therefore, I am asking for your agreement/consent to contact thirty (30) of your members who, with their individual consent, will become participants in one semi-structured interview to collect their perceptions of mentorship as an effective process for knowledge sharing in the Built Environment.

The New York Building Congress' participation – allowing me to utilize the contacts in the membership directory to generate a randomized list of potential participants – will greatly assist in my research. NYBC members represent a large cross-section of the Built Environment's senior leadership in New York City. Please be assured that all data will remain confidential. Additionally, I have obtained ethics approval for the study from the University of Salford Governance and Ethics Committee.

In return for NYBC members' participation, each will receive a report of the aggregated data and findings produced by this study.

If you have any questions, please contact me at (email) or (cell). My advisor for this research is Dr. William Swan, Associate Dean Enterprise, from the School of the Built Environment, at the University of Salford in Manchester, UK. His direct contact information is 44 (0) 161 295 2585 or W.C.Swan@salford.ac.uk.

Sincerely,

PARTICIPANT CONSENT FORM

TITLE OF THE RESEARCH STUDY:
An Exploration of Mentorship as a Resource for Knowledge Sharing in the Built Environment

CONSENT TO TAKE PART IN THE STUDY:

I _____ agree to take part in the research study: ***An Exploration of Mentorship as a Resource for Knowledge Sharing in the Built Environment***, led by Ellyn Lester, a PhD researcher at the School of the Built Environment at Salford University in the UK. I have read the participant information sheet and understand:

- I am not required to participate in this research study.
- I may withdraw from this study at any stage, and do not have to provide a reason or sign any statements.
- Any information I provide will be strictly confidential and will be securely stored.
- I have access to a copy of this form, as well as the Participant Information Sheet.
- Any information provided during this research will be used for purposes connected to this project.
- I agree to take part in this study.

Signature:

_____

Phone: _____

_
Email: _____

Date: _____

RESEARCH PARTICIPANT INFORMATION SHEET

Invitation Paragraph

Before you decide to take part in this doctoral research project, it is important for you to understand the parameters and goals of the project. Please take a few minutes to read this information before making your decision. If you have any questions or would like some additional information, you may request it directly from the researcher.

Title of the Research

An Exploration of Mentorship as a Resource for Knowledge Sharing in the Built Environment

Who will conduct the research?

The research will be conducted by Ellyn A. Lester (researcher), as part of her PhD program under the supervision of Dr. William Swan, Associate Dean Enterprise, at the University of Salford in Greater Manchester, UK.

What is the Purpose of the Study?

This research project is focused on mentors and mentorship as a process for knowledge sharing in the Built Environment. The aim of the study is to explore how to improve mentorship programs as a resource for knowledge sharing in the Built Environment.

Why Were You Chosen?

As one of 30 professionals, you were specifically chosen to participate in this study due to your experience and thought leadership in the New York City's Built Environment.

Will My Participation be Confidential?

All of the information provided will be kept confidential at all times and anonymized. Only the researcher will have access, and information provided will be locked in a cabinet in a secure, private office. After audio recordings have been transcribed and anonymized, the originals will be destroyed.

What Will I Do if I Take Part?

During your interview, the researcher will ask you a series of questions pertaining to your experience with mentorship in the Built Environment, the current status of mentorship in New York City, your impressions of knowledge management and your opinion of mentorship as a means of knowledge sharing. The interview will be set in a mutually agreed location, last for 60-90 minutes, and be audio recorded for accuracy, with your permission. Participation is requested, not required, and you may opt out of the interview at any time. If you would like to participate, please continue reading this information, sign the Consent Form, and return it to Ellyn Lester at e.lester@edu.salford.uk.

What are the Possible Benefits of Participating in the Study?

By participating in this study, you will be benefiting the future of the Built Environment by contributing to the future of the mentorship process, particularly as it pertains to knowledge sharing, to ensure sustainability of the professions. Additionally, the information you provide will be aggregated to produce a preliminary report, which will be distributed to the participants for feedback. You will receive both this preliminary report as well as a complete findings at the conclusion of the study.

What is the next step?

After filling out the Consent Form and sending it to the researcher, the researcher will contact you to set an appointment for the interview and to agree on a location. The location will be safe and confidential.

What Will Happen to the Results of this Research Study?

The results of this study will be published in Ellyn Lester's PhD thesis and may be presented at academic and professional seminars as well as published in academic journals. The findings may also be shared with professional organizations that are interested in mentorship. Confidentiality and anonymity will be maintained at all times. The findings of this study will contribute to a better understanding of mentorship in today's Built

Environment and will assist in improving mentorship programs to serve as a resource for knowledge sharing in the Built Environment.

For Further Information, Contact:

(RESEARCHER CONTACT INFORMATION)

Or

Will Swan, PhD
Associate Dean Enterprise
School of the Built Environment
University of Salford in Manchester, UK
Phone: T:+44 (0) 161 295 2585 or W.C.Swan@salford.ac.uk

RESEARCH PARTICIPATION INVITATION LETTER

Date

Dear Sir/Madam,

As a leader in the Built Environment, you are assuredly aware of the challenges posed to organizations when *experience* and *knowledge* are lost as professionals leave the industry. Studies have shown that this loss can affect the effectiveness, competitive advantage, and profitability of firms. I believe that mentorship is a potential solution.

Since there has been relatively little scholarship in this area, I am currently undertaking a research project titled "An Exploration of Mentorship as a Resource for Knowledge Sharing in the Built Environment" as a portion of the requirements for my doctoral degree in the School of the Built Environment at the University of Salford in the UK. This study will develop critical success factors for mentorship as a pathway to knowledge sharing, as well as recommendations to improve knowledge sharing in the Built Environment. This will initiate an exploration of how to improve mentoring programs as a resource for knowledge sharing in the Built Environment.

As an experienced mentor in the Built Environment, I would like to invite you to participate in a semi-structured interview where your experience and expertise would provide invaluable information to the study. If you agree to participate, you will be asked questions about your individual experience and opinions about regarding mentorship, particularly in relation to sharing knowledge with mentees. You may decline to answer any questions, and there are not right or wrong answers; your *opinion* is the answer.

The interview will be held at a mutually agreed place and time and should last approximately 60-90 minutes. With your permission, the discussion will be audiotaped to ensure accuracy of data collection. These recordings will only be reviewed by the researcher, who will transcribe and anonymize them and then destroy the originals. Your identity will not be associated with the audio recording or its transcription; a randomized numbering system will ensure anonymity.

Your privacy is at the forefront of the study's methodology. The information in the study records will be kept strictly confidential, shall be securely stored, and will be viewed only by myself. Additionally, your identity will not be revealed in any publications that result from this study, nor will any oral or written reports be produced that could link you directly to the study. Additionally, I have obtained an ethics approval for the study from the University of Salford Governance and Ethics Committee.

Your participation will greatly assist in completing this research. In return for your participation, you will receive a report of aggregated data and initial analysis for your review and comment, as well as the ultimate findings.

If you have any questions, please contact me at (email) or (cell). My advisor for this research is Dr. William Swan, Associate Dean Enterprise, from the School of the Built Environment, at the University of Salford in Manchester, UK. His direct contact information is T:+44 (0) 161 295 2585 or W.C.Swan@salford.ac.uk.

Sincerely,

Appendix C

Sub-Theme: Knowledge Loss is Inevitable (a)

Code	Details	Illustrative Quotes
a.1. Knowledge is Temporal	**Knowledge is not of value after a certain period of time.**	"…then you try to give them advice… they don't care, don't want to hear it, because they know this is not the position they're going to be in for a while. So it's just a moment in time. …They're not investing. They're not passionate." **– (Participant P1)** "maybe a decade because that's about as far as the useful knowledge goes…" **– (Participant P2)** "She also had a set up for new jobs, and truth be told, we don't do it anymore because we're in the digital age, but get a binder, different tabs, organize every single time… I tried to do it here, but it doesn't work in the same way." **– (Participant P6)** "You have to be willing to reinvent yourself…" **– (Participant P8)** "It's become so computerized. I mean the onset of computers, the way we attack problems and what we do, this new world of Revit an BIM has really changed the way we approach problems. …I never was really a great computer guy. I was more of [pause] I like to site there with this, you know, it is very very, very much different. … to some extent that's almost a detriment because people are constantly running to the computer, (we) used to be able to have to imagine these things in your mind in 3D, just to make sure everything fits. Now everybody want to see it on screen. …you become more of an operator than I designer I think." **– (Participant P8)**
a.2. Knowledge Loss Prevalent- Due to Changes	**Knowledge loss occurs often due to changes caused by uncontrolled forces.**	"…then you try to give them advice… they don't care, don't want to hear it, because they know this is not the position they're going to be in for a while. So it's just a moment in time. …They're not investing. They're not passionate."**– (Participant P1)** "..as people evaporate, knowledge, their knowledge, goes with them." **– (Participant P3)** "… if they don't get something out of the relationship that is better than the unknown of where they're going, um, then we'll lose them." **– (Participant P7)** "Hit the wrong switch, do the wrong toggle in a program and, you know, it is the old thing, garbage in, garbage out. **– (Participant P8)**

| a.3. Transfer of Information Only | **Only data or information is transferred or shared, valuable knowledge is not available or internalized.** | "And I picked up everything based on that, obviously it didn't fill in the blanks. It filled in enough information that I can be like, okay, I know what the intent is…" **– (Participant P6)**

"Understood that she needed to transfer that information and make sure that it was codified in a way that it could be looked at in the future." **– (Participant P6)**

"… if you wanted to move on to schematic design, you need to have checked off all the boxes on the predesign checklist. That's procedural because it forces you to make sure that you gone through the entire process." **– (Participant P7)**

"…we spend a lot of time on project management training, a technical skill, not people skills" **– (Participant P8)**

" [If] somebody comes to me to and asks how to do a problem, I'll get them the answer…" **– (Participant P8)**

"There's other guys I've talked with, I've only talked period." **– (Participant P8)**

"… we do keep the old guys around because they know what the answer is supposed to be. These other guys just have to make sure they comes out that way." **– (Participant P8)**

"I first believed in the early stages of (firm name) that shared consciousness would be best achieved by saving a folder on a network," **– (Participant P10)** |

Sub-Theme: Built Environment Stagnant (b)

Code	Details	Illustrative Quotes
b.1. Construction Process Stagnant	**The construction process evolves quite slowly.**	"We don't have common experiences anymore because our, our approaches to work are quite different. However, the method of building has not really changed tremendously." **– (Participant P2)** "There's no physical set of drawings. There's an iPad and if you aren't comfortable... ... But if you're not comfortable with that technology, you can't really access the drawings. So, there's, there's a breakdown in communication," **– (Participant P3)**
b.2. Knowledge Collection Stagnant	**Knowledge management is not necessary nor relevant.**	"I don't believe they're going to be retaining knowledge because we've had a few people leave and I don't see a plan to rehire that person, or that position, unless there was a need and that new person will come in and do whatever the job is that they need to do." **– (Participant P1)**
b.3. Lack of Formal Financial / Cultural Investment	**Built environment professionals do not prioritize investing in knowledge management nor mentorship programs.**	"...then you try to give them advice... they don't care, don't want to hear it, because they know this is not the position they're going to be in for a while. So it's just a moment in time. ...They're not investing. They're not passionate." **– (Participant P1)** "At one point we actually tried to start a formal mentor/protégé program here, and it never went anywhere," **– (Participant P8)** "So I can't imagine that there is any technology that's gonna get one of these old cantankerous engineers to try to store 'how have you solved an issue." **– (Participant P9)** "I was getting close to buying in and then I moved. I went to another company so I never got to it. But there is software out there that will do the matching of a mentor/mentee," **– (Participant P9)** We are trying to develop some level of formality too, but I think that mentorship is unique because people are unique. So the way that maybe there should be a rough structure to it or always being reminded that it's extremely important because I think what we tend to do in our base nature is we

		veered towards the individual selfish group. – **(Participant P10)**

Sub-Theme: Outside Forces Create Knowledge Gaps (c)

Codes	Details	Illustrative Quotes
c.1. Project-based Teams Create Knowledge Gaps	**The value of an individual's knowledge isn't recognized due to the aggressive nature of a project-based environment.**	"… in the company definite turnover… because in the construction industry (that's) the way it is, right? You know, in the current environment, if it appears that the job is done, so is your job." **– (Participant P1)** "I don't believe they're going to be retaining knowledge because we've had a few people leave and I don't see a plan to rehire that person, or that position, unless there was a need and that new person will come in and do whatever the job is that they need to do." **– (Participant P1)** "… nobody came to pick my brain or to say, 'hey, what do you know about this or what do we do about that?' Not at all." **– (Participant P5)** "It's only captured in the abilities of the people to take on the next challenge," **– (Participant P7)** "There's one group…they haven't hired a new employee in 15 to 20 years. I get people who send me kids all the time. I'll interview them or hire them and I'll assign them to that group. I try to force it," **– (Participant P9)** "So we can learn and let the entire office of 100 people know how to and that has proved to be challenging because of the pace of some things," **– (Participant P10)**
c.2. Generation Gap Creates Knowledge Gaps	**The extreme differences in the way that the five generations in the Built Environment approach work is causing knowledge management / knowledge sharing issues.**	"The differences are becoming more extreme." **– (Participant P2)** "…so what's important to us is like putting buildings together. So, I'm constantly, when I talk to people, it's like 'this is not a line.'" **– (Participant P2)** "So I can't imagine that there is any technology that's gonna get one of these old cantankerous engineers to try to store 'how have you solved an issue." **– (Participant P9)**

Sub-Theme: Loss of Data / Information (d)

Codes	Details	Illustrative Quotes
d.1. Transfer of Information Only	**It is necessary to retain certain data and information for liability, etc., other items are optional.**	"She was gone. I had her notebooks... and I picked up everything based on that, (but it) obviously didn't fill in the blanks. I think she understood that in a level of turnover, in any kind of industry, it's critical path (that's important)." **– (Participant P6)**
d.2. Data Collection Failure (Project-Based Business)	**Even data is not consistently kept due to the nature of project-based businesses.**	"...People just throw it all away... All of the information goes away." **– (Participant P1)** "...the past is the past..." **– (Participant P1)** "...we have all our projects going back maybe 20 years... We have it all written up. We know everything about those projects, so they are now (pause) just also stored in the brains of the partners..." **– (Participant P3)** "It's only captured in the abilities of the people to take on the next challenge," **– (Participant P7)**

Sub-Theme: Outside Forces Affect Business (e)

Codes	Details	Illustrative Quotes
e.1. Recessions Affect Mentoring	**Whether recognized or not, recessions affect mentoring relationships in many ways.**	"The point there was no more mentoring. Basically the training wheels had gone off and now you're on your own. **– (Participant P6)** "I called them recession proof kids. I said, you guys don't understand what it means to be laid off, not because you screwed up something... Not because you weren't working hard... but just because the work wasn't there...." **– (Participant P9)**
e.2. Recessions Caused Loss of Knowledge	**Knowledge is lost as a by-product of recessions.**	"the recession didn't end up affecting me very much other than the fact that I had to make a decision to go ahead and, and move across the country...," **– (Participant P7)** "...the recession holds us (up) because we have a whole, you know, five year periods of missing talent." **– (Participant P9)**

Sub-Theme: Mentorship is Difficult (f)

Codes	Details	Illustrative Quotes
f.1. Rejection of Mentorship	**Some professionals don't see the benefits of mentorship.**	"… it boggles my mind that they just don't realize the value of it, but I think it's even if they, if they see the value of it, they don't want to invest their all that time into it." – **(Participant P4)** "…I think you got some people who are, you know, maybe protective of their knowledge and their position or their time when they're too busy and they just have no interest in. They don't see the advantages… … I mean the construction industry is competitive." – **(Participant P4)** "…they want to be promoted. They want this, they want that, they want this, they want that. Sometimes, you know, you get back to what the older generation used to say, you're lucky to have a job," – **(Participant P9)** "I try to explain it to them, but I see them glaze over when I talk. It's going to have to be something they're going to learn…" – **(Participant P9)**
f.2. Formal Mentorship Difficult	**Many professionals don't value formal mentorship programs, which makes creating and supporting one difficult.**	"…the HR person decided that, you know, (a formal mentorship program is) what the industry does to be competitive, or there was somebody at the corporate level that really believes in it…. – **(Participant P4)** "… they tell you she grabbed lunch with your mentor once a month, that kind of thing. Um, but I think I went to the extreme." – **(Participant P5)** "…there's books, and pamplets, and brochures about how to be a mentor and I didn't read them… The program offered you support, if you chose to use it." – **(Participant P5)** "… I'm not a big believer of the formal mentoring program. I believe mentorship is just, um, it's a combination of teaching, giving somebody a pat on the back, um, helping somebody set a path or correct the path, um giving somebody a boost when they needed to, some cases to bring somebody back down to reality if they need to. I just, I don't, I'm not a big believer that these are these structured programs." **– (Participant P5)**

		...As far as formal training, no, a lot of it is, we'll have staff meetings or something based on a project..." – **(Participant P6)** "At one point we actually tried to start a formal mentor/protégé program here, and it never went anywhere," **– (Participant P8)** "In theory I am the mentor to all these guys... some people take advantage of it more than others." **– (Participant P8)**
f.3. Mentorship Training	**Formal mentorship training is not understood or available.**	...As far as formal training, no, a lot of it is, we have staff meeting or something based on a project..." **– (Participant P6)**

Sub-Theme: Outside Forces Affect Business (e)

Codes	Details	Illustrative Quotes
e.1. Recessions Affect Mentoring	**Whether recognized or not, recessions affect mentoring relationships in many ways.**	"The point there was no more mentoring. Basically the training wheels had gone off and now you're on your own. **– (Participant P6)** "I called them recession proof kids. I said, you guys don't understand what it means to be laid off, not because you screwed up something… Not because you weren't working hard… but just because the work wasn't there…." **– (Participant P9)** "I've probably been through four or five recessions," **– (Participant P9)**
e.2. Recessions Caused Loss of Knowledge	**Knowledge is lost as a by-product of recessions.**	"…during the great recession of the seventies, 75,…we were in trouble… the firm kind of got reduced and reduced and one day our city contracts were all canceled because of New York City… was practically in bankruptcy," **– (Participant P3)** "…that's what happens is as a firm when, when people leave, the firm becomes very stupid, right? So, the idea is how to prevent that and, and, uh, and sometimes, and, and one way is by the transfer of a person's knowledge to others so that the firm can remain smart," **– (Participant P3)** "the recession didn't end up affecting me very much other than the fact that had to make a decision to go ahead and, and move across the country…," **– (Participant P7)** "…and the recession holds us (up) because we have a whole, you know, five year periods of missing talent." **– (Participant P9)**

Sub-Theme: Business Reasons to Mentor (g)

Codes	Details	Illustrative Quotes
g.1. Career Pathing	**Leaders support career pathing opportunities for their employees.**	"I helped her launch into a good career… she started out as a typist… and ended up as a manager with GSA." – **(Participant P3)** "For those students that are showing promise I try to help them to the next step…. Give them advice and things like that…" – **(Participant P4)** "…it's being somebody's trusted advisor, if somebody came in here and asked me for career advice and they felt comfortable enough to do that…" – **(Participant P8)** "…the mentors were taking more notes than the mentees," – **(Participant P9)**
g.2. Succession Planning	**Leaders understand and actively support succession planning efforts.**	"…our real next step is to create an action plan to do which begins and part of it will be transitioning them into an ownership role, by basically delegating duties out to them." – **(Participant P2)** "… it's more important than ever to mentor the young talent coming up behind us… …I had multiple mentors growing up in this industry… but everybody has a finite lifespan and career path, so we need to make sure that the people coming up behind us are properly trained." – **(Participant P5)** "…you've spent your personal time, you put your personal effort into it, to these folks and then, you know, like, sorry… (pause) so, you know, like do you think this effort was really worth it?" – **(Participant P8)** "…I need to create a knowledge base… cause these people are retiring. They're walking out the door without, with stuff that's not being taught in college. A good traction engineer is worth their weight in gold," – **(Participant P9)** "…the real secret in all of this, the ability to replace yourself," – **(Participant P10)** "We will have impromptu discussions here, kind of micro conversations about projects where whenever there's an opportunity for someone to really raise up their involvement,

C-11

		how great a job they're doing, they will almost immediately be challenged with who else are you teaching to do this? And then there will be broader probably five or six times a year where we'll flip on a projector and we'll just talk about this idea of what's extremely important about mentorship. And it's usually encapsulated in this idea of replace themselves," – **(Participant P10)**
g.3. Communal Identity	**Leaders understand the benefits of building a strong communal identity.**	"I like the idea of helping people along. I like the idea of working with people to have them personal and professional growth," – **(Participant P7)** "…whenever there's an opportunity for someone to really raise up their involvement, how great a job they're doing," – **(Participant P9)** "Building the tools and the weapons that you need to have in order to deal with problems like that. So that's a lot of shadowing or people being part of projects, talking to clients at a very early stage," – **(Participant P10**)
g.4. Mentoring Communication Skills	**Leaders focus on communication skills as part of the mentoring process.**	"I put together a lot of processes and documentation… just a lot of documents. So when the next president came in, I gave him all of the information…" – **(Participant P1)** "You have to be able to communicate it to the outside world in a manner that's easy to understand and easy to digest. And if you can, if you can get to that level now, you're achieving proficiency, proficiency in your business and your chosen trade." – **(Participant P2)** "…mentorship is all about communication." – **(Participant P5)** "… I guess the most important thing is communication. It doesn't, mentorship doesn't have to be a structured, a structured program for it to work. It just has to be communication." – **(Participant P5)**

		"I try to tell them I don't listen, put it all in writing, everything in writing." – **(Participant P6)**
		"The key is to understand who you're dealing with. Some people respect the power of the fist and others respect to the softer hand. And the gift is to be able to read the person and see…" – **(Participant P6)**
		"…in real time and with real listening and real articulation of, and sometimes it's more complex than people would like, but just talking through things in a very detailed, deliberate way," – **(Participant P10)**
g.5. Mentorship Good for Business	**Leaders understand that mentorship is good for business.**	"I would generally say that you can ask why we believe something about anything and we as leaders within the company have to be able to answer that. Well, sometimes it may be too abstract or maybe over the abstract or maybe that very visionary. But I'm hopeful that in the way that my parents raised me a kind of in an environment of love and passionate about what you do and intense learning at all times, that it took me maybe a long time to understand how important that was," – **(Participant P10)**
		"…the real secret in all of this, the ability to replace yourself," – **(Participant P10)**

Sub-Theme: People are Keys to Enduring Success (h)

Codes	Details	Illustrative Quotes
h.1. People are Competitive Advantage	**A firm's employees are the source of competitive advantage.**	"The competitive advantage is staking out who you are so that the clients know what your expertise is, they know they can trust you, you have a track record, that track record that you can deliver all the time, and that, um, and then that's what they're going to go with, and then reward you every time." – **(Participant P2)**
		...in the end, it's a people industry. We have a building product that we do, but it's a people industry." – (**Participant P2)**
		"...I think our competitive advantage is I think we're smarter than a lot of architects..." "So most of our clients are repeat clients because we do a good job. Our competitive advantage (is) that we don't fuck up." – **(Participant P3)**
		"Clients usually like to hire architects who, who know their business, who've done there type of work so that we have a much larger range of projects that we go after..." – (**Participant P3)**
		"People just keep going and going and so it becomes. It's not like when you turn 65 and you're gone. You've got guys like (EXECUTIVE) who are around a long time." – **(Participant P4)**
		"If you want to succeed at getting a project, you have to have a relationship with a client." – **(Participant P5)**
		"...the people make the firm." – (**Participant P6)**
		"You have to demonstrate that you have the experience, and you know how to do the work. Then, the big differentiator for many things is (pause) believe in your staff and particularly your project manager," – **(Participant P8)**
		Part of what I believe our competitive advantage is believing and having faith in the idea. You get lots of push back about that idea internally. Other people in the industry don't even understand what I'm talking about, which is fine, but I think it's a return to learning many things, all kind of at one time, but highly specializing in things to give you a broad

		knowledge base and world class expertise in certain facets of what we do. And then also this concept of replacing yourself, that mentorship role being extremely important, caring about one another. I think that leads to a very strong competitive advantage for the time being," – **(Participant P10)**
h.2. Investment in People	**Leaders invest in their people.**	"They're grooming their seconds so that when they leave there is a continuity..." **(Participant P1)** "... it's more important than ever to mentor the young talent coming up behind us... ...I had multiple mentors growing up in this industry... but everybody has a finite lifespan and career path, so we need to make sure that the people comping up behind us are properly trained." – **(Participant P5)** "I'm investing in them – **(Participant P7)** "Mentorship is about investment," – **(Participant P7)** "...you've spent your personal time, you put your personal effort into it, to these folks and then, you know, like, sorry... (pause) so, you know, like do you think this effort was really worth it?" – **(Participant P8)**
h.3. Core Group is Stable	**Leaders believe that their core group of employees is stable.**	"...we have all our projects going back maybe 20 years... We have it all written up. We know everything about those projects, so they are just also stored in the brains of the partners..." – **(Participant P3)** "I mean, people just stick around forever and they keep, you know, they teach..." – **(Participant P4)** "...peers and we talk about technical things or talk about management things or just things in general, (pause) and you know, they've kind of disappeared," – **(Participant P8)** "There's one group...they haven't hired a new employee in 15 to 20 years. I get people who send me kids all the time. I'll interview them or hire them and I'll assign them to that group. I try to force it," – **(Participant P9)**

Sub-Theme: Business Theories Create Success (i)

Codes	Details	Illustrative Quotes
i.1. Innovations Transform Industry	**Innovations, particularly technological ones, have transformed the industry.**	"Some of the things that I had to figure out, we don't have to figure that out a lot because, you know, that now automated. Computers don't teach personal skills. Computers don't teach project management skills," – **(Participant P8)** "So I can't imagine that there is any technology that's gonna get one of these old cantankerous engineers to try to store 'how have you solved an issue." – **(Participant P9)**
i.2. Mentoring Connected to Knowledge Management	**Leaders understand that mentorship leads to knowledge management.**	"They're grooming their seconds so that when they leave there is a continuity..." – **(Participant P1)** "... it's more important than ever to mentor the young talent coming up behind us... ...I had multiple mentors growing up in this industry... but everybody has a finite lifespan and career path, so we need to make sure that the people coming up behind us are properly trained." – **(Participant P5)** "I felt so strongly about that idea after he explained it to me like it was this a new piece of knowledge that much of the cultural elements in this company are based solely around that idea, which I think is directly tied to the apprentice master relationship, which is deeply tied to mentorship," – **(Participant P10)**

Sub-Theme: Trust is Imperative (j)

Codes	Details	Illustrative Quotes
j.1. Trust is a Competitive Advantage	**Trust between employer and employee develops into a competitive advantage.**	"You have to have a good relationship with the people you report up to…" – **(Participant P5)**
j.2. Trusted Advisors are Competitive Advantage	**Employees who become trusted advisors are part of a firm's competitive advantage.**	"Clients will turn to the people they trust the most." – **(Participant P2)** "I've been a trusted, loyal advisor to them (client) for over 25 years." – **(Participant P2)** "…the person on the other end of the table has to be sure, you know, has to feel like, wow, I can really work with this person (pause) many times that's the discriminator," **– (Participant P8)**
j.3. Mentorship Requires Trust	**Mentorship requires a mutually trusting relationship.**	"…it's being somebody's trusted advisor, if somebody came in here and asked me for career advice and they felt comfortable enough to do that…" – **(Participant P8)**

Sub-Theme: People are Keys to Enduring Success (k)

Codes	Details	Illustrative Quotes
k.1. People are Competitive Advantage	**An individual's experience and expertise are sources of competitive advantage.**	"The competitive advantage is staking out who you are so that the clients know what your expertise is, they know they can trust you, you have a track record, that track record that you can deliver all the time, and that, um, and then that's what they're going to go with, and then reward you every time." – (**Participant P2**)

…in the end, it's a people industry. We have a building product that we do, but it's a people industry." – (**Participant P2**)

"…I think our competitive advantage is I think we're smarter than a lot of architects…" "So most of our clients are repeat clients because we do a good job. Our competitive advantage (is) that we don't fuck up." – (**Participant P3**)

"Clients usually like to hire architects who, who know their business, who've done there type of work so that we have a much larger range of projects that we go after…" – (**Participant P3**)

"People just keep going and going and so it becomes. It's not like when you turn 65 and your gone. You've got guys like (EXECUTIVE) who are around a long time." – (**Participant P4**)

"If you want to succeed at getting a project, you have to have a relationship with a client." – (**Participant P5**)

"…the people make the firm." – (**Participant P6**)

"… their ability to get things done, their expertise, their experience that they can apply to generation solutions…," – (**Participant P7**) |
| k.2. Investment in People | **Firms invest in employees to retain knowledge and competitive advantage.** | "They're grooming their seconds so that when they leave there is a continuity…" – (**Participant P1**)

"… it's more important than ever to mentor the young talent coming up behind us… …I had multiple mentors growing up in this industry… but everybody has a finite lifespan and career path, so we need to make sure that the people |

		comping up behind us are properly trained." – (**Participant P5**)
		"…you've spent your personal time, you put your personal effort into it, to these folks and then, you know, like, sorry… (pause) so, you know, like do you think this effort was really worth it?" – (**Participant P8**)
k.3 Core Group is Stable	**A firm's core group contains knowledge that leads to business success.**	"…we have all our projects going back maybe 20 years… We have it all written up. We know everything about those projects, so they are just also stored in the brains of the partners…" – (**Participant P3**) "I mean, people just stick around forever and the keep, you know, they teach…" – (**Participant P4**)

Sub-Theme: Knowledge Management / Knowledge Sharing Understanding (l)

Codes	Details	Illustrative Quotes
l.1. KM Familiar	**Leaders are familiar with knowledge management.**	"...he's in it, all these different jobs he is, he's responsible for, and all these execs mean he's a senior, senior exec and he's got other execs and they're all learning how to do job, after job, because we, you know. So, I don't think it's formal, but there's knowledge transfer knowledge management," – **(Participant P4)** "Knowledge transfer is something we're grappling with..." – **(Participant P9)**
l.2. Ignorance about KM Benefits	**Leaders are not familiar and/ or don't understand knowledge management.**	I'm taking your knowledge, the knowledge that this individual has and transforming it into some kind of policy procedure document. – **(Participant P1)** "The cultural side and then technical side," – **(Participant P2)**
l.3. Retain Data / Compile Information	**Retaining data and compiling information is important to knowledge management initiatives.**	"... I still can't throw it away because I'm thinking maybe I will need it, maybe I will use it, but the reality is who knows if I ever will." – **(Participant P1)** "And I picked up everything based on that, obviously it didn't fill in the blanks. It filled in enough information that I can be like, okay, I know what the intent..." – **(Participant P6)** "...we have a server that has terabyte on terabyte of projects within it, which are like literally will say over 12,000 case studies of projects," – **(Participant P10)** "The lessons learned through either postmortem discussions after a project has been approved or denied. But mostly I am very eager to kind of seek out the shared knowledge and the consciousness of where we failed. So we can learn and let the entire office of 100 people know how to and that has proved to be challenging because of the pace of some things," – **(Participant P10)**
l.4. Knowledge Across Strategies	**Multiple strategies are deployed to gain access to knowledge.**	"... When people leave, I think they take a lot of the information with them." – **(Participant P1)** "...maybe I can make some fun things like the person who enters the most lessons learned and get, you know, an extra week of vacation or something like that..." – **(Participant P9)**

		"I don't think you can have this shared knowledge through electronic means, I'm sure. But there are amazing software programs that I don't know about that I, I've been willing to give a look. But I think shared consciousness or knowledge comes from shared experience and storytelling and lots and lots of real conversations. Real communication or I think happens either face to face or over the fall. That's about the best that I can occur." – **(Participant P10)**
l.5. Collecting Information	**Collecting information supports knowledge management.**	"I am trying to figure out if there's a technology out there… that will help make it very easy to capture…the knowledge," – **(Participant P9)** "…we have a server that has terabyte on terabyte of projects within it, which are like literally will say over 12,000 case studies of projects," – **(Participant P10)**

Sub-Theme: Mentorship is Inevitable (m)

Codes	Details	Illustrative Quotes
m.1. Mentoring is Pervasive	**Mentorship opportunities exist throughout the firm.**	(Mentoring) "It's something I always think about... in some ways, when I think about it, it's akin to parenting." – (**Participant P2**) "Have not heard the whole term mentoring being used a lot. I think it's unsaid." – (**Participant P1**) "every problem, every question is like a mini case study," – (**Participant P7**)
m.2. Assumption of Mentorship	**Leaders assume that mentorship is occurring in their organizations.**	No knowledge retention program (not formally) "...a formal thing, I mean people just stick around forever and they, you they teach you..." – (**Participant P4**) "How we're wired to walk through the process with a guy maybe one or two times. Then the third time, it's like, all right, here you go. Here's the job. Take a crack at it." – (**Participant P6**)
m.3. Mentorship Built into the Organization	**Mentorship is built into the culture of the organization.**	"the mentorship process is built into your advancement in the organization." – (**Participant P1**) "I prefer to teach everybody what I know and then I can sit there and do nothing (laughter)," – (**Participant P8**) "I tell them the pros and cons. I'll tell them the things that can make it work," – (**Participant P9**)
m.4. Assumption of Continuity in Mentorship	**There's an assumption that mentorship exists on an ongoing basis throughout the firm.**	"...we have all our projects going back maybe 20 years... We have it all written up. We know everything about those projects, so they are just also stored in the brains of the partners..." – (**Participant P3**) "People just keep going and going and so it becomes. It's not like when you turn 65 you're gone. You've got guys like (EXECUTIVE) who are around a long time." – (**Participant P4**)

Sub-Theme: Mentorship is Fulfilling (n)

Codes	Details	Illustrative Quotes
n.1. Mutual Bonding	**Mentorship is a personal, committed relationship between individuals.**	"They stayed in my house this last weekend while they went apartment hunting. ...Maybe that's an extreme in terms of the mentorship thing but he's like a son to me..." – **(Participant P4)** "I've had mentors that wouldn't, probably wouldn't have considered themselves to be mentors..." – **(Participant P7)**
n.2. Enjoyable Process	**Mentors enjoy the mentorship process.**	"... You should ask about the gratification to the mentor." **– (Participant P3)** "... what they do and what they bring to the project is equal to/exceeds a lot of the much higher paid people." **– (Participant P4)** [latent] "They stayed in my house this last weekend while they went apartment hunting. ...Maybe that's an extreme in terms of the mentorship thing but he's like a son to me..." – **(Participant P4)** [latent] "He gave me real assignments. He gave me interesting things to do. He was willing to sit and explain things to me. He was willing to take me into situations." **– (Participant P4)** [latent] "It feels more like a pure relationship than a mentor-mentee relationship, but it is a mentor-mentee relationship," – **(Participant P7)** "for the mentor, it just makes you feel good, you know, makes you feel appreciated; (pause) in the business environment we're in, you know, it serves a greater purpose," – **(Participant P8)** "I'll be her mentor for life," – **(Participant P9)** "I love so many things about the mentor, the master apprentice relationship I have with this gentleman," – **(Participant P10)**
n.3. Social Values / Responsibility	**Mentorship is a way for a mentor to contribute to society and give back to their professions.**	"what we do is incredibly important to society..." – **(Participant P3)** "... so I came back and I told everyone what you're doing, putting the elevators (in the

		subways, there) are people who were benefiting. ...Engineers and Architects normally don't think of that wider world. ...I went to a building that I designed in 1969 and a children's psychiatric hospital. Well, he (the hospital's director) had the whole staff waiting in the lobby for me and they clapped when I went in because they love that building." – (**Participant P3**)
		"I like the idea of helping people along. I like the idea of working with people to have them personal and professional growth," – (**Participant P7**)
		"for the mentor, it just makes you feel good, you know, makes you feel appreciated; (pause) in the business environment we're in, you know, it serves a greater purpose," – (**Participant P8**)
n.4. Emotional Support	**Mentorship provides emotional support to its participants.**	"As a mentor you have to understand where that person's coming from. You have to understand how that and why that person feels the way they do, why they're asking the question... ...When it comes to career or when it comes to personal issues, it comes to stuff like that..." – (**Participant P5**) "I try to kind of give them the pointers I got in life from, you know, how I helped myself. And then also how the people kind of taught me..." – (**Participant P6**)
n.5. Lifespan of Mentorship	**Mentoring relationships can last for many years.**	"...there's a senior project executive at (firm name),... (name) is probably more than 70 years old now, but he's kind of my mentor. He certainly supports me. I don't know why, I kind of worked for him back when I first started at the company (32 years ago)," – (**Participant P4**) "I looked him up and he was sort of shocked that I would look him up and check in with him, but I think he appreciated it," – (**Participant P7**) "I keep in touch with my mentors," – (**Participant P7**)

		"I'll be her mentor for life," – **(Participant P9)**
		"I love so many things about the mentor, the master apprentice relationship I have with this gentleman," – **(Participant P10)**

Sub-Theme: Mentorship Occurs in a Variety of Settings (o)

Codes	Details	Illustrative Quotes
o.1. Experiential Mentoring	**Real world work experiences contribute to mentorship.**	"...so what's important to us is like putting buildings together. So, I'm constantly, when I talk to people, it's like 'this is not a line.'" – **(Participant P2)** As a mentor, "I'm looking at their qualifications, how they fit into a job. My intent is for them to be a contributing member of the team." – **(Participant P4)** "He gave me real assignments. He gave me interesting things to do. He was willing to sit and explain things to me. He was willing to take me into situations." – **(Participant P4)** "I try to relate something to an experience..." – **(Participant P6)**
o.2. Group Mentoring	**Mentoring occurs naturally in impromptu conversations and in an organization's group training and meetings.**	"... the mentorship I'm preaching right now, which is to the large group in the firm..." – **(Participant P2)** The "department head here used to do once a week, have a class called class, you know, with the junior guys that sit there for about an hour in the morning." – **(Participant P6)** "Sometimes they're like, hey, I remember that story you told me." – **(Participant P6)** ...As far as formal training, no, a lot of it is, we have staff meeting or something based on a project..." – **(Participant P6)** "...peers and we talk about technical things or talk about management things or just things in general, (pause) and you know, they've kind of disappeared," – **(Participant P8)** "We will have impromptu discussions here, kind of micro conversations about projects where whenever there's an opportunity for someone to really raise up their involvement, how great a job they're doing, they will almost immediately be challenged with who else are you teaching to do this? And then there will be broader probably five or six times a year where we'll flip on a projector and we'll just talk about this idea of what's extremely important about

		mentorship. And it's usually encapsulated in this idea of replace themselves," – (**Participant P10**)
o.3. Mentoring in Communities of Practice	**Communities of Practices have mentorship programs and support materials.**	"…just there's books, and pamplets, and brochures about how to be a mentor and I didn't read them… The program offered you support, if you chose to use it." – (**Participant P5**)
o.4. Mentoring in Educational Settings	**Mentorship can occur while a student is at university.**	"I got involved with a project, it was an advocacy group project lead by Professor (Name), uh, and those, uh, eventually be called (name of non-profit formed while in college)," – **(Participant P2)**
o.5. Supervisors as Mentors	**Supervisors are often naturally considered mentors.**	"…I believe the ones that mentorship programs within a firm are considerably more important… … it's beneficial to both the employer and the employee." – (**Participant P5**) …"I want to make sure that their success is, um, that they succeed both for themselves as well as for the firm." – (**Participant P5**) "In theory I am the mentor to all these guys… some people take advantage of it more than others." – (**Participant P8**) "…you've spent your personal time, you put your personal effort into it, to these folks and then, you know, like, sorry… (pause) so, you know, like do you think this effort was really worth it?" – (**Participant P8**) "…the biggest problem of mentoring in the firm is that people volunteer for (it) are usually too busy to do it," – (**Participant P9**)

Sub-Theme: Ways to Share Knowledge (p)

Codes	Details	Illustrative Quotes
p.1. Group Knowledge Sharing	**Groups share knowledge organically.**	"… periodically we'll have the whole firm… somebody will give a talk… with a slide show… that's the other way that knowledge is shared." – **(Participant P3)** "I don't think you can have this shared knowledge through electronic means, I'm sure. But there are amazing software programs that I don't know about that I, I've been willing to give a look. But I think shared consciousness or knowledge comes from shared experience and storytelling and lots and lots of real conversations. Real communication or I think happens either face to face or over the fall. That's about the best that I can occur," – **(Participant P10)**
p.2. Informal Knowledge	**Knowledge sharing occurs in informal settings.**	"I think people do it, but it's not a formal thing." – **(Participant P4)** "It's not like something where you'd have an appointment on the calendar," – **(Participant P7)**
p.3. Training as a Form of KS	**Training is a recognized form of knowledge sharing.**	…As far as formal training, no, a lot of it is, we have staff meeting or something based on a project…" – **(Participant P6)** "We spend a lot of time and effort on formal training… we spend a lot of time on project management training, a technical skill, not people skills…" – **(Participant P8)** "…we spend a lot of time on project management training, a technical skill, not people skills" – **(Participant P8)** "We practice hearings. We do mock heroes to do mock trials and much of it is about the storytelling about what you do, the persuasiveness with which you can discuss engineering, the amount of technical and you can take out of it, so you can still be very credible if asked a question. So the technical pieces provide very strong foundation, but your ability to convey it and person to person way is extremely important as I do think because we're so committed to people and this idea of building and empowering people, that it is a big part…" – **(Participant P10)**

Sub-Theme: Reasons to Mentor (q)

Codes	Details	Illustrative Quotes
q.1. Translating Theory into Action	**Mentors seek out theories to increase success and attempt to activate them in their organizations.**	"He gave me real assignments. He gave me interesting things to do. He was willing to sit and explain things to me. He was willing to take me into situations." – **(Participant P4)** "case study is more realistic and the information is specific to that instance, but might be able to be generalized to other instances," – **(Participant P7)** "Our higher natures look at the importance of teaching on every level in this shared reality or shared knowledge. Then you are going to do have explosive effects of knowledge and wisdom and personal growth and all of those things, so you can't tap into it unless you're willing to take on this very selfless, higher nature, self-aware idea," – **(Participant P10)** "I've gone to a lot of programs, like in CMAA (pause) and I walk out of the room not knowing what the hell they're talking about…," – **(Participant P9)**
q.2. Pursuit of Mastery	**Mentors continuously pursue mastery throughout their careers.**	"That goes through a methodical process of doing it in a way that you write it down, like especially with a calculation or count the calculation, write it out by hand first, go through the process, go look in the book, find it…. You've already kind of just assimilated that. Even thinking about it. That's something I try to instill in teaching to the, you know, the guys I work with and say everyone has their own way of doing things." – **(Participant P6)** "every opportunity is a teaching moment…if you're not learning every day in our profession, you're on your path out of the profession," – **(Participant P7)**
q.3. Assimilate Another's Experience	**Mentors understand and value other's assimilating their experience.**	"…and the firm becomes stupider… So the idea is how to prevent that… and one way is by the transfer of a person's knowledge to others so that the firm can remain smart…" – **(Participant P3)** "case study is more realistic and the information is specific to that instance, but might be able to be generalized to other instances," – **(Participant P7)**

Sub-Theme: Mentorship Reinforces Commitment to Organization (r)

Codes	Details	Illustrative Quotes
r.1. Reciprocal Relationship	**Reciprocal mentoring is beneficial to all.**	(Mentoring) "It's knowledge sharing because there's always young people who have new information that I would never think of…" – (**Participant P2**)
r.2. Communal Identity	**Communal identities reinforce commitment to the organization.**	"… what they do and what they bring to the project is equal to/exceeds a lot of the much higher paid people." – (**Participant P4**) "I think if everyone was thinking about that idea at all times, I'm talking about even in terms (of) two months after they start, then I think it becomes a cultural, foundational element that will become formal and extremely informal way. It will just be necessary. – (**Participant P10**)

Sub-Theme: Reasons to Mentor (s)

Codes	Details	Illustrative Quotes
s.1. Turning Theory into Action	**Theoretical concepts applied to experiential opportunities increase success.**	"He gave me real assignments. He gave me interesting things to do. He was willing to sit and explain things to me. He was willing to take me into situations." – (**Participant P4**) "The process of explaining it to someone else will make clear what you don't understand very quickly," – (**Participant P7**)
s.2. Pursuit of Mastery	**Mastering a skill or a concept is important, as is lifelong learning.**	"That goes through a methodical process of doing it in a way that you write it down, like especially with a calculation or count the calculation, write it out by hand first, go through the process, go look in the book, find it…. You've already kind of just assimilated that. Even thinking about it. That's something I try to instill in teaching to the, you know, the guys I work with and say everyone has their own way of doing things." – (**Participant P6**)
s.3. Assimilate Another's Experience	**Mentorship is important to encourage knowledge sharing, which increases knowledge management.**	"…and the firm becomes stupider… So the idea is how to prevent that… and one way is by the transfer of a person's knowledge to others so that the firm can remain smart…" – (**Participant P3**)

Sub-Theme: Mentorship is Personal (t)

Codes	Details	Illustrative Quotes
t.1. Personal Relationships	**Mentoring relationships can become quite personal.**	"...the mentee can become dependent upon you." – **(Participant P3):** "It was an intimate relationship." – **(Participant P3)** I was a young fella, you know, he really put himself out and wound up spending a lot of time with me. So, that project basically fostered that relationship." – **(Participant P8)**
t.2. Parental Relationships		(Mentoring) "It's something I always think about... in some ways, when I think about it, it's akin to parenting." – **(Participant P2)** "They stayed in my house this last weekend while they went apartment hunting. ...Maybe that's an extreme in terms of the mentorship thing but he's like a son to me..." – **(Participant P4)** "The key is to understand who you're dealing with. Some people respect the power of the fist and others respect to the softer hand. And the gift is to be able to read the person and see..." – **(Participant P6)** Some extremely powerful mentorships throughout my career. I think it started very early in this almost very natural family and mentorship where my grandfather was a builder and have the opportunity to, as a young kid just walk around...," – **(Participant P10)**
t.3. Mutual Bonding	**Mentoring dyads can become emotional relationships where each participant is bonded to the other; this may last for many years.**	"I'll be her mentor for life," – **(Participant P9)** "I love so many things about the mentor, the master apprentice relationship I have with this gentleman," – **(Participant P10)**
t.4. Mentorship Requires Chemistry	**Not all mentoring relationships work, successful ones have *chemistry*, thus share a special connection.**	"...we just have that sort of personal chemistry or whatever and they're willing to listen and I'm willing to spend the time." – **(Participant P8)**