

Design, Business Models, and Embedded Values: Developing a
mentor program management platform as a model of humane
technology

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Ryan Wold

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Dr. Lee-Ann Kastman Breuch, Co-Advisor
Dr. Ann Hill Duin, Co-Advisor

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Dedication

To those with the courage to keep learning

Abstract

Mentor programs proliferate across society and the benefits to participants and the sponsoring organizations have been extensively documented, yet mentor program coordinators face many structural, financial, and technological challenges. These challenges have been exacerbated as technology continues to play an increasingly central role in the facilitation of mentor programs. In response to the technologization of mentor programs and the reality that mentor programs are validated but struggling, this dissertation explores how the principles of humane technology could be used to develop a platform that helps mentor program coordinators navigate these challenges. The data from the first stage of a participatory design research process that included immersion in the world of mentor program management and interviews with mentor program coordinators from universities, government, non-profits, and startup accelerators, revealed that mentor program coordinators encounter a series of conflicts intrinsic to mentor program management, for example they encounter conflicting desires to provide participants more autonomy or more structure. As mentor program coordinators attempt to navigate the conflicts associated with sustaining a mentor program, they find themselves acting as part technology designer, part entrepreneur, part technical communicator, and part social justice advocate. This dissertation concludes by providing a critical reflection and recommendations for how mentor program coordinators can apply the principles of humane technology when making decisions about the design, business model, and embedded values of a mentor program.

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Chapter 1: Introduction to Mentor Programs and Humane Technology

In this introductory chapter I first provide a definition of mentorship and mentor programs. Second, I explain why the concept of humane technology is relevant for thinking about how to address the problems facing mentor programs and mentor program coordinators. Third, I provide an extensive literature review about mentor program management and the way the technologization of mentor programs is affecting the development of mentor programs. Fourth, I return to the concept of humane technology and explain why it is productive to ground the effort to develop humane technology for facilitating mentor programs in technical communication and entrepreneurship. I conclude the chapter with an overview of the remaining chapters of the dissertation.

Mentor Programs, Valued but Struggling

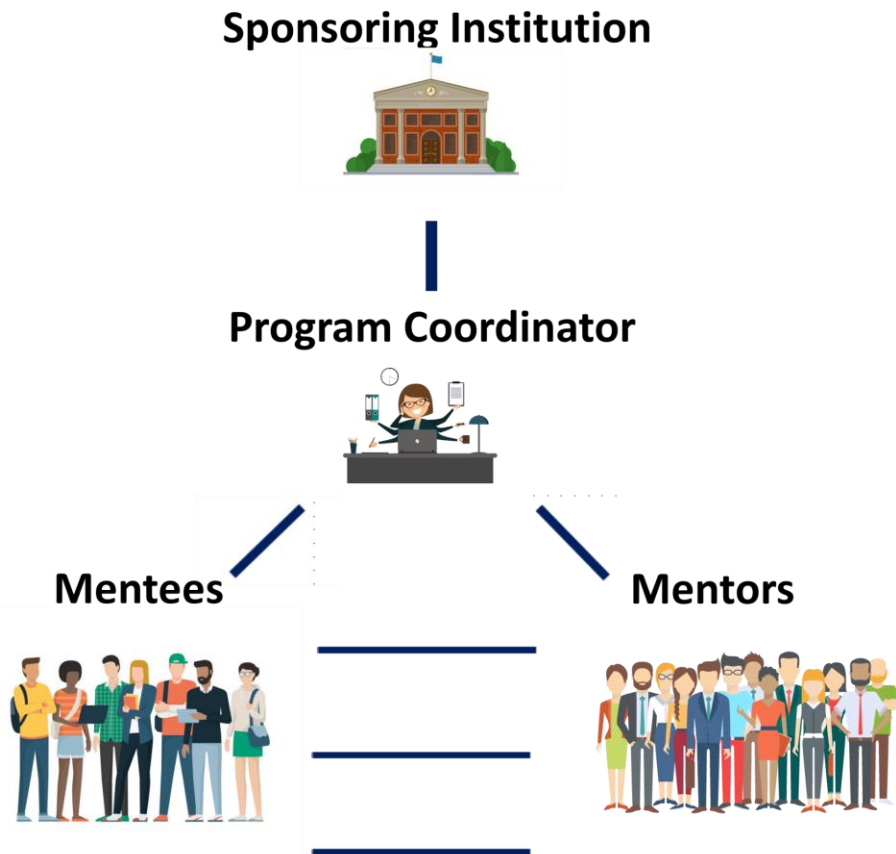
Since mentorship and mentor programs proliferate across society and can mean different things to different people, it is necessary to begin with a definition of mentorship and mentor programs. Ferman (2002) provided a helpful definition for embracing the many different ways mentorship manifests itself in the world saying mentorship is “a process whereby one is assisted, guided and advocated for by another” and “it can lead to an overlap with networking and other collaborative endeavors and can occur in many and varied modes, ranging from frameworks characterized by hierarchy and formality to those marked by informality and a peer relationship” (p. 147). Mentorship can look different in terms of the intensity, longevity, focus, and activities of those participating in the mentoring relationship, but regardless of these differences a mentoring relationship is predicated on one person intentionally providing assistance, guidance, and advocacy to another. Mentorship may take place within an existing relationship, such as a boss

mentoring an employee, or the mentoring relationship may exist for the sole purpose of mentorship.

For this dissertation I will primarily focus on mentoring that takes place within mentor programs. Ferman's definition of mentorship is representative of the way that the scholarship about mentorship typically overlooks providing an explicit definition of mentor programs. It is common for authors to refer to mentorship that takes place within the context of a mentor program simply as *formal mentoring* (For example see Bell & Treleaven, 2010; Freeman, 2002). Since this dissertation is focused specifically on mentor programs or *formal mentoring*, I want to start by providing an explicit definition of what I mean when I use the term mentor program. I define a mentor program as an institutionally sponsored system that facilitates mentorship. A mentor program has a sponsoring institution meaning the program exists within a school, company, nonprofit, or any other type of institution. In some cases, the mentor program may be its own institution if a group of people organize together for the primary purpose of helping each other develop mentoring relationships. Mentor programs may focus on just facilitating the formation of dyadic mentoring relationships, or they might also facilitate events for everyone that is a part of a mentor program. For example, a mentor program might encourage mentor pairs to meet once a week and there might also be a full group event for all program participants once a month. Another characteristic of mentor programs is that they must have a coordinator, a person or group of people who design all elements of the program. The responsibilities of the mentor program coordinator may vary due to the focus of the mentor program, but some of the typical mentor program coordinator responsibilities include recruiting participants to join the mentor program, facilitating the matching of mentees and mentors, defining expectations regarding the frequency of mentor meetings and the longevity of mentor matches, and educating mentors and

mentees about the expectations for the program. Figure 1 illustrates the key components of a mentor program.

Figure 1: A mentor program has a sponsoring institution, a mentor program coordinator(s), and program participants.



The value of mentorship and mentor programs is almost universally recognized. As such mentor programs proliferate across cultures and almost every part of society. Although mentorship is not a panacea, it is often viewed as an essential component for addressing societal problems such as recidivism (Sells, et al., 2020), gender equality in education (Carlson, et al., 2016), resistance to marginalization (Baldwin & Johnson,

2017), academic persistence (Brooms & Davis, 2017), and even the ability to identify fake news (Lee & Kim, 2018). Despite the widespread practice of mentorship, the abundant literature asserting the benefits of it, and the seemingly simple premise of sharing knowledge and experience with those who seek it, creating and sustaining mentor programs is a complex and difficult endeavor. The challenges associated with managing mentor programs lead to many programs getting discontinued each year, and many more never even launching in the places where they are needed the most. Later in this chapter I will provide an extensive literature review about mentorship, mentor programs, and the issues mentor program coordinators encounter.

Mentorship and structured mentor programs are common across society, but the problems associated with trying to create and sustain mentor programs are not the same. To illustrate some of these problems, let me share some quick examples from mentor programs that I have been involved with while in graduate school.

- For four years I was a volunteer with a juvenile probation mentor program in Minneapolis, MN that matched students transitioning out of the detention center with community mentors. In the fall of 2020, the director of the program called and sadly informed me that the county cut the budget for the program. This seemed like a particularly confounding decision considering the many success stories of the program and the likelihood students probably needed more support than ever as they navigated the loneliness of the pandemic and the aftermath of the murder of George Floyd.
- As a research assistant for the Technical Communication Advisory Board, I help coordinate a mentor program for the Department of Writing Studies that connects technical writing students with industry leaders. After

running the program for a year via spreadsheets and email, I learned the University Alumni Association had a contract with a company that provides sophisticated mentor program management software that eliminates most of the busy work associated with running a mentor program. Unfortunately, taking advantage of the tool was not really an option since getting our program included under the Alumni Association's license would have cost roughly three times our operating budget, of which the mentor program was only one component.

- In the year after completing undergrad, I participated in a year-long volunteer program that sends recent grads around the world to do service work. I occasionally attend networking events for former volunteers of this program. At each event a similar conversation happens, as someone who recently returned from their year of service says, "Wow, it would have been really helpful to talk to you before I left and while I was there." Everyone at the event nods and agrees that there should be some sort of mentor program to help prepare the new volunteers, yet this mentor program has never been created.

These three vignettes capture the spectrum of the challenges facing mentor programs as a whole and mentor program coordinators specifically. One program got discontinued, one is functioning sustainably, but does not have access to the tools that could help it run more efficiently, and one just never came to fruition. Although there is something familiar about a county cutting youth programming, an academic department not being able to afford the latest software, or a nonprofit not seizing an opportunity to improve operations, I still find it confusing and frustrating that these problems related to providing mentorship exist in a time where research has decidedly affirmed the value of

mentor programs and inexpensive and easy-to-use communication technologies proliferate. These problems related to mentor programs do not exist in a vacuum. People lacking access to sustainable mentor programs is part of a larger pattern of a social problem persisting or worsening despite collective knowledge of the importance of addressing the problem and an abundance of technologies available that claim to be designed to solve it. For example, there is an ever increasing supply of advanced communication technologies available, yet social science researchers continue to claim America is experiencing an epidemic of loneliness (Klinenberg, 2018; Jeste, Lee, & Cacioppo, 2020), and there is mounting evidence that the new communication technologies are actually exacerbating the problem (Twenge et al. 2022; Turkle, 2015). The problems facing mentor programs are complex and the result of a combination of technological, financial, social, and structural conditions. Addressing these problems requires more than simply providing research demonstrating the value of mentor programs. For mentor programs to become more sustainable and accessible, change needs to take place at several different levels.

Fortunately, the Center for Humane Technology has developed a framework for thinking about complex social systems like mentor programs. The Center for Humane Technology is a non-profit based in Silicon Valley that was founded in 2018 with the mission to “drive a comprehensive shift toward humane technology that supports our well-being, democracy, and shared information environment” (Center for Humane Technology, 2022). I will provide a more detailed overview of the organization in chapter two. The organization recognizes the reflective nature of the way humans and technology relate, where technology influences culture and culture influences technology, thus they take a holistic approach to thinking about addressing the societal problems caused or exacerbated by new technologies. The Center for Humane

Technology defines *humane technology* as technology that “honors human nature, grows responsibly, and helps us live in alignment with our deepest values” (Center for Humane Technology, 2021). Figuring out how to solve the problems facing mentor programs will definitely involve humane technology, but technology is not the only factor. So, the Center for Humane Technology’s holistic approach that recognizes the importance of the social, structural and technological factors that contribute to shaping a complex system serve as a useful starting point for thinking about the problems facing mentor programs.

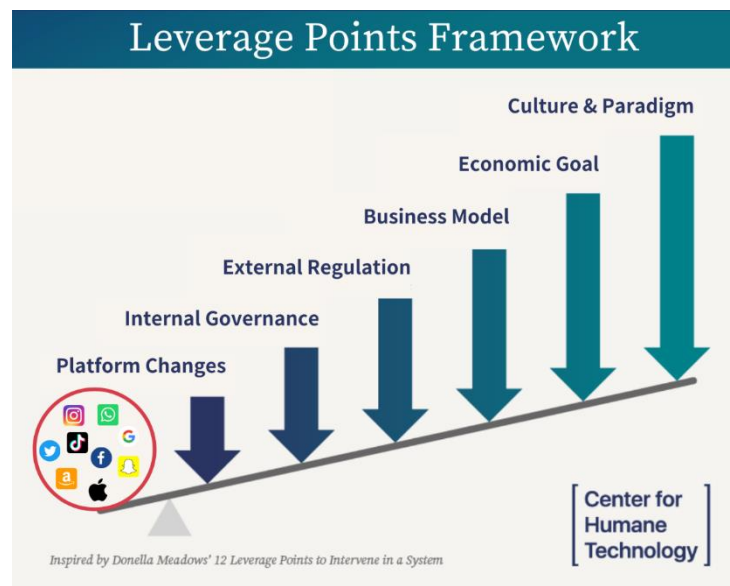
Mentor program coordinators seeking to develop new programs or improve existing programs might be able to benefit from the design principles advanced by the Center for Humane Technology. The Center for Human Technology has published a set of principles they hope will guide the people creating the technologies that mediate complex social systems to create more humane technologies. The six principles for developing a humane technology include:

1. **Obsess over values:** Create technologies that intentionally promote meaningful values rather than indifferently promote easy to track metrics like clicks or time spent on a site.
2. **Strengthen existing brilliance:** Create technologies that complement people’s skills rather than assuming technology is always the solution.
3. **Make the invisible visceral:** Make sure the way designers and owners of a technology benefit from a user’s actions is obvious and visible to everyone involved.
4. **Enable wise choices:** Create technologies that empower people to make informed decisions

5. **Nurture mindfulness:** Create technologies that help people be more aware of their decision making and thought patterns.
6. **Bind growth with responsibility:** Make platforms where the value added to society grows as more people adopt the technology. (Center for Humane Technology, 2022)

In the fall of 2021, The Center for Humane Technology provided a framework for how their principles can be applied to make changes in complex systems. Using social media as their example of a complex system, the Center for Humane Technology worked to identify opportunities for change within the complex system of that is the way humans interact with social media. They referred to these opportunities as leverage points, and the leverage points ranged from things technology companies could control such as making design changes to their platforms and adjusting their business model to societal level changes such as government regulation and changing the cultural paradigm of social media use (see Figure 2).

Figure 2: Example of how the Center for Humane Technology presented opportunities to intervene in a complex system.



Although not every aspect of the Leverage Points Framework is relevant to the problems facing mentor programs, it is a helpful example. It suggests the principles for designing humane technology can be used as a starting point for identifying the leverage points for making change and improving the way mentor programs and the technologies used to facilitate mentor programs are designed. Thinking about mentor programs in terms of humane technology is also useful, as the term *humane* shifts the focus of program design from institutional needs to the needs of human participants.

Thinking about this example of using the principles of humane technology to develop a framework for intervening in a complex social system helped shape the research questions for this research project. This dissertation uses the definition of humane technology and the principles provided by the Center for Humane Technology as a launching point for exploring how the principles of humane technology could be applied to developing mentor programs and the technologies used to facilitate mentor programs. Or more specifically, **how might mentor programs be designed to reflect a humane technology framework?**

Before applying the Center for Humane Technology's principles to create a framework for improving or building new mentor program management tools, it is important to first get a better understanding of the research related to mentor programs.

From Odysseus to Siri Mentorship Matters

Even before there were research journals, mentorship was recognized as a source for growth and personal transformation. The word mentor is derived from the character named Mentor in Homer's *Odyssey* who provided timely advice to Telemachus (O'Donnell, 2017). The practice of mentorship took many different forms throughout history but appeared in almost every cultural tradition. Just about every spiritual and religious tradition incorporates an element of mentorship such as the guru-disciple

tradition in Eastern religions or the elders and sponsors of Western religions. Mentorship is a central component of art across cultures as well. When Campbell (1949) popularized the idea of the monomyth, which is a template for the transformational journey of a hero, meeting with the mentor was included as an essential step in the journey. Referred to as a “meeting with the Goddess” the hero gains valuable insight or tools from the meeting that they would not be able to complete their journey without. From the wise gods of ancient epic poems to Yoda, Dumbledor, and Grandmother Willow of contemporary cinema, humans have embraced mentorship as a positive and arguably essential component of personal growth.

Meta analyses from several different disciplines bolster the positive cultural representation of the phenomenon, as they overwhelmingly indicate that, in general, mentorship provides value to those who participate in mentoring activities. Multiple meta-analyses of studies of youth mentor programs have indicated that mentorship correlates with a variety of prosocial outcomes (Rapose et al, 2019; Eby et al., 2008). Domain specific meta-analyses also align with the conclusion that mentorship is generally valuable to participants and the organizations sponsoring the programs. For example, a review of higher education interventions for struggling students identified that faculty to student mentoring has a positive effect on rates of persistence and graduation, which was better than many other forms of intervention (Sneyers & De Witte, 2018). Meta analyses of peer to peer mentoring programs indicate the practice improves academic outcomes in medical school (Guraya & Abdalla, 2020) and can promote physical fitness across generations (Burton et al., 2018).

The research about mentor programs has contributed to the growing popularity of mentor programs and a desire for mentor programs to play a major role in government

policy. For example, the Office of Juvenile Justice and Delinquency Prevention awarded over \$900 million in grants to mentoring organizations between 2008-2019 because,

“the research on youth mentoring to date has shown that it can be impactful for both prevention and intervention goals in a wide variety of areas of policy interest to the agency, including the prevention of juvenile crime and recidivism, fostering academic achievement, encouragement of positive peer relationships and healthy behavior” (National Mentoring Resource Center, 2021).

International policy scholars have begun exploring how migrant mentoring programs could be a policy lever for systematically improving immigrants' ability to integrate into labor markets of their new countries (Bagnoli & Estache, 2022). However, transitioning from the small, local mentor programs to national large scale programs has proven to be a design and logistical challenge yet to be overcome.

The Negative Side of Mentoring

Although the literature about mentorship paints a generally positive picture, it is important to consider some of the potentially negative outcomes of mentor programs. In a meta-analysis of mentor program research Ivey and Dupré (2020) provided a list of risks associated with mentoring. Some of the most prominent risks include the potential for toxic or abusive relational dynamics to occur between the mentor and mentee. These risks are not unique to mentoring relationships, but mentor relationships are certainly not immune to these issues. The implied power imbalance, especially in workplace mentor programs, where one party might have more organizational status and power, make mentor relationships susceptible to inequitable interactions. The logistics and ethics of scheduling mentor meetings also poses a risk to organizations seeking to establish mentor programs. Scheduling mentoring meetings during work hours can present challenges to industries that are organized based on billable hours, and scheduling

meetings outside of regular work times can make mentor programs less accessible to some participants. Since most professional organizations have a pyramid shaped organizational structure there may be more people who desire mentorship than can have access to it. If the creation of exclusive mentor programs is not tactfully managed, there may be negative indirect effects on those not chosen to be a mentor or mentee. Ivey and Dupre (2020) noted that this issue is understudied, “References to nonprotégés and the nonmentored are prominent in the literature but generally as a benchmark against which researchers evaluate the positive effects of mentoring on protégés” (p. 6).

Attributes of Successful Mentor Programs

Both the mythology and the research dedicated to mentorship demonstrate that despite the popularity of mentorship across history and cultures, effective mentorship is not inevitable. The term mentor is popularly traced back to the character of Homer’s Odyssey (O’Donnell, 2017), yet Rhodes’ (2018) analysis of the literary character named Mentor showed that Mentor is actually a far cry from an ideal mentor. Rhodes explained that rather than serving as a helpful guide to Telemachus while his father was away, “Mentor presided over utter havoc, allowing Odysseus’ household to sink into ruin and to be overrun with unwanted suitors who bullied Telemachus and harassed his mother” (para. 3). The research demonstrates that if left to chance or spontaneity, mentor programs in the real world may mirror the havoc and unhelpfulness of the original Mentor from literature. For example, Welsh, Bhave, & Kim (2012) analyzed informal workplace mentorship relationships and revealed that more often than not one member of the relationship would not define the relationship as mentorship. This lack of mutual identification leads to misunderstandings or disappointment on both sides. When studying formal mentor programs Flynn & Nolan (2008) argued, “no program, no matter how successful, is self-perpetuating. Leadership is the key to the establishment and

continuance of any program and that leadership must be knowledgeable, persuasive, and willing to champion the establishment of the program” (p. 178). In addition to Flynn & Nolan’s claims about the importance of leadership for sustaining effective mentor programs, the literature indicates that long term success of a mentor program depends upon 1) the design of the mentor program, 2) the training provided to the participants of the mentor program, 3) the program’s ability to measure outcomes, 4) the program’s ability to adapt and change over time, and 5) the communal support of the mentor program.

Design of mentor programs

Mentorship is a human relationship, so designing mentor program interactions based on the general attributes of healthy relationships is an important first step of developing a successful mentor program. For example, Rosselot-Merritt & Bloch (2020) stated the importance of rooting mentor programs in transparency, reciprocity, and equity. Transparency should include the time commitment expected from program participants, the goals of the program coordinators, the limits of mentors’ expertise, and the boundaries of mentees’ expectations. Reciprocity and equity refer to both the mentor and mentee entering the relationship freely and both believing they will benefit from participating in the mentor program.

Vetting and training program participants

Analyses of successful mentor programs emphasize the importance of vetting mentors and providing mentors with the necessary support and training (Johnson et al., 2014; Flynn & Nolan, 2008). Training should be provided prior to the beginning of the mentor program and additional resources should be available to mentors throughout the program (Johnson et al., 2014). The training provided for the mentors is connected to the design of the program, as the training ensures mentors understand the goals and

scope of the mentor program. In addition to enhancing the program outcomes and sustainability of mentor programs, if the organizations creating mentor programs clearly demonstrate a significant commitment to the mentor program and willingness to invest in mentor training, the willingness to serve as a mentor increases (Voetmann & Kendall, 2017).

Measure key metrics

Successful mentor programs have clearly defined and measurable goals for all program participants and they are evaluated on whether they meet these goals (Crumpton, 2014). Accountability measures for mentors is particularly important for peer mentor programs (Johnson et al., 2014). If programs are designed to help participants meet transparent goals, measuring the program's ability to help students meet those goals should come naturally. Shunk & Mullen (2013) provided a framework for researching and evaluating mentor programs. This framework suggests mentor programs could be measured and evaluated from three different perspectives 1) tracking pre-mentoring activities such as goal setting, outcome expectations, perceived value and interest in mentoring; 2) tracking during mentoring activities such as attention given to the program, attendance, and effort; and 3) evaluating post mentoring data such as reflection, satisfaction surveys, and skill gains (p. 377). Shunk & Mullen (2013) also encourage tracking variables that might have a moderating effect on the success of participants such as demographics and beliefs about mentorship or education (p. 377). It may be unreasonable for every mentor program to track and measure each of these variables, yet the successful and sustainable mentor programs take the time to figure out what metrics are most important to measure and develop the appropriate systems to support this tracking.

Longitudinal analyses of mentor programs have indicated that mentor programs provide value to the sponsoring organizations that justify the time and money it takes to run them (Villar & Strong, 2007). To ensure continued financial support from sponsoring institutions, mentor program coordinators are encouraged to be able to tell their own story regarding the cost-benefit analysis of their programs (Crumpton, 2014).

Adapt over time

Tracking key data related to the performance of a mentor program is only useful if the coordinators of the mentor program are willing to use the data to make changes that improve the mentor program. Reports on successful mentor programs (For example, Lefera & Swart, 2020; Johnson et al., 2014) portray programs that continuously iterate based on feedback from participants and the latest research about mentor programs. Mentorship may be an ancient phenomenon, but the social, economic, and technological context in which it occurs is constantly changing and mentor programs must adapt accordingly.

Communal support

The long term success of mentor programs depends upon institutional and communal support. If sufficiently designed and supported by the sponsoring organizations, mentor programs need not depend on highly skilled or charismatic mentors. For example, the Silent Mentor Program that originated at the medical school of Tzu Chi University in Taiwan has had a remarkable positive impact on program participants despite, as the name implies, the mentors being silent. The Silent Mentor Program is a training program for aspiring surgeons where instead of practicing on embalmed cadavers, the students conduct practice surgeries on unembalmed bodies of the recently deceased. Practicing surgery on bodies prior to embalming allows students to get practice in a much more realistic situation than previously possible. The Tzu Chi

medical school, in partnership with the Buddhist Compassion Relief Tzu Chi Foundation, modeled this surgical training program after the tradition of mentorship. The bodies are referred to as Silent Mentors, people who voluntarily donated their bodies to the university prior to their death. The practice surgeries the students conduct on the Silent Mentors take place within a series of rituals, one of which is where the students express gratitude for all the Silent Mentors will teach them about human anatomy. The Silent Mentor Program has had a number of positive effects on the participating medical students including improved levels of surgical safety (Hong, Chu, & Ding, 2017) and decreased surgical anxiety (Wong et al., 2021). The Silent Mentor Program provides a powerful demonstration that the mentee and mentor interaction is just one piece of a mentor program. The stories, design, rituals, and support of the sponsoring organization all contribute to determining whether the mentee and mentor interaction will be meaningful and productive.

Attributes of Effective Mentors

Since mentoring is such a common phenomenon that occurs within many different cultures and contexts, the beliefs about what makes a good mentor vary as much as beliefs about effective pedagogy or good parenting. Within popular culture various approaches to mentoring are heralded, such as business articles encouraging people to “find a mentor that scares you” (Glickman, 2012) and in cinema the good mentors are often portrayed as cryptic, indirect, and relying heavily on tough love. The character of Mr. Miyagi from the 1984 film *The Karate Kid* provides the best example of this. When a young student approaches Mr. Miyagi and requests to learn Karate, Mr. Miyagi responds by having the student paint his fence and wax his car, which through some Hollywood magic quickly translates to black belt Karate skills. Despite the various beliefs about mentorship in popular culture, the research on the topic of effective

mentorship consistently demonstrates that effective mentors practice transparency regarding their methods and values (Patel, 2018) and have a clear initial agreement with the mentee about each party's goals and the terms of the relationship (Rosselot-Merritt & Bloch, 2020).

Starting from a clear agreement about the goals of the relationships, effective mentors then practice an intellectual openness and welcome increasing mutuality and friendship as the mentee develops and the relationship grows (Johnson & Ridley, 2018). The ideal mentor starts with a clear focus on helping the mentee meet specific goals of the mentee and then lets the focus of the relationship expand over time. When talking about how a faculty mentor could help a graduate student develop a new course offering, Finch and Fernandez (2014) developed a model that essentially summarizes the research about effective mentoring relationships. They present a five step model that includes 1) Conception- brain storming the idea of a new class together, 2) Collaboration - working together to design the course, 3) Course Approval - the mentor uses their experience and insider status to help the mentee navigate the bureaucratic challenges of getting a new course approved, 4) Co-instructorship - the mentor and mentee teach the class together, 5) Completion - after the course is completed the graduate student is now prepared to teach the course on their own and leverage the experience to earn a professor position. Although this model is a little more hands on and collaborative than most mentor relationships it captures all the important phases of a mentor relationship from working together to gain trust, to the mentor providing guidance and support at key moments the mentee might not be able to navigate by themselves, to finally the mentor stepping back to let the mentee take the next steps on their own. An effective mentor functions, not as a destination, but as a gateway by providing networking opportunities

and insights that allow the mentee to reach new frontiers professionally and often personally as well.

Attributes of Effective Mentees

Mentorship is a dyadic relationship that requires the active participation of both parties. When writing about how to get the most out of mentorship Lee et al. (2015) explain the importance of “understanding that the relationship with one’s mentor involves mutual dependence between fallible persons” (p. 136). The mentee must recognize the limitations of the mentor while still being open to the insights the mentor has to offer. The research about effective mentors indicates that they should be transparent about their goals, values, and methods they use when working as a mentor, but in practice most mentors are not accustomed to stating these things explicitly (Patel, 2018). So, for a mentor relationship to work, a mentee must be proactive in aligning their expectations with the mentor (Lee et al., 2015), clarifying the values of the mentor, and assessing whether the mentor has the skills and knowledge the mentee desires (Zerzan et al, 2009). Choosing mentors in which the mentee has a shared personal interest or identity can also help strengthen the initial connection between mentors and mentees (Bell & Trevleave, 2011). In organized mentor programs, the mentor program coordinators should work to facilitate the connection process to help spark a connection between mentees and mentors.

Considering Effects of Identity on Mentor-Mentee Dynamics

Despite deliberate attempts to define mentorship as an egalitarian activity that benefits both participating parties equally, the notion that a mentor is older and has more power than the mentee is pervasive. So much so that scholars writing about mentoring relationships that exist outside of this stereotypical dynamic find it necessary to invent new terms or use qualifiers to describe the activities. For example, in the literature the

term *peer mentoring* is used to describe people the same age engaging in a mentorship relationship, and *reverse mentoring* is used to describe situations where younger people provide mentorship to older people (Chaudhuri & Ghosh, 2011). In an effort to emphasize the equal contributions of each member of the mentorship dyad, some authors choose to use the term *co-mentoring* (Mullen, 2000; McGuire & Reger, 2003). McGuire and Reger (2003) describe co-mentoring as “rooted in a feminist tradition that fosters an equal balance of power between participants” (p. 54). These examples of scholars resisting or qualifying the term *mentor* indicates it is important to consider how the implied power imbalance intrinsic to mentor relationships intersects with systemic power dynamics related to race, age, ethnicity, and gender.

Scholars have explored how both differences and similarities in the gender, racial, and age identities of mentorship dyads can affect the success of the relationship. Perceived similarities between the mentor and mentee correlate with higher quality support provided to the mentee (Hu, Baranik & Wu, 2014). Finding mentors with a similar identity can help mentees and mentors strengthen their relationship quickly. Results of a mentorship survey of over 2,000 college students found that students of traditionally marginalized groups are more likely to say finding a mentor with a similar identity is important (Ezarik, 2021). 40% of female students said finding a mentor with the same gender identity was preferred, while only 14% of male students said that. 56% of Black students said they would prefer a mentor of the same race, while only 5% of White students said they would prefer a mentor of the same race. Mentor relationships where both participants share a marginalized identity can contribute to empowering both parties and strengthening their sense of belonging at their institution (Baldwin & Johnson, 2018). For example, Baldwin and Johnson (2018) describe their experience of

developing a co-mentoring relationship as “a successful strategy that black women at predominantly white institutions (PWIs) can utilize to resist marginalization” (p. 125).

On the other hand, some warn against over emphasizing the importance of shared identity in mentoring. For example, since at most institutions there are fewer women in leadership roles than there are women who could benefit from mentoring, it would be unfair to place the burden of mentoring all female employees on the women in leadership. For this reason, Shteir (2015) expressed hesitancy to engage in mentorship or encourage other women to feel burdened to take on the unpaid labor of mentorship. Johnson and Smith (2015) argued for the importance of mentoring across gender. Writing from their perspective as male military leaders, they saw how mentorship has the potential to help mentees quickly advance to leadership ranks. In an effort to increase the number of women in military leadership roles they co-authored the book, “Athena Rising: How and Why Men Should Mentor Women.” They described people who hold positions of power as having the responsibility to be an ally for marginalized groups and argued that mentorship could be one of the most powerful tools for increasing diversity in leadership.

Providing mentorship across race and gender does not come without risks. Viernes Turner and Gonzalez (2015) provided an overview of the risks and opportunities in their edited collection that analyzed a series of successful cross gender or cross race mentorship relationships in academia. The risks related to this form of mentoring included the potential for the mentee to feel increased pressure to assimilate to the dominant culture, for cultural barriers or differences of experience to limit understanding, and for pairs to have difficulty managing external perceptions of favoritism or sexual liaisons. The successful pathways for this form of mentoring included the benefits of cross cultural support, an increase in a department’s ally identification, mentoring as

healing, and resistance to academic cloning (p. 4). Although there were obstacles to mentorship relationships that occur across race or gender, Viernes Turner and Gonzalez (2015) identified several themes that helped the pairs succeed. They explained, “although authors [mentor dyads] described differences causing tension in their relationships, these were mitigated, to a large degree, by the characteristics they had in common” (no page number). A major theme that emerged from their analysis of successful cross gender or cross race mentor pairs is the importance of those participating in mentor relationships to be aware of different cultural contexts and experiences that might affect their perceptions, and to realize that different approaches might work well in different situations. Regardless of the identities of the participants, connection still grew from shared identification. In some cases, it was a shared academic or political commitment, in other cases it might have been the shared experience of growing up in a small town, even if the small towns were in different countries.

Considering the Role of Technology in Mentor Programs

Mentorship has historically been viewed as an activity that did not require technology or was better if communication technologies were not involved. Similar to the way the use of terms like “peer-mentor” or “reverse-mentoring” reveal assumptions about how people normally think of mentorship, the abundance of research dedicated to “e-mentoring” revealed that mentorship has historically been viewed as an activity not mediated through electronic communication tools. Mentor programs facilitated through computer interaction are not new. Studies documenting effective computer mediated mentor programs have existed for decades. For example, Duin et al. (1994) demonstrated that college students could effectively provide mentoring to high school students via telecommunications. In this study, a mentor program that was conducted

via computer file sharing was seen as valuable by the mentees, mentors, and program coordinators. As communication technologies have advanced significantly since the early studies that experimented with facilitating mentor programs virtually, the research about this issue continues to demonstrate that using communication technologies to facilitate a mentor program need not be seen as a deficit. Meta analyses of e-mentoring programs have indicated that mentor programs that leverage the latest communication technologies reflected the same benefits associated with in-person mentoring programs (Single & Single, 2005). Mentor programs facilitated virtually also increased the access to mentor programs as technologies reduced some of the geographic and financial barriers for both mentee and mentor participation (Single & Single, 2005; Packard, 2003).

E-mentoring programs defined as programs that are “completely virtual or a blend of face-to-face and virtual” continue to grow in popularity (Neely, Cotton, & Neely, 2017, p. 223). The virtual nature of e-mentoring programs is well suited for facilitating large and geographically diverse mentor programs. Neely, Cotton, & Neely (2017) hypothesize that technological advances that increase the media richness, synchronicity, and social connection of e-mentor programs will correlate with higher levels of trust and relationship quality (p. 23). This suggests that as technology advances and virtually facilitated mentor programs proliferate, the positive outcomes of the programs will persist and increase. However, programs have yet to be thoroughly studied in many of these new contexts such as virtual mentor programs for college interns working in hybrid offices (Tinoco-Giraldo, Torrecilla Sánchez, & García-Peñalvo, 2020). Also, there is debate about the merits of continuing to research e-mentor programs as distinct from in-person mentor programs (Tinoco-Giraldo, Torrecilla Sánchez, & García-Peñalvo, 2020, p. 19). The pandemic led to many mentor programs moving quickly to an online format

or giving the participants the choice of how they choose to meet. The hybrid nature of the contemporary workplace makes it increasingly difficult to define what is and is not e-mentoring.

Initially the literature exploring the use of new technologies in mentor programs framed the technologies as the potentially limiting factor. In-person, human-to-human mentorship was viewed as the gold standard in which the technology-facilitated mentor programs were compared (Single & Single, 2005; Dellerman et al., 2019). The most recent research related to the emerging technologies used for mentor programs has flipped that paradigm. Increasingly, human mentors are viewed as the limiting factor in mentor relationships. For example, Dellerman et al. (2019) proposed a mentor program that leverages artificial intelligence, so mentees are not restricted to learning from the limited and potentially biased advice from one human mentor. The convergence of decision science research that exposed and then popularized how susceptible humans are to decision errors and unconscious bias (Bazerman & Moore, 2012; Kahneman, 2011; Thaler & Sunstein, 2008) and artificial intelligence has led researchers to explore innovative alternatives to traditional mentorship.

Dellerman et al. (2019) proposed a plan for developing a hybrid intelligence decision support system (HI-DSS) that could substitute or complement the traditional model of mentoring. This approach still views traditional, in-person mentoring as incredibly valuable, but aims to use technology to overcome the limitations of each individual mentor. Regarding the possibility of using an AI support system to assist the mentors in a mentor program for entrepreneurs, Dellerman et al. (2019) argued it could “provide scalable and cost-efficient solutions by leveraging the wisdom of multiple and diverse mentors, iterate the validation and adaptation process, and allow the transference of many entrepreneurs’ experiences to a single entrepreneur, thereby

increasing the learning rate of the individual entrepreneur” (p. 425). The principles at the core of the technology Dellerman et al. proposed are consistent with best practices in mentorship. For example, entrepreneurs are encouraged to seek multiple mentors with diverse perspectives (Feld & Mendelson, 2019) and mentors are encouraged to sort through their biases (Johnson & Ridley, 2018).

At this point I think it is important to mention all the technologies people engage with on a daily basis that essentially function as mentors but are not discussed in the literature about mentor programs. For example, a typical user of Google’s search engine might type in many questions that just thirty years ago might only be answered by a mentor. Platforms like YouTube or Netflix that use an algorithm to recommend videos you might find helpful mimic the actions of the mentor who might send their mentee some links to relevant videos. Except YouTube is powered by artificial intelligence and can draw upon a database far greater than any one human’s memory. At the beginning of this section, I described how one of the early studies about e-mentoring focused on college students using a file sharing system to provide feedback to high school writers. Now, much of that same type of writing advice is built into automated writing software such as Grammarly or the Hemingway App. ETS (Educational Testing Service), the nonprofit that facilitates standardized testing like the TOEFL and GRE, created an app they brand as “The Writing Mentor” (Educational Testing Services, 2022). The Writing Mentor allows people interested in improving their writing prior to taking a standardized test to just download and install a writing mentor rather than seek out a human mentor. Considering the app is built by the same company who facilitates and scores the test, just following the automated recommendations might lead to a higher score than any other type of mentor support could.

Duin and Pedersen's (2021) advice about the future of writing is helpful for thinking about how emerging technologies will require mentors and mentees to rethink the traditional model of mentorship. When talking about the future of writing they explain the importance of "abandoning nostalgic ideas of solo authorship to embrace writing as a dialogic activity informed by human-machine interactions" (p. 94). Duin and Pedersen encouraged writers to "embrace writing as dialogic, sociotechnological construction of knowledge" (p. 13). Similarly, mentor program stakeholders will need to transition from the nostalgic idea that the value of a mentor program comes only from the interpersonal interactions between the mentor and mentee. Participants of mentor programs would also be wise to view their activities as engaging in the sociotechnological construction of knowledge, meaning they must embrace the inputs of human and machine actors. Compared to writers, this transition may be more natural for mentor program participants since networking and sharing of resources has historically been a major component of mentor relationships. Nonetheless, moving to acknowledge and embrace technology as a mentor is a substantial departure from the traditional understanding of mentorship, even if the call is for computers to complement, not replace human mentors as Dellerman et al. (2019) reiterate, "The human should still be the focus, while augmented by machine intelligence" (p. 435). AI decision support for mentors, meaning the mentors get help from an algorithm about how to provide the most appropriate advice for each situation, is just one of many elements of mentor programs that have been or are soon to be augmented by technology. Research and development for computer models that could assist the mentor matching process is already underway (Volodymyrovych, Volodymyrovych, & Mykhaylovych, 2020).

Framing the Challenges of Coordinating a Mentor Program and Identifying Opportunities for Intervention

Seeing the depth and complexity of research related to mentor programs that spans from Ancient Greek mythology to the latest developments in artificial intelligence and decision support systems gives credence to the need to think about the development of mentor programs and the technologies used for facilitating mentor programs carefully. Existing and emerging technologies present the opportunity to improve mentor programs in various ways, but for the addition or expansion of the role of technology in mentor programs to be positive, the design of such technologies must be informed by the research related to mentor programs. Just as The Center for Humane Technology found it necessary to identify leverage points for framing the discussion about creating more humane social media platforms, I found it necessary to create a framework for identifying the key leverage points for thinking about designing mentor programs and the technologies used to facilitate mentor programs. Based on the complex combination of technological, financial, and social dynamics affecting mentor programs I found it appropriate to approach the problem of mentor program management by drawing on the perspectives of technical communication research and entrepreneurship. I will conclude this chapter by explaining why technical communication and entrepreneurship can function as the ideal leverage points for addressing the problems facing mentor programs.

Mentor Program Coordination is a Technical Communication Problem

At its core, coordinating a mentor program is a technical communication problem. Understanding mentor program coordination as a technical communication problem may not seem obvious at first, since most mentor program coordinators would not describe themselves as technical communicators, and people outside the discipline of technical

communication tend to have a vague and narrow understanding of what technical communication is (Rosselot-Merritt, 2020). However, the primary work of mentor program coordinators, which is to connect one group of people looking for specific information (the mentees), with another group of people (the mentors) who desire to share that information, aligns with the traditional understanding of technical communication which is to make complex information more accessible for a specific audience. A deeper look into how the discipline of technical communication has evolved will demonstrate why it makes sense to think of mentor program coordination as a technical communication problem.

The story of the definition of technical communication is a story of stretching and expansion. The Bureau of Labor Statistics described a technical writer, also known as a technical communicator, as someone that “prepares instruction manuals, how-to guides, journal articles, and other supporting documents to communicate complex and technical information more easily. They also develop, gather, and disseminate technical information through an organization’s communication channels” (U.S. Bureau of Labor Statistics, 2020). Although being included in the official list of occupations provided by the government was a notable accomplishment for a relatively young profession, members of the technical communication community continually attempt to update and modify this definition. The particular focus of the attempts to adjust the definition may differ, but Henning and Bemer (2016) provided criteria for adjusting the definition of technical communication that captures the spirit of the various efforts. When they proposed an alternative definition to the Bureau of Labor Statistics, they were motivated to expand the definition, so it allowed for stronger brand identity, connection between industry and academic values, better tracking with industry trends, and more flexibility. Like many others, they were fighting against the discipline being defined too narrowly.

Other attempts to widen the definition of technical communication have aimed to focus on the process and value of the work technical communicators do. For example, Dobrin (1983) defined technical writing as “writing that accommodates technology to the user” (p. 119) and Selber and Johnson-Eiola (2013) encouraged people to think about technical communication broadly as a problem solving activity. What these definitions have in common is they attempt to pull the discipline of technical communication from being a supporting element of an organization to being a central element of any organization, arguing that technical communicators do not just write manuals, they solve problems.

Yet studies exploring perceptions of technical communicators find that many people outside the discipline still view the profession as peripheral to the central operations of a business (Rosselot-Merritt, 2020). Carliner, Qayyum and Sanchez-Lozano (2014) suggest that professional technical communicators’ inability to articulate the business value of their work may contribute to the ambivalent perception of the field. For example, they reported, “Technical communicators rarely track return on investment” (p. 147). Clark and Andersen (2005) argued that the field’s focus on viewing technology as tools also contributed to the marginalization of the profession. They stated that technical communicators focused too much on training practitioners to use tools and not enough on building systems, technologies, and businesses. They proposed that instead, “practitioners and academics approaching technology training [should] train for design credibility [and] train for organizational credibility” (p. 293). Clark and Andersen’s argument can be summarized as accusing technical communicators of spending too much time looking down at how their tools are helping them communicate, and not enough time looking up and out at how they are helping their organization. Seemingly aware of the situation Carliner, Qayyum and Sanchez-Lozano would document almost a

decade later, Clark and Andersen explained that technical communicators had a long way to go to become central decision makers at their organizations. They wrote, “Even if technical communicators become more proactive leaders and gain more durable skills, they have to become the kinds of leaders and knowledge workers who have the business savvy needed to cross boundaries separating them from organizational technology goals and practices” (p. 295). They wrote as though it was common knowledge that the typical technical communicator lacked “the business savvy needed.” This led them to conclude, “We are arguing, ultimately, for an entrepreneurial understanding of technical communication for both academics and practitioners” (p. 299).

In recent years technical communication scholars have demonstrated a growing interest in the world of entrepreneurship. Journals in our field have dedicated special issues to entrepreneurship (Fraiberg, 2020; Spinuzzi, 2017; Spinuzzi, 2016). The descriptions of entrepreneurship offered by technical communication scholars closely align with descriptions of technical communication. Spinuzzi (2017) for example, described entrepreneurship as, “the process of discovering and conceptualizing problems and then solving those problems with innovative solutions” (p. 275). Later he described those solutions as possibly involving “combinations of products, services, processes, or principles” (p. 275). So, within the field of technical communication some scholars have argued for researchers and practitioners to embrace a more entrepreneurial perspective and to be in touch with the business impact of the work they do.

The call for the discipline to embrace a problem-solving and business conscious orientation is far from unanimous. On the other hand, some scholars have found it necessary to work to recover the discipline from being too focused on meeting corporate

needs (Agboka & Matveeva, 2018). Agboka & Matveeva (2018) have argued that technical communication should focus on advocating for the good of humanity and be embraced as a tool for social change. Similarly, St. Amant (2018) argued that effective technology communication is inseparable from advocacy work, since advocacy depends on marginalized communities being able to access and comprehend information. Jones, Moore, and Walton (2016) argued directly against defining technical communication as simply a problem-solving activity as they argued that technical communication scholarship should “unabashedly embrace social justice and inclusivity as part of its core narrative” (p. 211). This line of research encourages people to think of technical communication as a discipline and practice engaged with studying and changing societal structures.

Recognition that technical communication is essential to or inseparable from another domain is not unique to arguments about entrepreneurship or social justice. Similar arguments have been made about design (Pope-Ruark, Tham, & Moses, 2019), project management (Lauren & Schreiber, 2018), user experience (Redish & Barnum, 2011), and accessibility (St. Amant in Agboka & Matveeva, 2018). Together this paints a picture of a technical communicator as part entrepreneur, part social justice advocate, and part technology designer. As mentor program coordinators attempt to navigate the social, technical, and financial challenges associated with sustaining a mentor program, they also find themselves acting as part entrepreneur, part social justice advocate, and part technology designer. Thus, it makes sense to think about mentor program coordination as a technical communication problem.

Entrepreneurial thinking is essential for mentor program management

It is also important to view the challenges facing mentor program coordinators as an entrepreneurial challenge. Eric Ries, the author of *The Lean Startup*, a bestselling

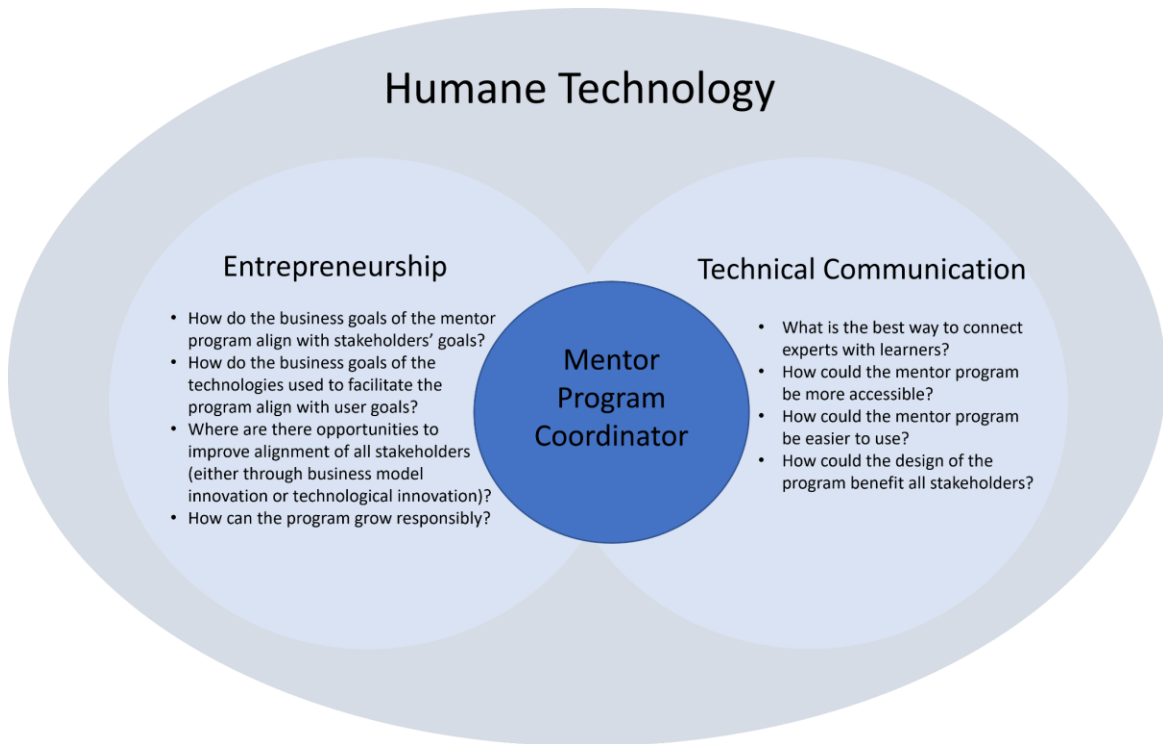
book that is revered as a manual for entrepreneurs (Ries, 2020), defines an entrepreneur as “anyone who works within my definition of a startup: a human institution designed to create new products and services under conditions of extreme uncertainty” (Ries, 2011, Introduction). This inclusive description of an entrepreneur as anyone who is taking the initiative and assuming the risk for building a self-sustaining institution in the face of uncertainty, is helpful for recognizing the entrepreneurial nature of mentor program coordinators. The research about mentor programs suggests that most mentor programs are designed in response to a specific need at an institution, such as improving student retention or increasing diversity in leadership, and the programs are built by program coordinators that are uncertain if anyone will sign up or if the mentor program will succeed.

The financial problems plaguing so many mentor programs provide another argument for considering the importance of entrepreneurial thinking for mentor program management. For a mentor program to sustain itself, the mentor program coordinators must develop a sustainable business model. A business model is the framework of financial incentives that allows an organization to sustain itself or turn a profit. If mentor programs cannot afford the resources needed to sustain themselves, that means they have an unsustainable business model. An entity need not be an independent business to have a business model. Each department or program within an institution has its own business model as well. For example, Carliner (2012) showed that the business model of technical communication teams within organizations, that is how the department receives its funding, can vary widely and the business model influences the way the department operates and the type of outputs they create. Business model research has increasingly been recognized as an important factor for addressing complex problems in fields ranging from technology and innovation management to environmental

sustainability (Massa, Tucci, & Afuah, 2016). Activists working to address societal problems created by technology argue that the business model of an organization or product will influence every design decision of the products or services (Harris, 2019). Mentor program coordinators face a variety of business model decisions. For example, mentor program coordinators working in a university setting have to decide whether the mentor program will be funded by an academic department, college, university, or alumni association. Then the funding entity might provide funding in a way that impacts the program coordinator's design of the program, such as providing a flat amount of funding or providing support based on the number of participants.

Considering the technical communication challenges of trying to connect multiple audiences and the relevance of business model decisions, it becomes clear that coordinating a mentor program exists at the intersection of technical communication and entrepreneurship. Figure 3 illustrates how the problems facing mentor program coordinators exist at the intersection of technical communication and entrepreneurship, and I am using the principles of humane technology as a means for identifying ways to address these problems.

Figure 3: The problems facing mentor program coordinators exist at the intersection of technical communication and entrepreneurship.



A note about positionality: An entrepreneur and technical communicator

Similar to the work of mentor program coordinators, my approach to this research project is rooted at the intersection of technical communication and entrepreneurship. My commitment to mentor programs is personal as demonstrated by decades-long involvement in mentor programs as a mentee, mentor, and program coordinator. As I began to connect my personal interest in mentor programs with my research related to humane technology, I quickly recognized many opportunities where I thought the development of new technologies could help improve the experience for people managing and participating in mentor programs. Since I was aware of these opportunities and I was formally studying the world of mentorship and the technologies used to facilitate mentorship, I started to brainstorm about how after I finished this dissertation project focused on researching the technologies used for mentorship, I

would then transition to thinking about building a new mentor program management technology. I started with this assumption that technology entrepreneurship and qualitative research were distinct worlds, with distinct values and processes that should not be intermixed. However, the participatory design research methodology (detailed in chapter 3) provided the opportunity to connect the research and entrepreneurial aspects of my exploration of mentor programs. As a result, this project is both critical and creative. Throughout this dissertation I provide theoretical contributions for understanding humane technology and mentor programs as well as practical recommendations about how to design mentor programs and the technologies used for facilitating mentor programs.

Overview of Dissertation

As explained above, this dissertation seeks to explore how mentor programs and the technologies used to facilitate them could be designed in alignment with the principles of humane technology, meaning they honor human nature, scale responsibly, and align with the deepest values of mentor program stakeholders.

In the next chapter, **chapter 2**, I provide a literature review of other ways scholars, activists, and entrepreneurs have approached using technology to create or improve complex systems. In this section I present a three part framework for thinking about advancing humane technologies that includes 1) efforts focused on changing the design of technologies, 2) efforts focused on changing the business model or economics of technologies, and 3) efforts focused on changing the values embedded in the technologies.

Informed by the approaches described in chapter 2, in **Chapter 3**, I provide a theoretical and practical discussion about how the humane technology framework

presented in chapter two relates to mentor programs. I also provide a detailed overview of my research methods explaining how the participatory design research process informed how I approached identifying opportunities to develop a mentor program management platform that might reflect the humane technology framework.

In **Chapter 4** I share the results from the interviews I conducted, highlighting key patterns that emerged among research participants. These patterns present insight into ways mentor programs may be redesigned to better meet the complex needs of stakeholders.

In **Chapter 5** I discuss how the results from chapter four could be used to inform the development of a mentor program management platform that reflects a humane technology framework.

Chapter 2: Nine Approaches to Advancing Humane Technology

In this chapter I present an overview of the ways others have aimed to advance humane technology in complex systems. I sort the diverse approaches into three categories 1) work focused on the design of technologies, 2) work focused on the business model or economics of the technologies, and 3) work focused on the values embedded in the technology. I provide examples of academics, activists, and entrepreneurs who focus their efforts on each of the three areas. I also describe the limitations associated with each focus. I conclude the chapter with a discussion of how the design, business model, and embedded values of a technology interrelate, and how these three categories are crucial for thinking about the development of a humane technology for facilitating mentor programs.

Learning from the Technologization of Other Complex Social Phenomena

In the introduction chapter I focused on the specific and unique details related to the problem of managing a mentor program. Now, in this chapter, chapter 2, I explore how the problem of managing a mentor program is similar to other complex problems and how the strategies used to address these other problem spaces can be useful for thinking about improving the sustainability and accessibility of mentor programs. Mentor program management is indeed a unique and important issue, but from a systemic perspective mentorship resembles other complex social phenomena that involve connecting people. For example, the problem of matching mentors and mentees shares similarities with other complex phenomena that involve matching people with shared interests such as dating, finding a job, and political organizing. For the remainder of this chapter, I will refer to these phenomena as complex social phenomena.

The literature review about mentor programs in the previous chapter demonstrated how computerized technology has become an increasingly central component of mentorship. The literature regarding mentorship evolved from skeptically questioning whether computers could be used to complement mentorship (Single & Single, 2005), to eventually embracing computer technology as a central component of mentorship and musing if it might supersede the limited human mentors (Dellerman et al. 2019). A similar progression has affected most complex social phenomena. The technologization of complex social phenomena such as mentorship, dating, finding a job, or making new friends is not necessarily good or bad, but it is certainly significant. Each of these complex social phenomena represent serious, value laden decisions. Who should you choose as a mentor to guide your personal and professional development? Who should you choose as a life partner? What work should you do with your precious time and talent? The way people navigate answering these complex questions both reflect and shape a person's values. Thus, the technologies involved in mediating these decisions for millions of users play a role in shaping a society's values.

Many scholars, activists, and entrepreneurs have observed that the technologies that mediate these social phenomena are far from perfect. Social media sites, job boards, and dating apps are fraught with unintended consequences, design flaws, and instances where the user goals are not aligned with the business goals of the proprietors of the technologies. Detailing the various problems created or exacerbated by social media sites or dating apps is beyond the scope of this dissertation and has been done well in many other venues, but what is relevant here is to consider the various approaches taken to make the technologies that moderate these complex social phenomena more humane. As a reminder, when I refer to making a technology more humane, I am using the Center for Humane Technology's definition which defines

humane technology as “technology that honors human nature, grows responsibly, and helps us live in alignment with our deepest values” (Center for Humane Technology, 2021). Seeing how people have critiqued, challenged, and posed alternatives to existing technologies is a necessary step in the process of addressing the problems affecting mentor program management. Therefore, for the remainder of this chapter I will be exploring the different ways people are working to make the technologies that moderate complex social phenomena more humane. Then in chapter three, I will elaborate on how each of these various approaches for advancing human technologies can inform the development of a humane mentor program management platform.

Nine Approaches for Advancing Humane Technology

Since technology affects every aspect of human life in complex ways, when people act to change the way humans interact with technology there are many different approaches a person can take. As I explored the various ways people throughout history have attempted to make the technologies around them more humane, I found it helpful to sort the various attempts. The remainder of this chapter is dedicated to providing a detailed discussion of the categorization I created, but for now I will provide a quick overview of the categories. Table 1 also provides a description of each of these categories and an example for each of the nine approaches for advancing humane technology. First, I sorted by the type of person or entity that was taking the action. The three primary categories that emerged were:

- 1) **Academics**, meaning people or groups of people focused on developing new ideas and theories about the way people interact with technology,
- 2) **Activists**, meaning people or groups of people with the primary goal of creating social change related to the way people interact with technology, and

3) **Entrepreneurs**, meaning people or groups of people that use business as a means for changing the way people interact with technology.

The boundaries between these categories are not firm as many people and initiatives overlap between the categories. Throughout the chapter I will also discuss limitations of this categorization. Also, human activities are not organized by academic disciplines, so exploring the technologization of complex social phenomena is inevitably interdisciplinary. Throughout this chapter I often refer to technical communication scholarship for examples, but technical communication is just one of many disciplines relevant to the exploration of humane technologies.

Second, I sorted the efforts to create change by the focus of the efforts. The focus of the efforts fit into three categories:

- 1) focus on the **design** of technology, which I describe as a focus on the features, functions, and experience of a technology,
- 2) focus on the **business model** of a technology, which I describe as the framework of economic incentives that allow an institution to sustain itself, and
- 3) focus on the **values** embedded within a technology, meaning the principles or ideas a technology was created to preserve or advance.

Throughout this chapter I provide descriptions of each of the three categories and examples of academics, activists, and entrepreneurs working in each focus area. I also describe the benefits and limitations of each focus area and conclude the chapter with a discussion of how the various focus areas intersect. The descriptions and examples provided in Table 1 provides a preview of the nine approaches I cover in this chapter.

Table 1: The Nine Approaches for Advancing Humane Technology.

	Design	Business Models	Values
Academic	Academic Focus on Design Advancing ideas about the functions and features of humane technologies.	Academic Focus on Business Models Describing and critiquing the economics of inhumane technologies and proposing alternatives.	Academic Focus on Values Embedded in Technology Naming what technology makes possible and theorizing what it could make possible.
Activist	Activist Focus on Design Creating social change by advocating for changes to a technology's features and functions.	Activist Focus on Business Model Creating social change by putting pressure on the financial incentives of a technology.	Activist Focus on Values Embedded in Technology Creating social change by proposing technologies be embedded with different values.
Entrepreneurial	Entrepreneurial Focus on Design Building products and services informed by principles of humane technology.	Entrepreneurial Focus on Business Model Building businesses that incentivize humane technology.	Entrepreneurial Focus on Values Embedded in Technology Building technologies encoded with humane values.

Advancing Humane Technology by Focusing on Design

Focusing on the design of technologies is advantageous as it allows for immediate and practical change. However, the changes that can be made at the design level of technologies might be limited due to the reality that the parameters of design decisions may be determined by the economic realities of an organization's business model and the values embedded in the technology. In this section I will provide examples of ways academics, activists, and entrepreneurs have aimed to make

technologies more humane by focusing on the design. Then I will use the recent history of technical communication scholarship to illustrate some unintended consequences and limitations of focusing on design. Academic Focus on Design of Technologies

Technical communication research focused on increasing the accessibility and usability of technologies, provides an example of scholarship aimed at making technology more humane by focusing on the design. Improving the design of communication technologies is seen as an extension of the basic work of technical communicators. For example, Redish and Barnum's (2011) comments on plain language, a concept developed in large part to increase the public's access to government documents, demonstrate the obvious symbiosis between design and technical communication, "My definition of usability and my definition of plain language are identical: 'Usability and plain language both mean that the people who use (or should use) what you develop can find what they need, understand what they find, and use what they find to meet their needs'" (p. 93). St. Amant (2018) made a similar argument about the concept of accessibility as he argued that it is inseparable from advocacy. He wrote, "At its core, advocacy is about effective access to information" (no page number). He then defined accessibility as being the culmination of availability and comprehensibility.

Technical communication scholarship's focus on the design, usability and accessibility of technologies continues to be embraced as an opportunity for advancing humane technology and creating real, positive change in the world. For example, the language and vocabulary of a recent RFP for a special issue of Technical Communication dedicated to the theme of "Advocacy in Technical Communication" captures the essence of this line of thinking. The RFP was designed to address "the field's need to critically examine usability methods, practices, and meanings in response

to numerous social issues” (Lancaster & King, 2021). The journal editors make their desire for their scholarship to influence real world design decisions clear by ending the RFP with, “We encourage submissions that focus on take-aways unique to practitioners and that propose new approaches to designing for diverse users” (Lancaster & King, 2021). The editors want ideas that can be translated into immediate action. Improving the accessibility and usability of the technology is recognized as a form of advocacy. This line of research is laser-focused on the needs of users.

Activist focus on design of technologies

Activists who aim to advance humane technology by focusing on the design of technologies demonstrate a willingness to operate within current economic and social structures. Their choice of action indicates they believe existing societal institutions (government, corporations, schools, etc.) are sufficiently detached from the technologies, thus these institutions have the power to redesign technologies to align with humanity’s best interests. The Center for Humane Technology provides an excellent example of an entity focused on the design of technology. The Center for Humane Technology is a non-profit founded by Tristan Harris and Aza Raskin, both of whom are successful entrepreneurs embedded in Silicon Valley culture. Harris is a Stanford Computer Science grad who worked for Google as the result of his startup being acquired. Raskin, the son of Jef Raskin who started the Macintosh project at Apple, is also a successful entrepreneur in his own right. Although it was founded only nine years ago, the organization has had a notable cultural impact. The founders have been featured on most major American and international news outlets including 60 Minutes, the New York Times, the Wall Street Journal, NPR, PBS, and Fox News. The organization describes their mission statement broadly saying, “We reframe the insidious effects of persuasive technology, expose the runaway systems beneath, and deepen the

capacity of global decision-makers and everyday leaders to take wise action” (Center for Humane Technology, 2021). Their mission statement is broad, but their focus is primarily on design. They describe their impact in terms of design changes made by major technology companies. For example, on their website they celebrate milestones such as Apple introducing parental controls, Instagram introducing a “You’re all caught up” feature that stops people from endless scrolling, and YouTube implementing “take a break” notifications (Center for Humane Technology, 2021).

The Center for Humane Technology has made the conscious decision to try to change the system from within the system. The achievements and cultural impact of the organization are dependent upon their commitment to exist as insider reformers empathetic to Silicon Valley culture. In 2019, Tristan Harris, the cofounder of the Center for Humane Technology, presented “A New Agenda for Tech” in which he outlined the organization’s vision for the design of future technologies while implying the organization’s comfort with everything else within Silicon Valley culture. They held the event at a relatively small auditorium in San Francisco at noon on a weekday. During the keynote presentation Harris compared the problems caused by technology to the seriousness of climate change and said, “But unlike climate change, only about 1,000 people need to change what they are doing. And many of us are here in the room and many of us are watching this” (Harris, 2019, 1:05:45). Rather than seeing it as alarming that just 1,000 people could cause problems as serious as climate change, he praised the abilities of those 1,000 people and encouraged them to start making different design decisions. The work of the Center for Humane Technology and the academics, entrepreneurs, and activists that align with the organization also address the economic component by encouraging the development of new business models and proposing

legislative reforms, but their primary focus is on improving the design of technologies within the current system.

Entrepreneurial focus on design of technologies

Meetup.com, designed as a technology platform designed to facilitate in-person interaction, serves as an excellent example of an entrepreneurial effort to make a technology more humane by focusing on the design. Scott Heiferman, who is one of the co-founders of Meetup.com, was in-part motivated to start the company based on fears about increasing social isolation in society. While the other emerging technologies of the early 2000s aimed to leverage technology to substitute in-person interaction, Meetup.com was designed to do the exact opposite. Prior to founding Meetup.com, Heiferman lived in New York City and worked in the marketing industry. When the 9/11 Terrorists Attacks took place, Heiferman realized he did not know his neighbors (Benz, 2014). The tragedy of seeing the residents of New York City wishing they had stronger community relationships helped fuel the creation of a technology platform that now facilitates hundreds of thousands of in-person events each month. What makes Meetup.com a great example of a design focused response for advancing humane technology, is that Heiferman did not try to change the societal structures that may have led to the social isolation he was observing in the early twenty first century. He also did not launch Meetup.com with an innovative business model. Meetup.com initially practiced an advertising based business model which was the standard for digital social platforms of the time. Instead, he just focused on how the design of the social platform could make it easier to organize in-person events.

The story of Meetup.com demonstrates there are not firm boundaries between the academics, activists, and entrepreneurs focused on designing for more humane technologies. Heiferman's inspiration was in-part based on his own observations of

social isolation, but it was also strongly influenced by the academic work of the sociologist Robert Putnam, particularly Putnam's 2000 book "Bowling Alone: The Collapse and Revival of American Community." In the book Putnam details how a functioning American democracy depends on a complex set of social networks such as bowling leagues and Elks Clubs. Putnam wrote that the declining participation in these types of groups will have detrimental effects on society as a whole. When Heiferman is spotlighted in media outlets for his work with Meetup.com there is typically an explicit reference to the influence of Putnam's work (For example, M.I.T. Technology Review, 2004). Meetup.com's history also intersects with the efforts focused on changing business models and social activism. Meetup.com eventually decided to move away from the advertising-based business model in favor of other forms of revenue generation that would more directly encourage in-person participation. Meetup.com has also become inseparable from many activist movements. The platform first gained popularity in political circles when it was leveraged by Howard Dean's 2004 presidential campaign. Dean's was the first campaign to use Meetup.com, but now the platform is an essential component of most political campaigns, protest movements, and even many academic communities.

Limitations of Focusing on Design of Technologies

Work focused on the design of technology is critical for advancing humane technology, yet it is unavoidably incomplete. Design alone cannot determine whether a technology is humane, because the economic and social values embedded in a technology also play a role. In this section I will provide some examples that illustrate the complexity and limitations of design focused initiatives.

The Problem Inclusivity and Accessibility Cannot Solve

An exploration of the social and economic side effects of the efforts to make technologies more humane by making them more inclusive and accessible demonstrates the limitations of focusing on just the design of a technology. Despite the efforts of scholars to treat design features, such as usability and accessibility as a social justice initiative, these same research streams have helped advance the commercial agendas of many organizations without regard to the values of the organizations. Consider the following examples of how some of the popular concepts from what is referred to as “the social justice turn” of technical communication (Walton, Moore, & Jones, 2019) have been applied by multinational technology companies. Facebook’s understanding of the nuances of cultural localization allowed it to effectively sell video ads in twenty four different languages (Clement, 2020; Facebook, 2020). Google’s efforts to overcome ableist bias in voice recognition systems led to the development of a smart speaker that could decipher a trembling, elderly voice (Google, 2020). And the results of Amazon’s mission to be the “Earth’s most customer-centric company” has made accessing goods and services easier for billions of people around the world. However, as each of these companies improved the accessibility of their products and services, they have also been involved in controversies including abuse of worker rights, tax avoidance, and a myriad of anticompetitive practices. As all of the companies listed in these examples are currently under investigation by the House Judiciary Committee for abuses of market power and practices that are decidedly against the best interest of the users (market manipulation, proliferation of hate speech, abuse of personal data, etc.), it demonstrates that improving the usability and accessibility of technologies does not necessarily make the technologies more humane. In these examples, making the

technologies more usable and accessible entangled more people in some of the unethical practices of these companies.

Fortunately, another strand of technical communication scholarship provides an example of how to engage with the complexity associated with advocating for usability and accessibility. Katz (1992) sets the standard for challenging the merits of advancing ease of use and accessibility as intrinsic goods. After coming across a Nazi training manual that met all the standards for clear and concise communication, Katz refused to accept that a neatly designed instruction manual guiding the user how to most efficiently kill people should be considered good technical communication. Katz argued that viewing efficiency as a worthwhile end in itself is problematic, since it is detached from other human values. And that a society's willingness to view technological efficiency as a valuable end in itself makes a society susceptible to embracing activities they would otherwise view as morally problematic, or at least non-neutral. He ended his article with the question, "Do we, as teachers and writers and scholars, contribute to this ethos by our writing theory, pedagogy, and practice when we consider techniques of document design, audience adaptation, argumentation, and style without also considering ethics?" (p. 271). I think it is necessary to extend Katz' question to the design of technologies as well. We must consider the risks of promoting usability and accessibility without considering the economic and social values embedded in the technologies. Do we as humane designers enable the harmful practices of technology companies if we advance accessibility and usability without considering the ethics of the features becoming more accessible?

Developing a better understanding of the framework of economic incentives in which a technology exists can help scholars and practitioners better understand the impact of improving accessibility or usability. Economic thinking was originally a central

component of usability. Nielsen (1993) taught that designers should prioritize information that is most important for the audience's goals or your business goals. It seems that much of the technical communication and design research focused on the user goals without considering how those user goals are related to and often created *by* business goals. Without a critical understanding of the business goals of their organization, a designer cannot know the ethical implications of their efforts to make it easier for the audience to perform certain activities. If those interested in designing more humane technologies are not engaged in the big picture agenda of their organizations, even the most altruistic efforts to empower audiences can contribute to large scale projects that usurp power from audiences.

Studying your audience, a good thing gone too far

“Listen to the audience” is a common refrain from technical communicators, designers, and entrepreneurs interested in developing humane technology. From a humane design perspective, listening is the gateway to empathy, and empathy is the cornerstone of humane design. Understanding the needs and wants of users of technologies allows designers to create technologies that meet the needs of users. Those committed to humane design practices are by no means the only people to recognize the power that comes from listening to the audience. As much as listening provides the opportunity to design with empathy, it also provides the listener new opportunities to control the audience. In order to embrace the positive potential that listening affords for humane design, it is important to first understand the limitations and to see how the concept of listening to audiences has been weaponized in the most technologically sophisticated ways.

Prior to being celebrated as a tool for empathetic design, listening was recognized as a tool for controlling audiences. For example, ancient rhetoricians viewed

knowledge of the audience as an essential component of persuasion. In his treatise *On Rhetoric* Aristotle dedicated a whole chapter to the importance of getting to know the audience in order to have greater influence (Aristotle, Book II, Kennedy translation, 2008) and Socrates' went as far as saying that a rhetorician should have complete understanding of the nature of the audience's soul to be persuasive (Plato, Nichols translation 1998, 277b). The argument here is that if you know the soul of the audience, you will know what type of argument they will respond to you. The more you know about the audience the more power you can have over the audience. From this perspective, listening to the audience is not a source of empathy, but a source of power and control. The idea that knowledge of the audience can be converted to power for influencing the thoughts and actions of an audience may have originated in Ancient rhetorical theory, but it has been passed down and extended to many other disciplines and is now the guiding principle of many technologies. Thus, the way technology companies track online behavior and collect personal data to develop personalized ads and behavioral predictions, a practice Zuboff (2019) labeled *surveillance capitalism*, is not a technological aberration, but a technological manifestation of the ancient practice of studying audiences to more effectively persuade them.

While it is easy to vilify the actions of the large technology companies, it is also important to see how the same principles that lead to surveillance capitalism continue to be a central component of writing and rhetoric instruction. For example, a business writing textbook encourages students to, "Mine your audiences' RFP, website, white papers, Twitter feed and anything else that helps you understand their viewpoint, concerns and values" (Canavor, 2018, p. 130). While college writers are encouraged to study their audience so they do not write an ineffective proposal, entrepreneurs are encouraged to study their potential customers so they do not create a product no one

wants (Ries, 2011). Modern technology companies have taken this principle to the extreme. Google's collection of cookies and Facebook's algorithm that tracks every like, comment, and login are simply technologically advanced applications of the same advice writing instructors have repeated for years: "Make sure you know your audience," "Think about your audience," and "Think about what this audience cares about." Unlike most college writing students, the internet entrepreneurs leading the way at the turn of the 21st century were not satisfied with a couple reflective pauses to ponder what the audience might think before moving on with their writing. Instead, they decided to create the surveillance infrastructure that would allow them to approach complete knowledge of their audience. For example, Google's tools that track a person's every online action allow them to approach the Socratic recommendation to "know the soul of the audience."

So, the practice of studying the audience has created a dilemma. On one hand, listening to the audience is the key to designing humane technology as it allows designers to develop empathy for the unique needs of the users. On the other hand, as listening morphs into surveillance, studying the audience can give designers unprecedented control over the audience. Zuboff (2019) argued that surveillance capitalism is a pathological extension of the desire to listen to the audience. When taken to this extreme, users are not viewed as complete humans, but they are essentially reduced to an algorithm, a living algorithm whose behavior can be predicted and controlled by studying the stimuli and reflexes. Zuboff (2019) described this approach to humanity as behaviorism and I believe it is antithetical to humane design.

Behaviorism, first propagated by the psychologist John Watson and later championed by B.F. Skinner plays a major role in the way designers and entrepreneurs conceptualize the users of their technologies. This school of thought stems from the belief that humans are animals, and their behavior can be predicted and controlled with

stimuli and reflexes. B.F. Skinner outspokenly argued against the existence of free will claiming that any behavior that cannot be predicted is just not well enough understood yet. Regarding actions attributed to free will Skinner wrote, “The vortex of stimuli that produced it cannot yet be adequately specified” (Quoted in Zuboff, 2019). The theory of behaviorism would suggest that with enough data and the ability to see all the variables affecting a human at any given moment, each word a person speaks could be predicted with certainty similar to an observer being able to predict that a person who touches a hot stove would reflexively move their hand away from the heat source.

Although most contemporary designers and entrepreneurs do not wave the anti-free-will flag like Skinner did, they enthusiastically embrace the findings from research dedicated to observing human behavior. For example, the work of behavior economists Daniel Kahneman and Amos Tversky has become standard reading in business schools. Their research, based on observing how humans react to stimuli, defined a set of cognitive biases and heuristics that have influenced the way the world understands human decision making and has changed the way financial institutions and almost every other industry understand the behavior of their audiences. Kahneman won the Nobel Prize in economics for his work on Prospect Theory which was monumental for the field of economics as it moved the field from depending on theories of rational human decision making to designing models and theories based on the experimental observations of human behavior.

The idea that human behavior can be observed through experimental research, manipulated, and predicted has gained widespread acceptance in popular culture. Bestselling books such as Dan Ariely’s “Predictably Irrational,” Thaler and Sunstein’s “Nudge” and the general audience translation of Kahneman and Tversky’s work “Thinking Fast and Slow” provide examples of how elements of behaviorism have begun

to take a prominent place in the public sphere. This thinking has helped shape the political and economic order we now live in. For example, Ariely, Sunstein, and Kahneman were all advisors to the 2008 Obama campaign (Scheiber, 2009) and the Cambridge Analytica Scandal of the 2016 election centered on the idea of using behavioral data to predict and control voter behavior.

B.J. Fogg's 2003 textbook "Persuasive Technology: Using Computers to Change what we think and do" provides the most accessible (and possibly most influential) codification of how behaviorist principles can be built into computer programs. The career of BJ Fogg who has an MA in English that focused on linguistics and rhetoric, and a PhD in communication with a dissertation titled "Charismatic computers: creating more likable and persuasive interactive technologies by leveraging principles from social psychology" illustrates how the rhetorical theory and behaviorist research can be fused to create computers that modify human behavior (Fogg, 2003). The trajectory of Fogg's academic endeavors is also illustrative of how behaviorist thinking has extended beyond the computer screen. In 1997 he founded the Persuasive Technology Lab at Stanford, in 2011 he changed the name of the lab to the Behavior Design Lab to reflect how the research done there is not just limited to technology, but it desires to design and direct all forms of human behavior.

Many of the most popular technologies are an extension of this line of research. For example, Google is essentially a behavior prediction company. Every time someone enters a query on Google Search an auction takes place where advertisers bid for the opportunity for their ad to appear, this is an automated auction of course. Google picks a winner of the auction not just on the basis of who bids the highest, but who scores the highest on their algorithm that creates a composite score based on the likelihood the searcher will click on the ad, the price the advertiser is willing to pay, and the technical

and visual quality of the ad. The accuracy with which Google can predict the behavior of their searchers directly correlates with the amount of money they will be able to make from the advertisers. Improving the quality of Google search or improving Google/Alphabet's quarterly earnings depends on improving the company's ability to predict human behavior.

Google's unprecedented profits in the first quarter of the 21st century demonstrate the value of being able to predict and direct the behavior of their users. Their investment in projects such as Pokémon Go, which was funded by Google investments and led by the Google executive John Hanke that led the Google Street View project (Zuboff, 2019) demonstrate Google is not content to only predict and direct human behavior in the online space. In the summer of 2017, the launch of Pokémon Go demonstrated how a tech company could quickly direct the physical behavior of their audiences. If a pizzeria was willing to pay to have a "Pokégym" located on a virtual plane on top of their restaurant, Pokémon Go could predictably increase foot traffic to that store. These activities demonstrate an instrumentalization of the audience. To summarize Zuboff's description of the way these technologies relate to their audience, they practice a radical indifference about their audience's beliefs and needs, they only care about their audience's actions. For example, Facebook profits from selling an ad for a MAGA hat just as much as they profit from selling an ad for a BLM facemask.

The call to listen to or involve the audience and leverage the insights from the audience in the design process often stems from noble intentions. However, designing technologies that listen to the audience's insight does not necessarily empower the audience. Comparing Breuch's (2019) book to the practices of Google's reCAPTCHA program provides a powerful example. Breuch showed how learning from complaints posted on social media about the HealthCare.gov website could be used to improve the

usability of the website. She recognized that if the designers of the HealthCare.gov site listened to their audiences and extracted insights from audience behavior they could have benefitted those audience members by making it easier to access affordable healthcare. Google's reCAPTCHA system shows the other side of that same coin. In online situations where a person must prove they are not a robot, Google's reCAPTCHA program extracts labor and knowledge out of users without their consent (Lung, 2012). As users type difficult to decipher words or click on pictures of crosswalks, they contribute to developing the training data used to improve Google's artificial intelligence capabilities. Where Breuch's activation of the audience would lead to improving users' access to healthcare, the benefits of Google's activation of the audience are more difficult to analyze. Google's reCAPTCHA project could lead to long-term benefits for Google users, or each reCAPTCHA might just be tricking users into helping Google digitize and monetize human knowledge in a way that will exacerbate inequalities of wealth and knowledge. These issues demonstrate that creating humane technology must involve more than just designing to improve inclusivity, accessibility, and usability.

Fortunately, researchers have begun to think about design with a more holistic perspective that does not only focus on increasing usability and accessibility. The concept of human-centered design has been growing in popularity. Shifting the focus from users to humans is significant as it defines the audience in terms of their humanity rather than their relationship to the technology. Many within the human-centered design movement are working to ensure emerging technologies are grounded in a human-centered approach. For example, Duin, Armfield, and Pedersen (2019) provided human-centered design heuristics to guide the developers of augmented reality experiences. In their heuristics they still value usability, but it is not the primary focus. It is one of many priorities that must be balanced with other important concepts such as authenticity,

embodiment, and empathy. As technologies become more immersive and interactive, they may have even more influence over human actions. Therefore, it is important for designers to be aware of the implications of making these technologies more usable and accessible.

Moving Beyond Design

In the beginning of this section about the focus on the design of humane technology, I explained how the field of technical communication had developed an intense focus of user advocacy. Seemingly in recognition that a focus on design is incomplete, in recent years technical communication scholars have demonstrated a growing interest in the world of entrepreneurship. Journals in our field have dedicated special issues to entrepreneurship (Fraiberg, 2020; Spinuzzi, 2017; Spinuzzi, 2016). In the world of digital communication technologies, the experience is the product (Ismail, Malone, Van Geest, 2014), thus a focus on the design must be complemented by an understanding of entrepreneurship. The field of technical communication's transition to embrace entrepreneurial thinking is reflective of the movement to advance humane technology, which has also recognized that a focus on design must be paired with an understanding of business models, entrepreneurship, and other economic factors.

Advancing Humane Technology by Focusing on Business Models of Technologies

When trying to advance humane technologies, focusing on the business model is useful because it brings clarity to who benefits from the design of a technology. Shining a light on and exploring the incentive structures of the technologies that mediate complex human phenomena can make it easier to see what needs to change in order for the technologies to become more humane. Seeing that some groups of people might profit from a technology that intentionally or inadvertently causes harm to the user of the

technology pulls the whole situation under the umbrella of the logic of profits and losses, and thus makes the problems created by the technologies less mysterious. In a 2008 NPR interview the novelist Toni Morrison provided a quote that captured the essence of the importance of thinking about business models. When asked why she thinks racism still persists, Morrison said, “Racism will disappear when it’s no longer profitable and no longer psychologically useful” (Quoted in Yam, 2019). I believe the sentiment of this quote applies to developing humane technology. The inhumane dynamics of technology platforms (such as rewarding the spread of fake news or designing features to trigger insecurity) will disappear once they are no longer profitable. Analyzing business models provides a lens for seeing how inhumane technologies become profitable and how new incentive structures could be developed to reward more humane technologies.

Academic focus on the business model of technologies

Critiques of the attention merchant business model provide an example of academic attempts to advance humane technology by focusing on the business model of a technology. The attention merchant business model is the practice where a company gives away a product or service for free and then generates revenue by selling the attention of their users to advertisers. Practiced by newspapers since the 1830s, the attention merchant business model is not new. Benjamin Day of the New York Sun popularized the practice when he radically dropped the price of his paper from five cents to one cent (Wu, 2017). By thinking about the advertisers as his primary customer he realized “The Sun could charge less, provide more news, reach a larger audience, and still come out ahead” (Wu, 2017, p. 14). The way technology has facilitated the widespread and diverse applications of this business model is new though. The success of the attention merchant business model has led the practice to essentially become a default business model in the content industry (Zuboff, 2015).

However, scholars and activists have become increasingly curious and critical of the attention merchant business practices. Wu (2017) argued that the attention merchant business model incentivizes sensationalism in a way that negatively affects the quality of all other content in the marketplace. In the digital era content is abundant, but the attention of each individual is scarce. Thus, content creators and technology designers must compete for the limited attention of each person. Jarring photos, exaggerated headlines, and flat out lies have proven effective at capturing attention. This forces other content creators practicing the attention merchant business model to choose between creating even more attention grabbing headlines or risk getting ignored. Others have argued that the popularity of the attention merchant business model threatens the health of democracy (Harris, 2019). Tristan Harris, of the Center for Humane Technology, has been an active critic of the attention merchant business model, arguing that tech companies competing for the scarce attention of potential users led to a situation where, “Social media rewards outrage, false facts, and filter bubbles – which are better at capturing attention – and divides us so we can no longer agree on truth” (Harris, 2019).

Zuboff's (2019) work on surveillance capitalism is another, closely related example of an academic critique of the business model of new technologies. Zuboff described surveillance capitalism as “A new economic order that claims human experience as free raw material for hidden commercial practices of extraction, prediction, and sales” (p. Introductory matter). Surveillance capitalism is the practice of surveilling human behavior and using the data generated from that surveillance to create a product. Google is Zuboff's primary example, and she is very careful to explain that surveillance capitalism is not just about advertising. Google surveils what information people are most likely to click on when entering search terms, Google then uses that data to create behavioral futures that they auction off to advertisers. Zuboff expresses concern that the

incentive structure of this business model leads to ever increasing surveillance and control by the dominant technology companies. The more behavior Google surveils the more accurately they can predict user behavior and the more profitable their product becomes. She warns that this incentive structure “effectively exiles persons from their own behavior while producing new markets of behavioral prediction and modification” (2015, p. 75).

Since the companies that pioneered surveillance capitalism (Google and Facebook) primarily profited from selling the opportunity to advertise on their sites, advertising based businesses are often viewed as the primary problem regarding surveillance capitalism (Wu, 2017). Zuboff responded to these claims saying, “Surveillance capitalism is no more restricted to that initial context than, for example, mass production was restricted to the fabrication of Model T’s” (quoted in Laidler, 2019). Using surveillance as the means of production for creating products related to behavioral prediction has moved beyond advertising to take hold in domains such as insurance, education, and even municipal governments’ approach to parking infrastructure.

Much to the chagrin of critical reviewers, Zuboff refused to throw capitalism out with the bath water (Fister, 2019; Bridle, 2019). For example, she occasionally defends the actions of capitalist behemoths like Apple, arguing that technologies that surveil user behavior solely for the means of improving the product or service is not surveillance capitalism (p. 22). Zuboff also expresses hope that the economic and information inequalities created by surveillance capitalism could be resolved via effective regulation within a democratic and capitalist society. This demonstrates how scholars aiming to advance humane technology by focusing on the business model of technologies are focused on changing nuanced business practices, not the overarching values of a society.

Activist Focus on the Business Model of Technologies

The Stop Hate for Profit Campaign provides an example of an activist organization dedicated to advancing humane technology by focusing on the business model of the technologies. The Stop Hate For Profit campaign started in the summer of 2020 as a direct response to Facebook allowing the proliferation of disinformation, hate speech, and incitement for violence against protesters in the wake of the killings of George Floyd, Breonna Taylor, Ahmaud Arbery, and many others. The campaign was created by a conglomeration of civil rights organizations including the Anti-Defamation League (ADL), the National Association for the Advancement of Colored People (NAACP), the National Hispanic Media Coalition (NHMC), and Mozilla Foundation. The movement differed substantially from previous activist attempts to put pressure on Facebook. Instead of encouraging individual users to delete Facebook as the #deletefacebook movement did in the aftermath of the Cambridge Analytica scandal, the Stop Hate For Profit organization sought to put economic pressure on technology companies, particularly Facebook, that were facilitating hate speech. The boycott included notable brands such as Coca-Cola, Ford, and Unilever refusing to advertise on Facebook for months at a time (Scola, 2020). To various degrees the movement succeeded as it led to Facebook removing thousands of accounts, banning groups, and making many other minor changes to their platform.

Despite being motivated by political and moral reasons, their strategy for recruiting boycott participants focused entirely on business incentives. In addition to focusing on Facebook's business goals, the movement also leveraged corporations' fears that their brands might become less profitable due to being affiliated with hate speech. By circulating examples of the advertisements of major brands appearing side by side Facebook posts including Hate Speech, the campaign eventually recruited over

800 companies to boycott advertising on Facebook for the month of July 2020 (Anti-Defamation League, 2020). The movement also did not seek to limit Facebook's power, only redirect it. A statement on the campaign's website read, "Facebook is a company of incredible resources. We hope that they finally understand that society wants them to put more of those resources into doing the hard work of transforming the potential of the largest communication platform in human history into a force for good" (Stop Hate For Profit, 2021). The Stop Hate for Profit campaign sought to work within the norms of a capitalist society. By understanding Facebook's business model, they were able to make more immediate concrete change than previous movements that did not target the financial pain points of Facebook.

Entrepreneurial Focus on the Business Model of Technologies

The story of Medium.com, provides an entrepreneurial example of an effort to advance more humane technology. The company was founded by Twitter co-founder Evan Williams. Reflecting on the reason for creating Medium, Williams (2017) wrote, "Our vision, when we started in 2012, was ambitious: To build a platform that defined a new model for media on the internet." The team at Medium wanted to distance themselves from the advertising centric business model of sites like Twitter. Their founder explained, "The problem, as we saw it, was that the incentives driving the creation and spread of content were not serving the people consuming it or creating it — or society as a whole" (Williams, 2017). Williams was aware that the incentive structure of most web based media companies was out of line with the goals of users, so Medium was created as part of an effort to develop a new business model that would more effectively align the business incentives with the needs of media consumers and society as a whole.

Williams and the Medium team worked in uncharted territory. Changing from an advertising centric business model to one that might serve the needs of both readers and writers left many confused. An Atlantic review of the platform after Medium's first year of operation summed up the publishing world's curiosity of the platform, "For us media producers, we have to decide whether Medium is a friend or a foe" (Madrigal, 2013). Williams and Medium.com's commitment seemed to be to a vision for a new internet, not advocacy for a certain set of people. For example, the site initially started with a mix of advertising and subscription revenue streams. After five years of experimentation, the Medium leadership team decided even with a mixed model they were still part of the problem they were trying to resolve if any part of their business depended on advertising revenue. Thus in 2017 Williams announced that Medium was laying off the entire advertising and sales team, which amounted to over 30% of their staff. They did this in order to commit all of the company's focus to a membership and subscription model where the money from user subscriptions would be proportionately distributed to the authors that have the most engaged readers and receive the most applause (similar to Facebook likes).

As Medium has continuously iterated to figure out the best way to incentivize the creation of high quality content in a way that serves readers and writers, there have been many ups and downs for the stakeholders involved. At some points amateur writers were benefiting from Medium's policies, at other points established media brands were the beneficiaries. For ten years now, the company has pursued this idealistic vision of discovering a profitable business model that also incentivizes the creation of quality content and serves the greater needs of society. The history of Medium highlights the unavoidable tradeoffs associated with efforts to advance humane technology by focusing on the business model. As they experimented with new business models they inevitably

had to make tough decisions about whose needs they would prioritize, as was the case when the 50 members of the advertising sales team were suddenly without jobs after the company's 2017 pivot. In response to journalists' much debated question about whether Medium is a friend or foe, a review from Harvard's Nieman Foundation for Journalism concluded, "It's neither" (Owen, 2019). The article continued, "It's turned out to be an endless thought experiment into what publishing on the internet could look like. That's not much fun for people who get burned along the way, but Medium was never exactly ours to begin with" (Owen, 2019). By keeping the focus on aligning Medium with the goals of readers, the leadership team at Medium.com often found itself in conflict with the goals of publishing partners, employees, and anyone else that did not share the same vision for developing a new form of online media business.

Limitations of Focusing on the Business Model of Technologies

The examples in this section demonstrate how a keen understanding of the business model of a technology can provide academics, activists, and entrepreneurs a road map for identifying the leverage points for creating more humane technology. This insight is extremely powerful for encouraging change among entities that function within a capitalist society and are responsive to profits and losses. However, focusing on the business model of a technology is less useful for evaluating the technologies that are created and used outside of the capitalist milieu. Starting with the assumption that the business model is relevant, i.e., that technology exists within the capitalist system, can be problematic in several ways.

The first problem with focusing on the business model of technologies is that it treats the economic conditions in which the business model exists as inevitable. For example, this limitation is apparent in Zuboff's (2019) work that detailed the inhumane elements of the surveillance based business model. In the process of describing how

Google and Facebook use surveillance technology to predict and control the behavior of users, Zuboff used Apple as the primary point of comparison. Where Google and Facebook's revenue depends upon using personal data as the raw material used to generate behavioral predictions, Apple, Zuboff explained, only tracked user activity to improve the products and services they sell to users. Apple's business practices are presented as a more humane form of capitalism. In a review of Zuboff's *The Age of Surveillance Capitalism* Morozov (2019) wrote, "We might ask, nevertheless, why 'information civilization' faces a choice only between two capitalisms." In the same review Morozov lamented that academics pursuing this type of research debate and critique the adjectives that precede *capitalism*, but they neglect to consider that capitalism itself might be the problem leading to inhumane technologies.

Morozov brings up a good point about the importance of looking beyond the nuances of a business model to instead consider the impact the economic structure of a society as a whole has on the development of technologies. Looking at the economic norms of a society as a whole may be more complete than just focusing on a business model, but this approach also comes with another set of risks. Where Zuboff's approach provided an example of treating capitalism as an inevitable part of the solution, work focused on critiquing capitalism's influence on technology is susceptible to overstating capitalism's role in creating the problems of inhumane technology. There are plenty of convincing arguments and evidence to suggest that the dynamics intrinsic to capitalism such as private ownership, competitive markets, and rewarding capital accumulation may incentivize the development of inhumane technologies. A recent book published by Wendy Liu, a San Francisco based coder turned journalist, serves as a contemporary, representative example of this sentiment. The book, unambiguously titled *Abolish Silicon Valley: How to Liberate Technology from Capitalism*, frames capitalism as the main

culprit preventing the proliferation of humane technology. Liu wrote, “In fact, the present industrial model is a betrayal of the liberating possibilities of technology, as technology that should serve the public good is instead locked up within corporations for private gain” (Liu, 2020, p. 4). Although Liu and many other authors can produce compelling examples of how capitalist incentives led to the creation of unjust technologies, their claims are of little use for making sense of the inhumane technologies that arise from other economic systems.

The inequalities exacerbated by the imperfections of a capitalist system should not be minimized, but I believe it is a form of ethnocentrism to claim that the American economic system has an exclusive claim to perpetuating inequality or developing inhumane technologies. Exposing how certain business models within the capitalist system or capitalism as a whole are exacerbating the production of inhumane technologies is important work, but it does nothing to address the harms caused by inhumane technologies created within other constructs. For example, Wu’s (2017) proposal for newspapers to practice more humane business models might sound quaint to the citizens of countries where surveillance technologies are used by the government to control all the journalists. This demonstrates that there is a limit to assessing the merits of a technology by focusing on the economic systems in which the technology is embedded, because technologies stemming from different economic systems can operate in similar ways. For example, capitalism alone cannot be blamed for the creation of the surveillance technologies used by American technology companies, since similar technologies are used by governments around the world that are outspokenly not capitalists. It suggests that an exploration of humane technologies must also explore the values embedded in the technologies themselves as separate from the values and economic systems of the society in which the technology was created.

Winner (1990) provided a vocabulary for assessing technologies that is not conscribed to the economic and social conditions in which the technology was created. In an exploration of the politics of artifacts Winner (1990) emphasized the importance of studying both the social and economic uses of a technology as well as the values in the technology itself. He claimed that technologies should not only be judged by the impacts they have on society, but also by the “ways in which they can embody specific forms of power and authority” (p. 121). This is a useful perspective for thinking about humane technology, however Winner acknowledged that talking about the values of technological artifacts is a tricky dance. He claimed that efforts to focus on the values embedded in technological artifacts are often reduced to or mistaken for “naive technological determinism, the idea that technology develops as the sole result of an internal dynamic, and then unmediated by any other influence, molds society to fit its patterns” (p. 122). While still recognizing the importance of studying the social and economic factors that affect the development and use of technologies, Winner argued that it was necessary to consider “whether a given device might have been designed and built in such a way that it produces a set of consequences logically and temporally prior to any of its professed uses” (p. 125). For example, exploration of a technological artifact might reveal that the technology enables domination over others regardless of the social or economic environment in which the technology is used.

Naming the Business Model of Technologies as a Means for Moving Beyond Them

So far in this section I have described some of the limitations of focusing on the business model of a technology. In the next section I will focus on the importance of talking about the values embedded in technology, but first I will explain how, within a capitalist system, naming or marking the business model of a technology is a useful first step on the journey to understanding the values embedded in a technology. Star (1991)

described how just marking an object can significantly change the way people view the technologies they interact with:

When an artifact or event moves from being presumed neutral to being a marked object- whether in the form of a gradual market shift or a stronger one such as barrier-free architecture for those in wheelchairs or deaf-signing for the evening news - the nature of human encounters with the technologies embedded in them may be changed (p. 36).

Much of the difficulty of advancing humane technology stems from the fact that the values of a technology are typically not readily visible. In a response to this problem the Center for Humane Technology lists “making the invisible visceral” as one of the primary missions of their organization, meaning they want to make the values embedded in technologies obvious, so people have the opportunity to choose which technologies to use based on what technologies align with or support their personal values.

While scholars and activists are working to make the values of technologies more visible, the companies that control contemporary communication technologies are racing to make their technologies the invisible center of human life. The invisible center is a term that has been used by critical theorists to describe a condition that is assumed to be universal, always and already (Giroux, 1997). For example, within rhetorical theory Nakayama and Krizek (1995) argued that whiteness functioned as the invisible center of the discipline. They wrote, “As a consequence of this historical framework, in U.S. culture, whiteness has assumed the position of an uninterrogated space. In sum, we do not know what ‘whiteness’ means” (p. 293). Established as the invisible center, it took centuries of hardworking activists and scholars to get to a point where in 1997 Giroux declared, “whiteness is no longer invisible” (p. 376). Once it became visible, whiteness could be scrutinized, defined, displaced, and rearranged. The proprietors of many

technology companies strive to become the invisible center of society to avoid subjecting their profits and position of power to scrutiny, definition, displacement, or rearrangement.

A 2015 comment by former Google CEO Eric Schmidt at the World Economic Forum exemplifies the race to become invisible. When asked about the future of technology he said, “The internet will disappear. There will be so many IP addresses... so many devices, sensors, things that you are wearing, things that you are interacting with that you won’t even sense it” (quoted in Matyszczyk, 2015). Invisibility is a desirable goal for a company like Google, because invisibility “perpetuates and protects” the status quo (Ruparelia, 2016). The key contestants in this race to become the invisible center are the companies with the easiest to use services and simplistic designs. Every time a technology platform makes an interface more simplistic the values of the technology become more difficult to see, and it is so much more difficult for people to question or challenge things that cannot be seen. The way the largest technology companies are investing heavily in making their interfaces smaller and less visible indicates they are aware that time is of the essence, and there might only be one winner in the race to become the invisible center. Microsoft’s Cortana, Google’s Home, Apple’s Siri, and Amazon’s Alexa are all examples of ambient technologies that represent steps toward becoming the invisible center. By moving the interface from a phone or a computer to a small, always-listening speaker with a voice responsive interface, these companies sidestep debates about screen time while increasing their surveillance and influence in a person’s thoughts and actions. Those seeking to critique the role of technology in human life must scramble to develop a new vocabulary for discussing dynamics that can hardly be seen. Accurately labeling these technologies as tools of for profit companies designed to increase profits, is an important first step in recognizing the non-neutral nature of the technologies we use every day.

Advancing Humane Technology by Focusing on the Values Embedded in Technology

Focusing on the values embedded in a technology provides an opportunity to subjectively evaluate a technology independent from the way it is being used in the world. While efforts focused on the design of a technology brought attention to the practical implications of a technology, and efforts focused on the business model of a technology provided the lens for seeing the social and economic impact of a technology, efforts focusing on the values embedded in a technology explores what a technology makes possible. This approach shifts from the immediate to the hypothetical, asking not what a technology is being used for but what it could be used for. Understanding what a technology makes possible is important, because once a technology is created there is no guarantee its application will be limited to use cases envisioned by the creators of the technology.

A recent commercial for a new Chevrolet truck captured, seemingly unintentionally, how the values of a technology will stay constant regardless of the intended use of the technology. The commercial aired in the US during the 2021-2022 football season and was uploaded to YouTube on January 6th, 2022 (Chevrolet, 2022). The storyline of the commercial is that a family invited the boyfriend of their teenage daughter to join them on a camping trip. While driving to the campsite the father in the driver seat noticed that in the backseat his daughter reached out to hold her boyfriend's hand. The father then stops the truck to show the teenagers that since the truck comes with eight cameras offering up to fifteen different views, the father would be able to monitor the whole campsite to ensure there would be "no funny business." The father then pressures his daughter's boyfriend to answer whether there will be any "funny

business” and the boyfriend meekly shakes his head no. Even though the voice over announcer in the commercial explained that Chevrolet installed the cameras on the truck to make driving, towing, and parking easier and safer, the writers of the commercial recognized that the cameras could be used as a tool for intimidation and controlling sexual expression. Since the cameras are built in a way that gives one person the control over who is the subject of surveillance, cameras can always be used as a means of power and control, even when they are installed with admirable intentions.

In this section I will provide examples of academics, activists and entrepreneurs focused on advancing humane technology by exploring the values embedded in technologies and then discuss the limitations of this approach.

Academic Focus on the Values Embedded in Technology

Academics interested in advancing humane technology by targeting the values of a technology face a difficult two part challenge. First, they have to work to make the values embedded in a technology tangible, then they need to pose alternatives. The ordinary and matter of fact introduction of technologies such as the additional backup cameras for a pickup truck from the previous example, often leads the process of just making the values of a technology visible an inconvenient and uncomfortable activity. Thus, naming the values of a technology is often met with resistance. A lot of the influential work related to naming the values of technology and posing alternatives sidestepped this resistance by creating new worlds via science fiction to explore the values of technology. From the Greek cautionary tale of Icarus who mistakenly overestimated the capabilities of his new flying technology to Black Mirror’s pointed critiques of the attention economy, science fiction has always served as an effective vehicle to bring people’s awareness to the values embedded within a technology. When the characters of fiction frantically scream “I’ve created a monster” or some other

iteration of the well-worn quote derivative of Mary Shelley's *Frankenstein*, the audience understands that the values embedded within a technology may allow a technology to function in ways beyond the creator's intentions. The fictional stories are helpful, because they allow audiences to see that the values embedded in technologies are not inevitable. Every story could have been written differently.

Academics committed to nonfiction writing still embrace the power of storytelling for bringing attention to the values embedded in technologies. Haraway's (1985) *Cyborg Manifesto* provides an excellent example of this. I chose Haraway's scholarship as a representative example of the work focused on the values embedded in technologies, because her work demonstrates that once you name and question the values embedded in a technology, all the other values and norms of society are also subject to questioning. Haraway uses the power of story and proposes a new story, the cyborg myth, to challenge the idea that technologies must be seen as distinct from humans. In the process of challenging the idea that humans are distinct from technologies, Haraway also challenges the other dichotomies that play a role in shaping the structure of modern society, such as the belief that there are firm boundaries between male and female, right and wrong, god and human, and self and other. This is serious stuff. As you can see once the values embedded in technologies are visible and questioned, anything is fair game.

Previously, I mentioned that academic efforts that focus on the values embedded in technology shift the focus of attention from what a technology is doing in the world to exploring what the technologies make possible in the world. This same notion applies to the impact this type of academic work has in the world. For example, Haraway's work is unlikely to be directly useful for a group of Facebook developers' morning agile scrum as they try to determine which new widget can help curb the spread of hate speech on their

platform, or to a body of government officials trying to write the legislation that can reign in the anticompetitive practices of major technology companies, however the work has influence as it captures the imagination of readers and makes them reconsider what is inevitable and what might be possible.

Activist Focus on Values Embedded in Technology

The free software movement provides an example of activists that aim to advance humane technology by focusing on the values embedded within the technology. Proponents of the free software movement believe that social issues such as economic inequality, monopolies, and labor abuses can be remedied if technologies are designed to be free, because the ability to freely use technology would facilitate cooperation and personal liberation. Richard Stallman, one of the leading voices of the free software movement, famously explained that they mean *free* as in liberty, not *free* as in free beer (Zoetewey, 2013, p. 324). This is an important distinction, as it indicates the movement is focused more on the values embedded in the code of the technologies than the business models used to distribute the technologies.

The emphasis on values is made clear by a set of principles published by the Free Software Foundation in 1986. The Free Software Foundation provided the following description of the four essential freedoms they think should be built into all software:

“The freedom to run the program as you wish, for any purpose (Freedom 0). The freedom to study how the program works, and change it so it does your computing as you wish (Freedom 1). The freedom to redistribute copies so you can help others (Freedom 2). The freedom to distribute copies of your modified version to others (Freedom 3)” (GNU.org, 2021).

The radical nature of these principles becomes apparent when compared to the political and economic norms of society. These principles directly conflict with the legal

and economic agreements that facilitated the creation and sustained the growth of major technology corporations. For example, the design of Apple's devices strictly limits users' ability to modify the code or freely share the software with their peers.

Similar to the academics focused on the values embedded in technology, the activists focused on the values of technology also rely on the power of story. Söderberg (2008) described how the development of free open source software (FOSS) depends on adhering to a different set of myths regarding ownership and labor. Söderberg wrote, "The key to this narrative is the notion that we live in an information society, that information resources are different from tangible resources since information can be endlessly duplicated, and a strong bent for explaining historical change with technology" (p. 24). Starting from this assumption of abundance differs substantially from the philosophy of commercial software companies whose business models depend upon contrived scarcity in the form of software licenses. Söderberg argued that many people view contributing to open source projects as a form of play rather than a form of labor. Programmers choosing to spend their time and talents playing with abundance rather than working with scarcity effectively withdraw from the capitalist wage system. Advocating for a different set of values to be embedded in technologies triggers a chain reaction that poses a challenge to the legal and economic norms of society. Söderberg explained, "In collaborative and institutionalised forms of play, such as in FOSS projects, the labour market is no longer the chief principle for organising labour power" (no page number). The free software movement also demonstrates that the values embedded within a technology do not necessarily correspond to a specific set of political or economic values. The free software movement is far from a cohesive unit as it includes groups of right wing libertarians and also left wing anarchists (Söderberg, 2008). So, to the extent to which it is even possible to describe it as a unified phenomenon, the free

software movement serves as an excellent example of an activist effort to advance humane technology by focusing on the values embedded in a technology.

Entrepreneurial Focus on Values Embedded in Technology

Creators and advocates of cryptocurrencies serve as an example of an entrepreneurial attempt to advance humane technology. It is an imperfect example, since the movement is arguably as much about advancing personal wealth and exacerbating inequalities as it is about advancing humane technology, however it is still a serviceable example since one of the most alluring characteristics of cryptocurrencies is that the inventors of them get to choose which values to embed in their systems. For example, the principle that people should be rewarded for their contributions to a communal project is encoded into many cryptocurrency systems as coins are automatically distributed to those who contribute computing power to help verify transactions on the platform. The movement is rooted in a form of techno optimism that believes it is possible for a technology to be encoded with a set of values that would fortify it against human corruption.

For example, the origin story of bitcoin must be understood as a value based response to the corruption and unethical activities of regulators and financiers that led to the 2008 market crash. The anonymous creator(s) of the decentralized virtual currency platform bitcoin indicated they were trying to create a technological solution to the problems caused by incumbent financial and governmental institutions. As a reference to the perceived failures of those systems, in the first block of the bitcoin blockchain the creator embedded the text, "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks" (Davis, 2011). The automated transaction tracking, distributed ledger, and anonymity embedded into the technology were intended to protect the users of the technology from government overreach and corporate manipulation. Transactions would

be verified by code, not corrupt regulators or profiteering middlemen. Critics of Bitcoin are quick to point out that the values embedded in the code of the technology also exacerbate other problems such as the anonymity of the platform facilitating tax evasion, extortion, and ransom (Kethineni & Cao, 2019) the contrived scarcity contributing to inequality (Cohen, 2021), and the vast amounts of energy needed to verify transactions accelerating global warming (Truby, 2018). Nonetheless, these features are baked into the technology in a way that makes it nearly technologically impossible for anyone to change them.

The cryptography used to create blockchain based currencies means that for better or worse the values of the creators of the currency can be locked into the system via cryptographic algorithms. Thus, blockchain technology has been used in efforts to lock in many different types of values into a technology such as the right to anonymous transactions and freedom from government regulation or that a currency should be scarce or abundant. Within the cryptocurrency community this has led to debates about the extent to which human users should defer to the values embedded in the code. Some people think that the code written into the technologies should be treated as law. Others think that the users of the technology should be able to make changes to the technology, so the technology more appropriately meets their needs and reflects their values and goals over time.

The cryptocurrency community was forced to test the limits of their belief that code is law in the summer of 2016, when \$56 million worth of a cryptocurrency was stolen at one time. Ethereum and its community of developers was at the center of this controversy. Ethereum is a decentralized, open-source blockchain that was launched in 2015. Ethereum has much more functionality than bitcoin such as facilitating the development of additional cryptocurrencies and smart contracts (computer programs

that automatically execute financial transactions such as bets made on a stock or sporting events and insurance claims). In 2016 a group of developers launched a project to build a decentralized autonomous organization, known as DAO, on the Ethereum network. The goal was for the DAO to function as an automated venture capital fund that would distribute Ethereum tokens to startup projects and distribute profits from the startups to those that contributed tokens. Shortly after thousands of people pooled their resources into the DAO, a vulnerability in the DAO code allowed a hacker to steal \$56 million worth of Ethereum from the DAO. After much debate, the stewards of the Ethereum network decided to manually return the stolen money, effectively bailing out the victims of the theft. They did this in a process known as a hard fork, where they collectively chose to ignore the record inscribed in the blockchain that documented the theft, and instead built a new record starting from the point immediately prior to the theft. The irony that the cryptocurrency community, which was formed in large part due to disgust with the bailout of big banks, was now supporting a bailout was lost on no one. Vitalek Buterin, one of the chief visionaries behind the creation of Ethereum continually defended the decision despite receiving flak from those who believe that the bailout was a betrayal of the values of the community, saying, "Some Bitcoin users see the hard fork as in some ways violating their most fundamental values. I personally think these fundamental values, pushed to such extremes are silly" (Quoted in Leising, 2017). Buterin's position demonstrates that even among those most entrenched in the efforts to encode values into technologies, there is a time for social and political values to override the values embedded within the technology.

Limitations of Focusing on Values Embedded In Technology

There is a major risk associated with every effort to advance humane technology by focusing on the values placed within the technology. That risk is *irrelevance*.

Functional and practical irrelevance has been the end for many efforts to improve the values embedded in technologies. For example, the Center for Humane Technology's community discussion forums are full of enthusiastic announcements from small teams of developers showing off their new, more ethical, more humane alternative to the prominent social media platform du jour (Humane Tech Community, 2022), but the limited engagement with these posts and lack of traction outside of the community leads the discussion archives to feel much more like a graveyard than a launch pad. Designing the most humane technology, does not ensure that anyone will know it exists or decide to start using it.

Watson (2016) explained the irony that the critics and entrepreneurs trying to pose alternatives to existing technologies face. They work within the same economy of attention they are trying to rebel against. Whether advancing a new technology or modifying an existing technology it is still a struggle for attention. Creators of new technologies face logistical and ethical dilemmas about how to draw attention to their creations. When trying to change existing technologies, the challenge is keeping attention. For example, if the proprietors of Facebook removed the inhumane forced social comparison, data collection, bottomless scrolling, and endless notifications, would people just reallocate their attention to another platform that was still doing these things? Efforts to make a technology more humane risk creating a vacuum that could be filled by less ethical actors. Purity may be at odds with practicality.

The history of rhetorical theory provides a helpful comparison for understanding the cycle of purity and practicality related to the advancement of humane technology. Ancient rhetorical theorists were embedded in the major economic and political debates of the time. Rhetoric was taught as a tool for winning elections, court cases, and the favor of the public or romantic partners. Discomfort with the domineering, utilitarian, and

relativistic undertones of a goal-oriented and functional rhetoric led rhetoricians of all eras to redefine the term and discipline in a way that might eliminate or at least neutralize its abhorrent effects. The result was an understanding of rhetoric that shifted from a focus on persuasion to a focus on listening (Ratcliffe, 1999), identification (Burke, 1969), and invitation (Foss & Griffin, 1995). As a side-effect of these efforts to move the discipline away from focusing on how to change people's minds, the field of rhetoric became less relevant to the important issues of society. For example, when Barack Obama needed help winning elections, he didn't turn to leading rhetorical theorists. No, his academic "dream team" for gaining influence was comprised of psychologists and behavioral economists versed in the growing field of decision science (Scheiber, 2009). And when Donald Trump wanted an edge in 2016, he looked to big data specialists at Cambridge Analytica (Hern, 2018). By pursuing purity, rhetorical theorists inadvertently removed themselves from participating in the practical. Efforts to develop humane technologies face the same risk.

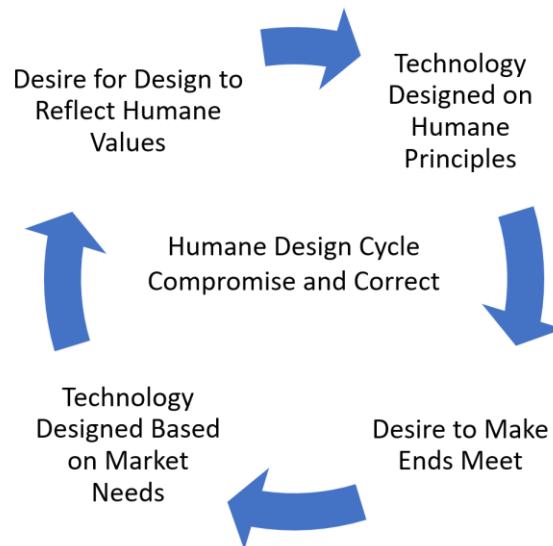
If the technologies were created within a political and economic system that embraced and rewarded the principles of humane technology, efforts to advance humane technologies would not have to worry about the risk of irrelevance. That is not the case in the American economy today, so most efforts to advance humane technology by focusing on the values embedded in the technology swing back and forth between trying to develop a perfect technology and trying to thrive within the current market realities. This often creates inconsistencies and imperfections as entrepreneurs, activists, and academics have to face the reality of making ends meet. Projects that start out with noble ambitions take sudden dramatic turns once they encounter pressure to bring in revenue. Zuboff (2019) suggests this is actually what happened with Google, when the founders stumbled upon the commercial value of tracking user behavior at a

moment of financial desperation. The imperfect and inconsistent nature of values-based efforts to advance humane technology remind me of the seesawing that takes place within higher education institutions. One faction in the institution argues for the need to emphasize the intrinsic value of education and to focus research and pedagogical efforts on the fundamental questions of each discipline. Then, either simultaneously or a couple years later, another faction argues for the need to develop a pedagogy focused on developing marketable skills and research that supports local industry. The figures below demonstrate how this creates a whirlwind for the stakeholders trying to find their footing. The first figure (Figure 4) shows how an academic department may go through cycles of either responding to or retreating from market pressures. The second figure (Figure 5) shows how those attempting to develop humane technologies may experience a similar cycle as they attempt to find a balance between ideological purity and market relevance.

Figure 4: Debates within higher education provide an example of an institution's effort to balance the needs for ideological purity with market demands.



Figure 5: Efforts to create humane technologies must constantly compromise and correct as they attempt to meet market demands while promoting their new technologies.



Technologies cannot exist separate from the societies in which they are created, so efforts focused on embedding values in the technologies are caught in a cycle of constantly compromising and then attempting to course-correct. If human needs were perfectly aligned with the demands of the market this back and forth struggle would not exist. But since individual interests and values often diverge from what the marketplace values, efforts to advance humane technology focused exclusively on the values embedded in the technology are incomplete.

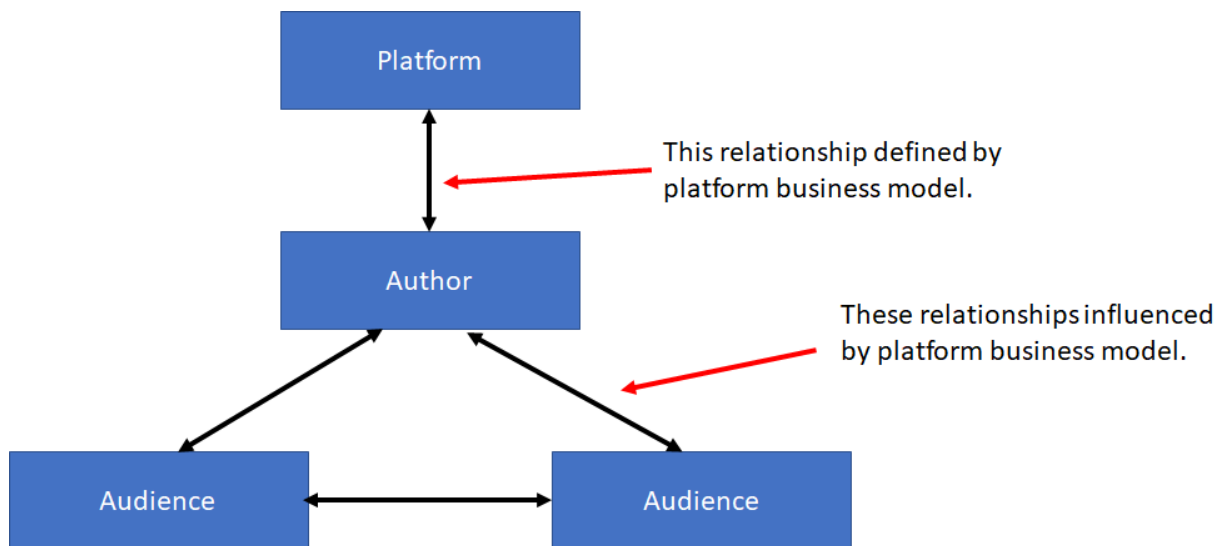
People Reproduce the Design, Business Model, and Values of Their Technologies

My observations of the way people behave on popular technology platforms suggests the design, business model, and values embedded in a technology are not just abstract ideas, but the people using the technology actually reproduce the values and economics embedded in the technologies. In this section I will provide examples of how people are rewarded for reproducing the values and business practices of a technology

platform. I will use Instagram, Wikipedia, and Amazon as examples. Instagramers are rewarded for attracting attention, Wikipedia editors are rewarded for organizing information, and on Amazon 3rd party sellers are rewarded for serving buyers as quickly as possible.

Instagram, Wikipedia, and Amazon are all examples of technologies that intermediate complex social phenomena. Instagram facilitates the connection of people with shared interests, Wikipedia facilitates the organization of human knowledge, and Amazon connects buyers with sellers. When a person uses one of these technologies there are several layers or interactions taking place. Figure 6 illustrates two levels of relationships affected by the design, business model, and values of a technology.

Figure 6: The business model of a platform influences how users of a platform interact.



A brief observation of the behavioral differences among people who are considered to be successful on each of these three different technologies shows how people are rewarded for mirroring the values and economics of the technologies they

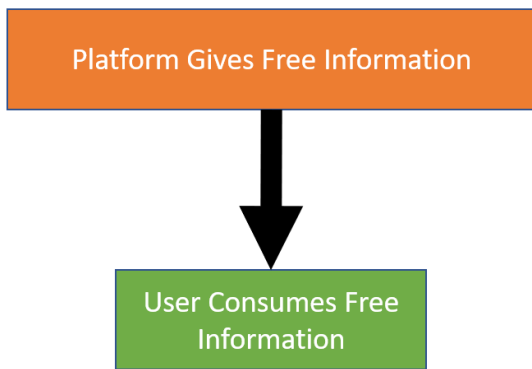
use. First, let us look at Wikipedia. Wikipedia is a free, online encyclopedia written by crowdsourced volunteers. Wikipedia does not serve ads, nor does it generate revenue by selling or leasing access to content (Wikimedia Foundation, 2020). Wikipedia sustains itself via charitable contributions. Wikipedia’s relationship with users is simple as illustrated in Figure 8. Second let us look at Instagram, a platform that practices the attention merchant business model, where the company makes money from selling advertisements. Figure 7 illustrates how the Instagram business model splits user attention between free content generated by other users and advertisements served by

Figure 8: Wikipedia’s interactions with users.

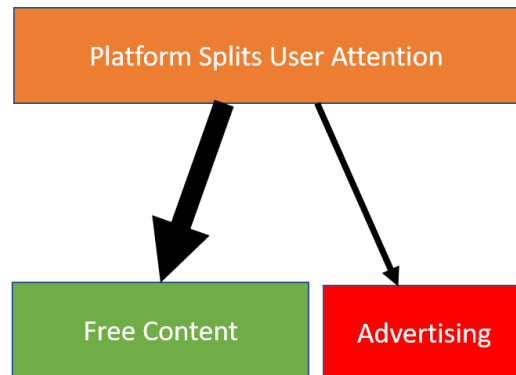
Figure 7: Instagram’s interactions with users.

Instagram.

Charitable Model– The platform gives content away for free.



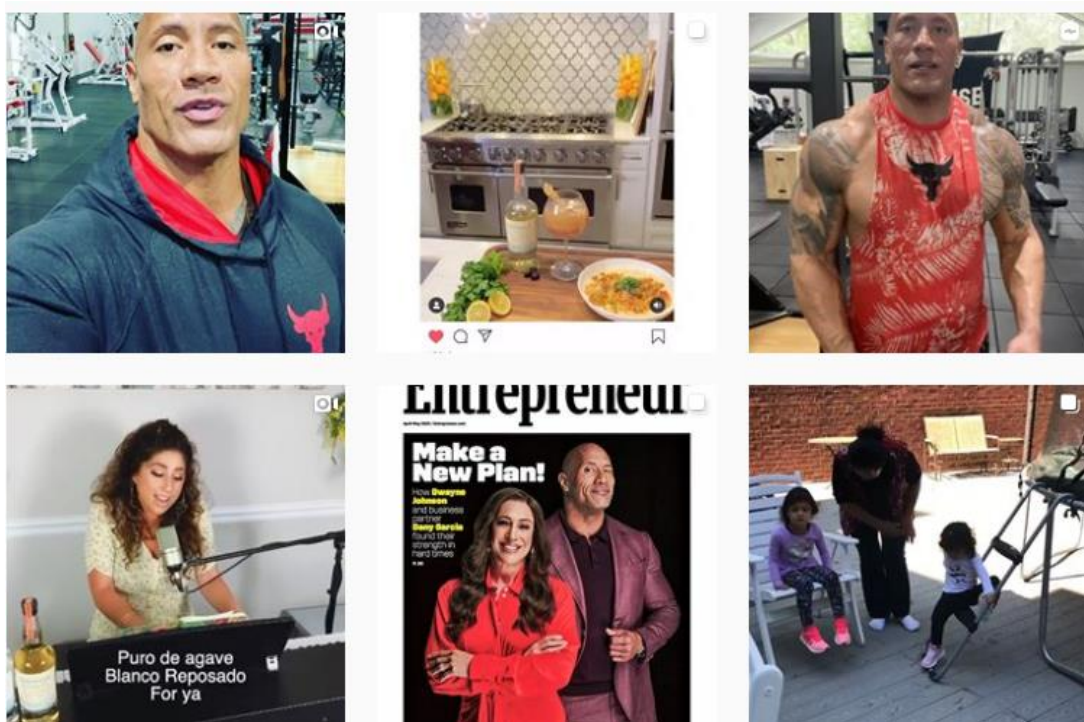
Attention Merchant Model – The platform splits user attention between free content and advertising



The behavior of the most prominent users of these platforms reproduces the business model of the platform. For example, the top five most followed users on Instagram in 2020—Cristiano Ronaldo (@Cristiano), Ariana Grande (@arianagrande), Dwayne Johnson (@therock), Selena Gomez (@Selenagomez), and Kylie Jenner (@Kyliejenner)—all replicate the Instagram business model in their own activities on the platform (Boyd, 2020). They each alternate between posting personal content and

sponsored posts that contain advertisements. The users of the Instagram platform turn their popularity into a platform as they make money as influencers. For example, on Dwayne Johnson's Instagram feed (Figure 9) his lifestyle photos of him lifting weights or spending time with kids are intermixed with tequila advertisements.

Figure 9: Screenshot of Dwayne Johnson's Instagram Grid (Johnson, n.d., Screenshot by author).



On Wikipedia on the other hand Justin Knapp (known online as Koavf) and Steven Pruitt (known online as Ser Amantio di Nicolao) are the top two contributors, both having made over two million edits to content on English language Wikipedia (Wikipedia: List of Wikipedians by number of edits, n.d.). Despite being highly influential people, Pruitt was even named top 25 Most Influential People on the Internet by Time Magazine (Time Staff, 2017), there is no evidence that they have attempted to monetize their influence in the same way Instagram users have. Wikipedia editors reproduce the values

of the platform by producing and distributing information for free, without ads. Wikipedia pages edited by one of these prolific contributors look just like every other page on Wikipedia. And many prolific Wikipedia editors create open source bots to do things like fix typos. These bots function just like Wikipedia does at large by letting anyone contribute to them. Figure 10 shows an example of a Wikipedia page created by Steven Pruitt, and it looks just like every other Wikipedia page.

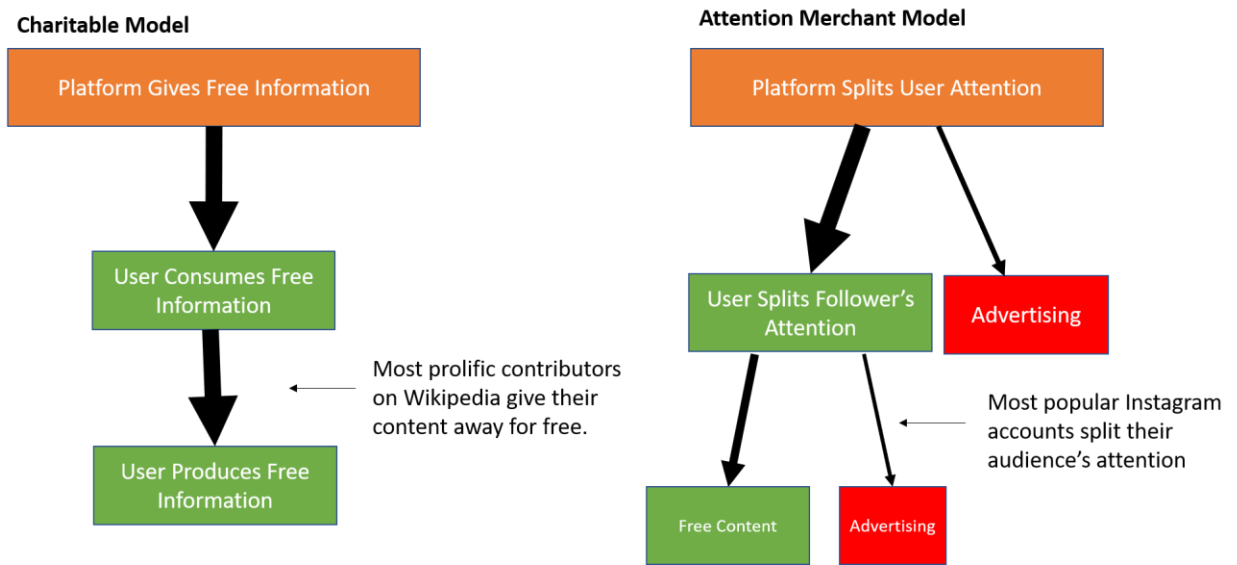
Figure 10: Wikipedia page authored by Steven Pruitt (“Peter Franciso”, n.d. Screenshot by author).

The screenshot shows a Wikipedia article for Peter Francisco. At the top, there is a navigation bar with 'Article', 'Talk', 'Read', 'Edit', and 'View history' buttons, along with a search box. The article title is 'Peter Francisco' with a subtitle 'From Wikipedia, the free encyclopedia'. A notice states: 'This article is about the American Revolutionary War soldier. For the South African snooker player, see Peter Francisco (snooker player)'. Below this is a yellow box with a book icon and text: 'This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. Find sources: "Peter Francisco" – news · newspapers · books · scholar · JSTOR (July 2018) (Learn how and when to remove this template message)'. The main text begins: 'Peter Francisco, born Pedro Francisco (July 9, 1760 – January 16, 1831), known variously as the "Virginia Giant", the "Giant of the Revolution" and, occasionally, the "Virginia Hercules", was a Portuguese-born American patriot and soldier in the American Revolutionary War.' To the right is a portrait of Peter Francisco, captioned 'Miniature portrait, early 19th century'. Below the portrait is a table of key facts: Born (Pedro Francisco, July 9, 1760, Porto Judeu, Terceira, Azores), Died (January 16, 1831, Richmond, Virginia), Resting place (Shoakoe Hill Cemetery, Richmond, Virginia), Occupation (blacksmith, soldier, sergeant-at-arm), Spouse(s) (Susannah Anderson, Catherine Fauntleroy Brooke, Mary Grymes West), and Children (1 son with Susannah Anderson, 2 sons and 2 daughters with Catherine Fauntleroy Brooke). A table of contents is also visible on the left side of the article.

The metrics used to determine prominent users of a platform demonstrate a reflection of the values built into the platform’s business model as well. Wikipedia

prioritizes free content production and distribution, so they count the number of contributions a person makes to the site. Instagram profits from capturing and redirecting attention, so they highlight attention related metrics such as the number of likes and followers that indicate the amount of attention a user captures. Figure 11 models how the users of the different platforms reproduce the business models of the platforms they use.

Figure 11: Users Reproduce the Business Model of the Platform.



This reproduction of the business model is not unique to technologies classified as communication technologies. Amazon makes the majority of their revenue from selling third party products. And the people who sell third party products on Amazon make the majority of their revenue selling third party products. Prominent users of Amazon for example reproduce Amazon's business model and strategy by first making money selling one product and then eventually expand to selling many other products. Figure 12 and Figure 13 illustrates the basic premise of how Amazon users reproduce the business model of Amazon.

Figure 12: Amazon functions as a platform connecting buyers and sellers.

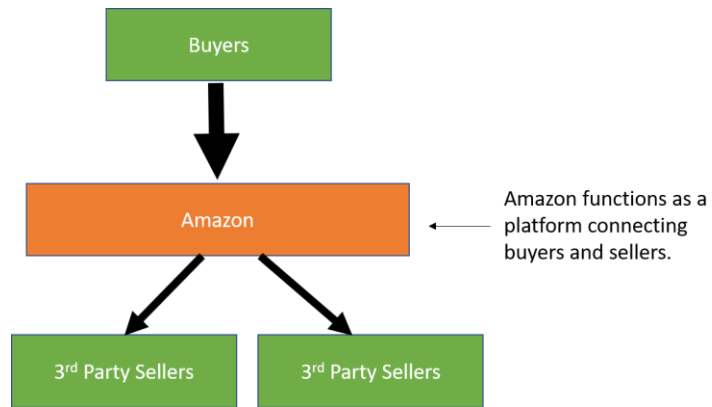
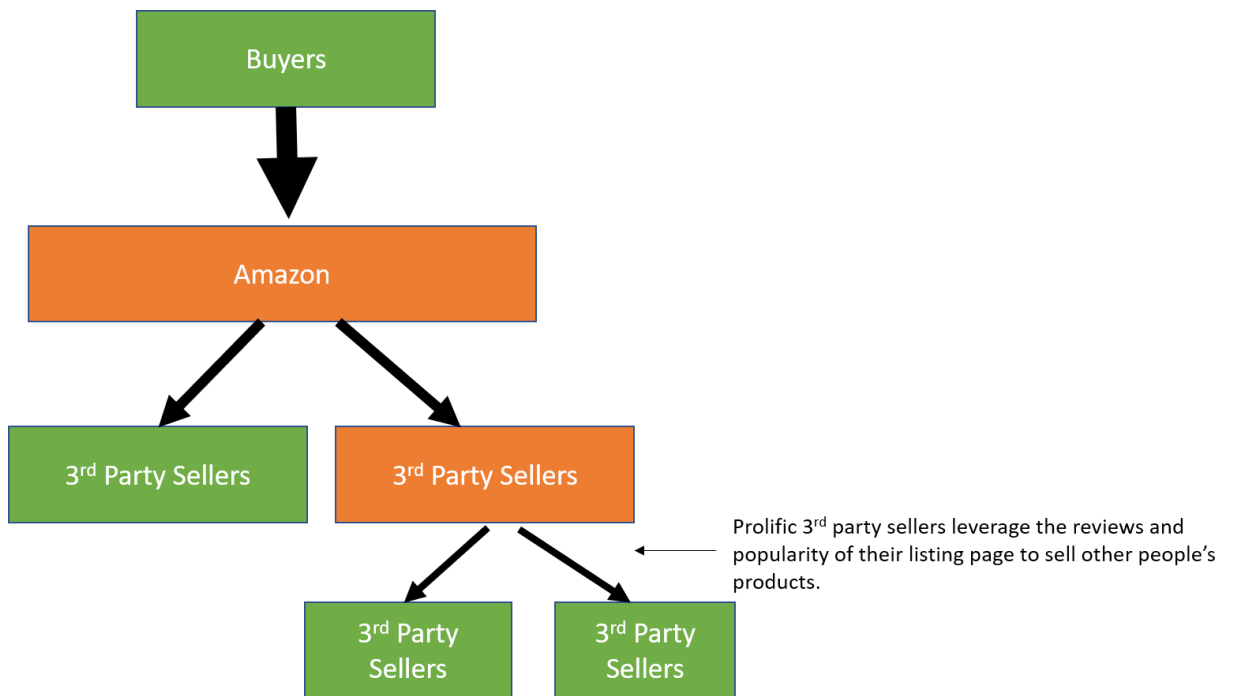


Figure 13: Amazon 3rd party sellers function as a platform connecting buyers and sellers.



A New York Times article documented how the user accounts of Amazon sellers are being commodified just like everything else Amazon sells. For example, one user

who first started making money on Amazon by selling car seats for small dogs thought, “If I can do this with a small-demand product, I can do more” (quoted in Herrman, 2021). This user then branched out to create additional Amazon listings to sell other gadgets manufactured for cheap in China. His Amazon account and the reviews of his customer service then became a sought after commodity, thus this user’s listing page became a platform for connecting buyers and sellers in the same way that Amazon functions as a platform. The diagram above is a simplification of how selling products on Amazon works, since there are many nuances and variations to the way people can sell products on Amazon (such as whether Amazon or the seller takes responsibility for warehousing and shipping), but the premise of the diagram is true. People that sell things on Amazon are rewarded on the platform for how much they act like Amazon. How effectively a user mirrors Amazon’s zealous commitment to efficiency, commodification, and continuous growth determines how successful the user will be on the platform. If this phenomenon appears on platforms as diverse as Instagram, Wikipedia, and Amazon, it is likely to impact the way people interact with the technologies used to facilitate mentor programs as well.

Conclusion

In this chapter I provided an overview of nine approaches for advancing humane technology. I provided examples of academics, activists and entrepreneurs that have been working to advance humane technology by focusing on the design, business model, or values embedded in technologies. Table 2 recaps the nine approaches for advancing humane technology and also includes the examples I used in the chapter.

Table 2: Summary of the Nine Approaches for Advancing Humane Technology.

	Focus on Design of Technology	Focus on Business Model of Technology	Focus on Values Embedded In Technology
Description	Work that advances humane technology by focusing on making changes to the features, functionality, and user interface of technology.	Work that advances humane technology by focusing on the business incentives and economic structures related to the technology.	Work that advances technology by focusing on the values encoded into the technology.
Academic Example	Technical communication scholars' focus on usability and accessibility as a means for promoting equity.	Zuboff's (2019) argument that surveillance based business models of companies like Google and Facebook exacerbate inequality.	Haraway's (1985) discussion of how technology must be freed from patriarchal restraints.
Activist Example	The Center for Humane Technology provides "Design Guides" for technologists seeking to develop humane technologies. (Center for Humane Technology, 2021)	The Stop Hate For Profit campaign encourages people to boycott technology companies that profit from spreading fake news and hate speech. (Stop Hate For Profit, 2020)	Free software movement as characterized by Söderberg (2015) as a Marxian alternative to the way capital and labor are organized in society.
Entrepreneurial Example	Meetup, a technology platform designed to encourage community building and reduce social isolation. (Meetup, 2021)	Medium.com seeks to improve the quality of user generated content by sharing revenue with content creators (Medium, 2018).	Cryptocurrency inventors who embed their political values in the code of the blockchains such as Bitcoin and Ethereum.

Each of these nine approaches has their benefits and limitations, and each approach presents valuable insights for thinking about how to develop a mentor program management system. In the next chapter, chapter 3, I detail how the design, business model, and values embedded into a technology relate to both the theoretical and nitty-gritty decisions mentor program coordinators must make while developing their programs and choosing which technologies to adopt.

Chapter 3: From Theorizing to Building Humane Mentor Programs

Thus far I have presented the issues related to mentor programs and the efforts to advance humane technology separately. In chapter one I presented a detailed overview of the research related to mentor programs. In chapter two I presented a framework for understanding the efforts to advance humane technology. Now in this chapter, chapter three, I focus on connecting the two concepts to explore how the framework for advancing humane technology (focusing on design, business models, and values) could be used to address the research question I presented in chapter one- **how might mentor programs be designed to reflect a humane technology framework?**

This chapter is divided into two parts. In the first part I explain what the existing efforts to advance humane technology imply for mentor program coordinators and the technologies used to facilitate the management of mentor programs. I theorize how the broader issues related to the design, business model, and values embedded into a technology relate to the nitty-gritty decisions mentor program coordinators must make while developing their programs and choosing which technologies to adopt. The goal of the first part of the chapter is to provide a set of considerations and questions that can be used as a starting point to inform efforts to develop mentor programs and the technologies used for facilitating mentor programs.

In the second part of this chapter, I explain how I transitioned from theorizing about how the ideals of humane technology can help make mentor programs more accessible and sustainable to beginning the process of developing a humane technology for managing mentor programs. I present the details of how I used a combination of participatory design methodology (Spinuzzi, 2005) and Lean Startup practices (Ries, 2011) as I interviewed mentor program stakeholders to identify opportunities to develop

a mentor program management software that aligns with the values and needs of all the stakeholders involved.

Using the Humane Technology Framework to Inform Mentor Program

Management

In the following sections I provide examples of how the various approaches to advancing humane technology could inform the way mentor program coordinators approach their work. I start by going over considerations related to the design of mentor programs, then cover considerations related to the business model of mentor programs, and third I cover considerations related to the values embedded in mentor programs.

Important Design Considerations for Mentor Program Coordinators

One of the ways to make mentor programs reflect a humane technology framework is by focusing on the design of the mentor programs. As discussed in the previous chapter, there are major benefits and also some shortcomings that result from attempting to make technologies more humane by focusing on the design of the technologies used to facilitate complex social phenomena. The efforts to advance humane technology by focusing on the design of the technology demonstrated that you can make improvements by:

- 1) Working within the existing institutional structures,
- 2) Listening to the needs of the audiences,
- 3) Increasing access to the technology, and
- 4) Making the technology easier to use.

Each of these opportunities can pose problems if taken to the extreme, so I find it necessary to think about each of these opportunities as existing on a continuum.

Those interested in developing a humane mentor program management software must determine where they want to position themselves on each of these four continuums. In

what follows I provide examples of the risks and benefits of designers positioning themselves on the high or low end of each of these four continuums when designing a mentor program or the technologies for facilitating mentor programs. I present each of these continuums as a question, a question that must be answered by those designing the technologies for facilitating mentor programs.

Working within Institutional Structures: How independent do I want the mentor program to be?

The first continuum designers face is to determine the extent in which they will embed their efforts within existing institutions. On the one extreme the mentor program and the facilitating technology is completely owned by the school or corporation that is sponsoring the mentor program and on the other extreme the mentor program and the associated technologies are completely independent from any sponsoring institution and functions as an independent entity. Embedding a mentor program management technology within the existing institutional infrastructure provides the opportunity to have immediate impact at scale. This is a common approach practiced by universities and corporations. For universities taking this approach, the mentor program management technology may be an add-on to the software used to manage alumni relations or a part of the formal curriculum. At corporations it may be an add-on to the human resource management software, part of new employee onboarding, or a management training program. In these examples the software used to facilitate the mentor program often already holds the contact information and a lot of other data about program participants, so design tweaks to the software can quickly impact key factors related to the success of the mentor program such as enrollment and retention.

The risk associated with this approach is that the focus on design leaves bigger questions regarding the values and goals of the sponsoring organization unscrutinized.

Design decisions will be informed by institutional goals, not the goals of individual participants. This is not necessarily problematic, but it may lead to conflicts of interest between program participants and program coordinators. For example, in a university setting when the mentor program management software is part of the same software suite used by the alumni association to track donor participation, alumni volunteerism, and generally advance the brand of the University, mentor program participants encounter a walled garden where they can only connect with other people in the alumni network. Embedding a mentor program within this type of software can be powerful as it can immediately scale the mentor program to include a university's entire alumni network, but since the software is originally designed to create a closed network exclusively for the university's alumni, even if it is designed in a way that is extremely easy to use it will never be well suited for facilitating skill or interest based mentor programs with stakeholders who aspire to develop connections outside of the university's network. Or in a corporate setting a mentor program might be designed with the goal of encouraging employee retention, but the mentee participants might value their professional development while being indifferent to whether they stay at the company long-term.

The option at the other end of the spectrum is for the mentor program to be an independent entity. This approach gives the designers the opportunity to focus on the needs of the individual participants. This approach could be really helpful in situations where mentees seek guidance from people outside of their current institution, such as mentor programs designed to help people transition to new careers. Independent mentor programs are also helpful when the focus of the program does not align with the existing institutions in which people are affiliated, such as a mentor program designed to connect people who share the experience of being in the minoritized demographic at their

respective organizations. In this scenario, a mentor program that is distinct from the mentee’s employer or university may be better equipped to support the goals of the program participants. Independent mentor programs still need to develop a business model in order to sustain themselves. While independent mentor programs may provide the opportunity to support a wider range of user goals, there is also no guarantee that the business model practiced by the independent mentor program will be more closely aligned with the goals of all the stakeholders. For example, an independent mentor program might cost individual participants money, or use participant data to further their own financial goals. There are risks and benefits associated with every location on the continuum of institutional affiliation. Table 3 highlights the concerns a designer of a mentor program must consider related to institutional affiliation.

Table 3: Benefits and Risks Associated with Institutional Attachment.

	Low Institutional Attachment	High Institutional Attachment
Description	Mentor program functions as an independent entity. It is either completely separate from or just loosely affiliated with a sponsoring entity such as a school, company, non-profit or government agency.	Mentor program is embedded within an institution. It is formally part of a school, company, non-profit, or government agency.
Benefits	Can be designed to serve the needs of individual participants without concern for their institutional affiliation.	Can scale quickly by leveraging resources and brand of sponsoring institution.
Risks	Must figure out a way to sustain itself, eventually becoming an institution itself with financial and organizational needs.	Goals of the institution might conflict with participant goals.

Listening to audiences: How much do I want to monitor participants?

When interactions take place via a digital platform everything can be tracked. Thus, designers of mentor programs and designers of the tools used to facilitate mentor programs must determine how they want to listen to program participants and what information about users they want to track. Assuming that designers are interested in using the interests and actions of their participants to inform the design process, designers will have to stake a position somewhere on the continuum between listening and surveillance. There are risks and benefits for the stakeholders involved in the mentor program associated with whichever position the designer of the mentor program decides to land on the continuum.

If the mentor program and the facilitating technologies are designed in a way that allow the program coordinators to listen to the concerns of the participants, there are several benefits. Asking users about simple preferences regarding meeting times and program rhythm could potentially improve participation in the program. Incorporating regular surveys and feedback forms would be an example of design features associated with listening to program participants. These features could also uncover unanticipated priorities or concerns of the stakeholders. A risk associated with this type of listening is that the process of giving participants a chance to share their voice creates pressure for the mentor program coordinator to act upon these concerns. So, mentor program coordinators must determine how much weight to give to participant feedback and to what extent they are willing to let user insight inform the design of the program. Program coordinators must be prepared to respond to feedback that might directly contradict their own goals or perceptions. For example, a manager at a company may encounter a dilemma if they feel motivated to design a mentor program, but the employees at the company indicate they are not interested in a mentor program. However, in most

situations learning from this data would present a greater opportunity than designing the program while intentionally staying ignorant of the opinions of stakeholders.

Of course, the designers of mentor programs interested in using data from their participants to inform the design of the platform need not stop at interviews, surveys, and feedback forms. For mentor programs facilitated in a digital environment it is possible for mentor program coordinators to track everything including the messages mentors and mentees send to schedule the meetings, whether participants show up for meetings, how long meetings last, and if the meetings are conducted via video conferencing collecting recordings and transcripts is also a possibility. Collecting additional data and figuring out how to leverage it requires additional technical and human resources, but for large mentor programs at big institutions this might be worth the additional costs. For example, data from the mentor program could be used to identify trends related to retention and performance of students and employees. The risks associated with increased surveillance and data collection primarily affect the program participants as they have no way of ensuring the data would be used to advance their personal goals. This is particularly relevant for mentor programs that are embedded within existing institutions as there is no guarantee that the goals of individual stakeholders will align with the goals of the institution. Table 4 highlights the key concerns related to listening and surveillance a designer of a mentor program should consider while creating a mentor program.

Table 4: Benefits and Risks Associated with Mentor Program Surveillance.

	Listening to Stakeholders	Surveilling Stakeholders
Description	Mentor program coordinators design systems for program stakeholders to share their	Mentor program coordinators design systems to surveil the behavior of program participants.

	preferences and concerns.	
Benefits	Feedback from stakeholders can influence the design of the program in ways that might improve satisfaction for all stakeholders.	Data collected about participant behavior can be leveraged to alter program design and support institutional goals for the mentor program.
Risks	<p>Feedback from relevant stakeholders might conflict with program coordinator goals (ex. Potential participants might report having no interest or time for a mentor program).</p> <p>Collecting and acting on information requires technical and staffing resources.</p>	<p>Collecting data requires technical and human resources</p> <p>Data extracted from participants might be used in a way that does not benefit all stakeholders.</p>

Increasing participation: How inclusive do I want the mentor program to be?

Making mentor programs available to more people is one of the drivers of this research project, but like the other concepts related to the design of mentor programs the merits of increasing the number of people that have access to a program must also be placed on a continuum. Designers of mentor programs should be prepared to consider the pros and cons associated with how open they design their mentor program to be.

On the one hand, mentor program coordinators could choose to make their mentor programs as inclusive as possible. Most institutionally sponsored mentor programs have built in boundaries to eligibility, for example university sponsored mentor programs are typically only open to students who are enrolled in the university. Even within universities there are dozens of places in which mentor program coordinators could choose to draw the line for program participation. For example, the mentor program could be open to all students at the university, only first year students, only

students who have completed their first year, only transfer students, or only students of a certain department. If the program focuses specifically on serving students of a certain department, it would need to determine if the program would only be for undergraduate students majoring in the discipline, or if it would include those seeking minors, and the graduate students as well. The possibilities about where to draw the line for eligibility are endless.

Even if a mentor program is created with a focused charter to serve students of a certain department or degree program, many decisions about how to design for inclusivity remain. The onboarding and recruiting process alone presents another set of endless possibilities- Should students who want to participate in the program have to apply to be accepted to the program? Should they be required to attend an information or training session prior to beginning the program? Should this training session be offered online or in-person? Should it be offered on more than one night? Should it be recorded, transcribed, and made publicly available? What happens if a student asks to join the program a week after it started? Each of these little decisions about how to design the mentor program will affect how easy it is for a person to be a part of the program and how many people have access to the program. Expanding or narrowing the inclusivity of the program could have implications for both the number of people that sign up for the program, how focused the program is, and how committed the participants are to the program.

On the other end of the spectrum some mentor program coordinators may choose to make their mentor program intentionally exclusive. For example, some mentor programs have a very narrow focus in terms of the demographic characteristics or the level of expertise or commitment of participants. A mentor program might choose to hold events in-person even though they realize that might limit enrollment, because they are

more concerned about ensuring the program participants have a shared commitment to a certain community or geography. Other barriers to entry might be created to ensure that the mentees can be matched with mentors with the appropriate skills and experience. For example, a mentor program designed for graduate research students would benefit from excluding mentors and mentees who lack the relevant training and academic credentials. In some situations, one side of the mentor program may have more selective criteria than the other. For example, youth mentoring programs might intentionally make the program as inclusive as possible for the student participants, while simultaneously implementing stringent background checks and training requirements for the potential mentors. Regardless of the motivations, increasing barriers to entry increases the control that the mentor program coordinators have over the program. Table 5 highlights some of the key tradeoffs associated with designing the inclusivity of a mentor program.

Table 5: Benefits and Risks Associated with the Inclusivity of Mentor Programs.

	Low Inclusivity	High Inclusivity
Description	Mentor program has high barriers to entry and implements narrow selection criteria for mentors and mentees.	Mentor program has no or very low barriers to entry.
Benefits	Vetting can help ensure participants have high levels of commitment and appropriate qualifications. Potential to create programs where all participants have shared identity or interests.	Gatekeepers have less power, and mentor programs have the potential to be more inclusive and have greater levels of diversity.
Risks	Participation is controlled by values and biases of gatekeepers.	Lack of vetting creates potential for unqualified mentors and uncommitted mentees.

	Stringent vetting process creates more work for program coordinators and makes recruiting more difficult.	Increasing inclusivity may require additional support resources.
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Making mentor programs easier to use: How easy should it be to participate in the mentor program?

Similar to considering the accessibility of mentor programs, at first glance it would seem that making the technologies that facilitate mentor programs and mentor programs in general as easy to use as possible would be a good idea. However, the benefits of usability also exist on a continuum and mentor program coordinators must consider the tradeoffs when deciding how easy they want their mentor program to be.

From a technical perspective, ensuring that the technologies that facilitate mentor programs are easy to use is an unquestionable good. For example, the directions about how to connect with a mentor should be easy to understand, and users of a mentor program management software should be able to easily navigate the menus and buttons as they try to connect with their mentor, set up meetings, and meet their other goals. However, over emphasizing ease of use has the potential to limit user autonomy (Tham, 2016). For example, when determining how mentees will be matched with mentors, program coordinators have endless options about how they will balance ease of use with autonomy. If the mentor program coordinators wanted to make the matching process as easy as possible for program participants, they could just assign a mentor to each mentee without asking for any input from the participants, but this would limit the mentee’s agency. If the program coordinator wanted to give the participants more autonomy, they could allow the mentor to read through the bios of hundreds of potential mentors and then fill out a form to request certain mentors. This would increase the agency of the mentees while also making the matching process much more difficult for

the mentees. Each element of a mentor program has similar extremes related to autonomy and ease of use. For example, scheduling could be made easier by a software platform that automatically schedules the meetings for mentors and mentees at predetermined intervals. In addition to demonstrating how increasing ease of use might limit participant autonomy, this example about scheduling demonstrates that mentor program coordinators must consider the goals of their program when thinking about ease of use. Many university sponsored mentor programs frame learning how to write networking emails and set up meetings as one of the learning goals of the program, so if the software platform used to facilitate the mentor program automatically schedules the meetings it might inadvertently undermine the learning goals of the mentor program.

There are many benefits to making mentor programs easy to use. For both mentees and mentors, mentor programs are typically viewed as an extracurricular activity that is above and beyond their normal responsibilities. Mentor program coordinators should be aware of this and be intentional not to add any unnecessary burden to program participants. Even if the mentor program coordinators choose to prioritize the autonomy of program participants there are still many ways to make the program easy to use. For example, if the mentor program coordinator wants to allow mentees to browse through the entire list of mentors, the program coordinators could be intentional to ensure the list is formatted with structured data that makes it searchable and easy to navigate.

When considering ease of use, mentor program coordinators must reflect on the essential goals of their program and seek to make it easier for program participants to accomplish those goals. For example, even if a mentor program coordinator thinks it is important to allow mentees to browse mentors and make their own requests, the mentor program coordinator might be able to provide some strategic filtering that makes that

task less burdensome for program participants while still supporting the goals related to the self-determination of mentor selection. While still prioritizing ease of use, mentor program coordinators can add layers of difficulty to participating in the program that might support their learning goals. Requiring two meetings per month rather than one meeting per month or requiring mentees to complete a reflection form are examples of design features that might make participation in the program more difficult, but these features might also increase the value of the program for participants. Table 6 highlights some of the key tradeoffs to consider related to the usability of mentor programs.

Table 6: Benefits and Risks Associated with the Ease of Use of Mentor Programs.

	Low Ease of Use	High Ease of Use
Description	Participation in the mentor program requires significant time and energy from program participants	Participation in the mentor program requires minimal time and energy from program participants
Benefits	<p>The time and energy required to participate could lead those capable of participating to have very high levels of commitment.</p> <p>Making participation more burdensome may protect participant autonomy.</p>	Minimal effort needed to participate could increase overall program participation and preserve participants' time and energy.
Risks	Increasing demands of program participation may exclude many potential participants or lead to program drop off.	<p>Making things easier might limit participant agency or undermine learning goals.</p> <p>Minimal effort required for program participation could lower participants' commitment, and or leave participants wanting more.</p>

Important Business Model Considerations for Mentor Program Coordinators

In chapter two I detailed how focusing on the business model of a technology can be an effective way to advance humane technology. By focusing on the economic levers, you can strategically incentivize the development of humane technology and avoid incentivizing the development of technologies that exacerbate social harms. As discussed in Chapter 2, a focus on the business model of the technologies that facilitate complex social phenomena does not guarantee the technology will be humane, however it is an important factor that should not be ignored. Therefore, in order to understand how to develop a humane technology for facilitating mentor programs it is important to understand the business model of mentor programs and of the technologies used to facilitate them. In this section I will provide an overview of the variables mentor program coordinators should be aware of related to the business model of mentor programs and the technologies used to facilitate mentor programs.

Since mentor programs exist in many different formats at many different types of institutions there are a wide variety of business models used to sustain mentor programs. What follows is a discussion of some of the business models used by mentor programs and the financial incentives that might influence the stakeholders involved in mentor programs. The examples provided here are not meant to be exhaustive. It would be nearly impossible to create an exhaustive list of the business models and incentive schemes practiced by mentor programs, since mentor programs exist across so many dimensions of society and many different cultures. The discussion provided here is meant to describe the popular practices used by corporations, schools, non-profits, and government agencies in the United States, and to provide an overview of some of the key issues and tradeoffs associated with popular models of mentor programs. To describe how the various financial incentives of the stakeholders involved in creating

mentor programs can influence the values and design of a program I provide examples of issues related to the business models of the sponsoring institutions, the technology vendors, and the mentor program itself.

Business Model of the Sponsoring Institution: Is the mentor program central or peripheral?

There are many layers to consider when evaluating the business model of a mentor program. The first and highest layer to consider is the business model of the sponsoring institution. An institution is likely to create a mentor program for the sake of advancing its pre-existing goals, thus mentor program stakeholders should be aware of how the mentor program contributes to advancing the business goals of the sponsoring organization. Institutions that sponsor mentor programs range from government organizations and nonprofits to universities and corporations. Indexing the business model of every organization that has a mentor program is beyond the scope of this project. However, for this project it is important to consider whether the mentor program is central or peripheral to the business model of the sponsoring organization.

The mentor programs that exist at most schools and corporations are examples of what I describe as peripheral mentor programs. The programs exist to advance the goals of the sponsoring institutions, but the mentor programs are not essential to the sponsoring institution. For example, the University of Minnesota sponsors dozens of mentor programs that advance the mission of the University in regard to student retention, job placement, recruiting, alumni giving, and many other ways, but the mentor programs are clearly a peripheral focus of the University when compared to the academic curriculum and research enterprise that are the primary focuses of the university. The mentor programs complement other core revenue-generating activities of the university. The same can be said for many corporate based mentor programs.

Mentor programs that are peripheral to an institution's core business model face two risks. First, they are perpetually susceptible to budget cuts or other forms of resource scarcity such as under staffing since their existence is not essential to the existence of the sponsoring institution. And second, they might be assessed based on metrics that are not aligned with the needs of program participants. For example, if an MBA student's participation in a mentor program led to them getting hired for their dream job without finishing their degree the program might be judged harshly by the university, because the student's early departure would mean a revenue loss for the university.

For other institutions, the mentor programs they sponsor are central to their business model. Startup accelerators provide an excellent example of this. A startup accelerator is an organization that provides structured support for entrepreneurs to accelerate the growth of their businesses. Y Combinator and Techstars are two examples of popular startup accelerators, in both cases entrepreneurs apply to be part of the accelerator program. If the entrepreneur is selected to be part of the program, the accelerator will take a percentage of the company and then the entrepreneur will have access to a set of support resources in which mentorship from veteran entrepreneurs is marketed as the most important and valuable of the resources the accelerator provides. Mentorship is typically viewed as a noncommercial activity, in contrast to other advising activities like therapy, life coaching, tutoring and consulting, mentorship is provided for free, but startup accelerators provide the closest thing to paying directly for mentorship. Entrepreneurs pay for the mentorship in an indirect way and the mentors do not technically get paid. The entrepreneurs pay for access to mentorship as they trade equity in their companies for the opportunity to be part of the program. The accelerators then have a stake in the success of the company, so they leverage their extensive networks to find the best possible mentors for each entrepreneur. In cases like this

where the mentor program is central to the business model of the institution the mentor program does not face the same risks for budget cuts as mentor programs that are peripheral to an institution. They face a different set of challenges such as the potential for the mentor relationship to be subject to a literal cost benefit analysis.

Business Model of the Technologies: General or mentor program specific?

The business model of the technologies used to facilitate a mentor program may affect the mentor program in a variety of ways. It is helpful to divide the technologies used to facilitate mentor programs into two categories- 1) general communication tools and 2) tools specifically designed to facilitate mentor programs. The popularity of software platforms designed specifically for facilitating mentor programs is growing quickly. The market for mentor program management software is estimated to be nearly \$400 million globally and on pace to double by 2025 (Research and Markets, 2021). Despite the growing popularity of these mentor specific software services, many program coordinators still run their programs with general purpose communication tools. In this section I first cover some of the ways the business model of general communication tools might influence a mentor program and then I will focus on how the mentor specific tools might influence a program.

Many mentor programs are organized with general purpose communication tools. For example, many small mentor programs are facilitated with nothing more than Excel spreadsheets and email. Using general purpose tools is a good way to minimize costs for mentor programs. For example, for corporate mentor programs a mentor program coordinator can leverage the communication tools the institution already pays for. If it is a company that uses the Google Work suite, the program coordinator can easily use Google Forms, Gmail, Sheets, and Calendar to facilitate the program, or maybe a corporation might conduct the whole mentor program through a Slack channel. Using

general communication tools works well for programs where all the participants have access to the same set of tools.

Using non mentor specific tools can create issues for mentor programs that have participants from different organizations. For example, mentor program participants may experience pressure to buy access to certain software, like Zoom, or they might experience undesirable forms of context collapse if a program is facilitated via a public facing social media like LinkedIn or Facebook Groups. If the mentor program is facilitated via general communication tools, mentor program coordinators will generally not have the ability to track participant behavior. This may be more important for some types of mentor programs, particularly youth or university mentor programs, where the mentor program is peripheral to an institution's mission and the program coordinators may need a way to demonstrate the value of the program by carefully tracking mentee participation patterns.

Using mentor program specific software presents a different set of opportunities and risks. The specificity of the software allows mentor program coordinators to have more control over the program as a whole. Software platforms such as the Mentor Programs feature of PeopleSoft allows program coordinators to track meetings scheduled, meetings completed, and create conversation templates, all within the same interface that facilitates video calls between mentors and mentees. Since the software is specific to mentor programs, the burden to pay for the software gets placed on the mentor program. Unlike the general communication tools where the cost is either covered by each individual participant or is covered by the institution's enterprise level contract, the cost of mentor program specific software typically must be paid by the department responsible for the mentor program. On one hand, this could increase accessibility to the mentor program, since effective participation in the program will not

require each individual to purchase their own software. On the other hand, if the price of the mentor program specific software is determined on a per-user basis, mentor program coordinators might need to place a cap on the total number of program participants.

Mentor specific programs are also susceptible to the creepy treehouse effect, the phenomenon where a teacher creates an online environment and unsuccessfully attempts to get students to spend time there (Jones, 2010). The benefits of mentor specific software are greatest for the mentor program coordinator, because it provides the ability to monitor user behavior. For many program participants the mentor specific software might seem like one more app that duplicates services they already have access to. This may be particularly true for mentor programs focused on serving professionals who have access to communication technologies and are already skilled at scheduling meetings and following up afterwards. Since much of the value of using the mentor specific software comes from the data generated by the system, mentor program coordinators might encounter situations where they are trying to convince people to use the assigned platform instead of just chatting via email or another video conferencing tool.

Business Model of the Program: How is a mentor program funded?

How a mentor program is funded is likely to affect the design of a mentor program and the values embedded in a mentor program. In this section I will discuss the possible issues related to three elements affecting how a mentor program is funded: 1) where the mentor program is located within an institution, 2) how the staff responsible for a mentor program is compensated, and 3) whether there are funding contingencies.

As I mentioned previously, a mentor program can exist in a lot of different places within an institution. For example, at a university it could be in an alumni office or in an academic department. The departmental home of a mentor program is likely to affect the

amount of resources dedicated to a program and the goals of a mentor program. For example, a mentor program housed in an institutional advancement office might have more funds to dedicate to the program than an academic department. The institutional positionality of the people paid to manage the mentor program could influence the design of the program and the priorities of the program. For example, people that spend their time primarily interacting with alumni are likely to have different priorities or at least a different perspective than people who spend their time interacting with students.

A closely related issue to the institutional location of the staff responsible for coordinating a mentor program is the job description and compensation scheme of the mentor program coordinators. Whether the success of a mentor program is a central responsibility of a mentor program coordinator or one of many things a person is responsible for could impact the design and values of a mentor program. The way mentor program coordinators are compensated would not necessarily determine the quality of a mentor program, but the experience of program participants might differ significantly if, for example, running a mentor program is the central focus of a program coordinator's job or if running a mentor program was just one of many responsibilities a person had to do. Participants could set their expectations for the mentor program based on their knowledge of whether the mentor program was a side passion project of the program coordinator or an initiative that the institution considered worthy of dedicating full-time staff.

The way the program itself received funds could also have a big effect on the design and values of a mentor program. For example, if an institution provided funding for a mentor program based on the number of participants, the quality of support provided for the participants could remain the same or improve as the program grew in popularity. However, if the mentor program received a flat rate of funding, the staff of the

mentor program might have an incentive to keep the program small, so they do not get stretched too thin. This demonstrates how the funding of a mentor program might play a role in influencing concepts related to the design of the program such as how accessible a mentor program will be. If a mentor program is low on staff time and money, they might be hesitant to begin initiatives to expand the reach of their mentor program.

The third element related to the business model of a mentor program is understanding funding contingencies. For example, if funding for a mentor program is contingent on the mentor program coordinator demonstrating the mentor program helps improve a certain metric valued by the institution (*e.g.*, graduation rates, employee retention, *etc.*) every element of the mentor program would be influenced by that dynamic. If not communicated transparently to all stakeholders of a mentor program, funding contingencies could lead to conflicts of interests among stakeholders in a variety of ways.

Every institution has a finite amount of resources, so they have to make decisions about how many resources to dedicate to a mentor program, who is responsible for managing those resources, and how those resources will be distributed. In this section I did not comment on which approach to funding a mentor program might be best. Instead, the goal was to illustrate that the strategy used to fund a mentor program is likely to influence the design and values of a mentor program, so those interested in developing mentor programs or the technologies used to facilitate them should be sure to choose a business model for their mentor program that will align with their goals for the mentor program.

Important Consideration Regarding the Values of a Mentor Program

Despite the popularity of mentor programs, mentor programs are not standardized. No element of a mentor program can be treated as inevitable. The

previous two sections demonstrated that there are infinite variations in the way mentor programs can be designed and funded. This section will focus on how there are also infinite opportunities for mentor programs to be embedded with values. The values of a mentor program, like the design and business model, should not be viewed as inevitable, static, or neutral. In this section I will present considerations for thinking about how values are embedded in mentor programs. In this section I do not seek to list all the values that could be embedded in a mentor program, for the values that could be embedded in a mentor program are as numerous and diverse as the number of mentor programs. Instead, I provide a list of three questions that could be used to guide the discussion about values for those interested in developing a mentor program or a technology for facilitating mentor programs. I dedicate a section to exploring the issues related to answering each of these three guiding questions:

1. Whose values will be embedded in the mentor program?
2. What types of values will be embedded in the mentor program?
3. Where will the values be embedded in the mentor program?

Before discussing these questions in depth, it is necessary to explain what I mean when I use the term values. In chapter two, I defined a value as a principle or idea being preserved or advanced. Mentor programs are intrinsically value-laden as they exist to pass information, skills, or principles and beliefs from one group of people (the mentors) to another (the mentees). The flexibility and the adaptability of the phenomenon of mentor programs means they could be embedded with different types of values. For example, political parties that disagree on every topic might both have mentor programs designed to pass along their respective values. In this section I will be providing examples of how to think about whose values get embedded in a mentor

program, what types of values get embedded in a mentor program, and where in a mentor program values get embedded.

Whose values will be embedded in the mentor program?

Mentor programs have many stakeholders. Mentor program stakeholders include the program participants, the program coordinator, all the members of the sponsoring institution, and anyone else that might be affected by the mentor program. Each of these stakeholders may possess a different set of values that they would like to advance. A mentor program will advance a set of values, but there are many variables that can influence which stakeholders' values are centered in a mentor program. In this section I will discuss some of these variables to show how a mentor program could be designed in a way that gives more or less weight to advancing the values of the sponsoring institution, the mentor program coordinator, or the program participants.

A mentor program may be central or peripheral to the mission of the sponsoring institution, and this may affect how much the values of the sponsoring institution influence the mentor program. The values of the sponsoring institution might be strongly embedded in a mentor program that is central to their mission. For example, the mentor program of a startup accelerator would likely be strongly influenced by the beliefs about the value of entrepreneurship and capitalism in general, because the mentor program exists to help advance support the institution's central mission. The values of an institution might have less influence on a mentor program if the mentor program is peripheral to the sponsoring organization's mission. For example, the founding mission of a large, land grant university might not be that present in a mentor program run by a small academic department within that university. The distance between the center of the institution and the mentor program allows for other stakeholders such as the mentor

program coordinator or the participants to influence the values embedded in the program.

When a mentor program is peripheral to the sponsoring institution, the mentor program coordinator can have more influence on the values embedded in the design of a mentor program. When the goals and structure of a mentor program are not determined by the administrators of an institution, the mentor program coordinator has the ability to define the goals of the program. For example, if a mentor program is created and managed by a faculty member of an academic department the goals of the program could reflect the personal, political, or academic agenda of the mentor program coordinator regardless of if those views align with the sponsoring organization. The mentor program coordinator is also in a position to determine whether their values or the values of the individual participants will be most central to a mentor program.

If the mentor program chooses to grant the mentor program participants more autonomy, the values of the program might be more fluid and reflective of the individual participants. For example, if mentors and mentees are not provided rigid instructions about what topics and goals to focus on, the pairs might choose to pursue their own goals and meeting structure. They could define their own terms of success and thus the mentor program might represent a different set of values for each participant. In this section I showed that there are several variables affecting whose values are embedded in a mentor program. In the next two sections I will cover what these values may look like and how this process may take place.

What types of values will be embedded in a mentor program?

The values embedded in a mentor program include much more than just the ideas passed from the mentors to the mentees. Each mentor program is embedded with two types of values. The first is the content values. Those are the values (ideas,

experiences, expertise) that presumably the mentors have and are expected to pass along to the mentees. The second set are process values. These are the ideas and principles that a program implicitly advances via the structure of the mentor program. In this section I will explain factors influencing how these two types of values are embedded in mentor programs.

Content values are the easiest to see and evaluate, because they are the ideas in which a mentor program is built. The experiences, expertise, and knowledge that the mentors are expected to pass to the mentees are the content values of a mentor program. For example, a mentor program designed to connect undergraduate engineering students with recent graduates who have full-time engineering jobs has a clear set of content values. The structure of the program indicates that the program values developing engineering skills, graduating college, and securing stable work. The structure and goals of a program reflect the content values of a mentor program as do also the pool of mentors recruited to be a part of the program.

The other set of values embedded in a mentor program, the process values, are a little less obvious. The design of each mentor program reflects a certain set of process values. Two programs with similar content values could have very different process values. For example, two mentor programs dedicated to connecting undergraduate engineering students with recent engineering graduates might have identical content values but dramatically different process values. One program might value making the program as easy to participate in as possible by automatically assigning participant matches and predetermining the meeting schedule for mentor matches. The other program might value giving participants more autonomy and believe the exploration process is time well spent, so instead of automatically matching mentees with mentors the program might give mentees a list of two hundred possible mentors to browse

through. Each of the logistical features of a mentor program, like how participants sign up or get matched, will reflect a program's process values. So those interested in developing mentor programs or the technologies for facilitating them should be aware that every mentor program has both content values and process values.

Where are the values located?

The content and the process values of a mentor program might appear within a mentor program in many different places. The values of a mentor program might be shaped by the sponsoring institution, the mentor program coordinator, the technology used to facilitate the program, or the program participants. In this section I will describe some ways that the values of a mentor program can be determined by each of these elements.

The sponsoring institution will always play a role in shaping the values of a mentor program, even if the mentor program is peripheral to the sponsoring institution. For example, a mentor program that is housed within a university will be influenced by the brand of the university and the values the stakeholders of the program attribute to the university. If a sponsoring university has a reputation for being prestigious or exclusive, those values will affect the mentor program even if the mentor program is otherwise designed to be inclusive.

The program coordinator is the second place where the values of a mentor program may exist. Since the mentor program coordinator is responsible for creating the rules and design of the program, they get to have a significant influence on both the content and process values of a mentor program. The mentor program coordinator's impact on the values of a mentor program may be explicit in the form of specific design choices, directions in written materials, or presentations given to participants in the mentor program. The mentor program coordinator might also influence the values of the

mentor program inadvertently. For example, if a mentor program coordinator only uses their preexisting personal network to recruit mentors, the mentor pool is likely to reflect the interests and values of the mentor program coordinator. Since the mentor program coordinator is such a critical component of a mentor program, almost all of their actions will play a role in shaping the values of a mentor program.

The technologies used to facilitate a mentor program will also influence the values of a mentor program. As was discussed in detail in chapter two, technologies are embedded with values. The technologies used to facilitate mentor programs are no different. The values embedded in the matching algorithms of software programs specifically designed for mentor programs is an obvious example of how the values embedded in a technology will shape a mentor program. For example, the matching algorithm could be designed to place more or less weight on whether mentees and mentors have a similar academic background or a shared gender identity. Each of these design choices would reflect a certain set of values. The values embedded in the technologies not specifically designed for mentor programs could also affect the values of a mentor program. For example, most online scheduling tools default to schedule meetings for sixty minutes. This might lead mentor pairs to schedule meetings for sixty minutes. This non-essential design feature of a calendar app might have more influence in determining how long mentor pairs will meet for each time they connect than the recommendations of a mentor program coordinator. Every technology that is used as part of a mentor program could contribute to shaping the values of the program.

Finally, the values of a program will also be shaped by the program participants. Despite the influence of the sponsoring institution, the mentor program coordinator, and the facilitating technologies, program participants still have free will and can engage with mentor programs in a way that aligns with their personal values. For example, program

participants might choose to meet more or less often than recommended by the program coordinator. A mentor and mentee pair might decide to focus on different goals than those recommended by the program coordinator and meet for different amounts of time than what was recommended by the mediating technologies. Mentor programs are made up of individuals, so the individuals that make up mentor programs will always play a role in shaping the values of a mentor program.

Recap of Important Considerations for Developing Humane Mentor Programs

In the previous sections I provided examples of how the various approaches to advancing humane technology (focusing on the design, focusing on the business model, and focusing on the values) could inform the process of developing a mentor program and the technologies used to facilitate mentor programs. Each section was presented as a set of questions that could help guide discussions about how to develop a mentor program that meets the needs of the stakeholders involved. In the second half of this chapter, I will be shifting gears to discuss my process of researching and working to develop a response to my research question which is: **how might mentor programs be designed to reflect a humane technology framework?**

Methods

In this section I describe the process I followed as I transitioned from researching existing technologies and mentor programs to developing a new technology for facilitating mentor programs. For the remainder of this chapter, I will explain how I implemented a combination of participatory design research methods and Lean Startup customer development interviews to understand the specific opportunities to improve the design of mentor programs.

As I mentioned in chapter one, this dissertation takes place at the intersection of entrepreneurship and technical communication. Participatory design research functions as the methodological linchpin connecting the worlds of entrepreneurship and technical communication. In this section I first provide a brief overview of participatory design as a research methodology, second, I explain some of the similarities and differences between participatory design, entrepreneurship, and other closely related concepts including human-centered design and user-centered design, and then third I provide a detailed description of how I applied the principles of participatory design to shape this research study.

Participatory Design: Bridging the gap between entrepreneurship and qualitative research

In an influential article providing a detailed history and description of participatory design as a research methodology, Spinuzzi (2005) stated clearly, “Participatory design *is* research” (p. 163, emphasis in original). By declaring it as a form of research Spinuzzi was emphasizing that it is not just a design orientation, but it is a deliberate way of developing new knowledge. However, it also is an approach to design. Spinuzzi explained, “As the name implies, the approach is just as much about design—producing artifacts, systems, work organizations, and practical or tacit knowledge—as it is about research” (p. 164). For this project that aims to both understand the problems facing mentor programs and develop a platform informed by humane technology to help navigate those problems, participatory design was a research methodology uniquely positioned to achieve both goals.

Participatory design was developed as a research methodology for bridging gaps. It was developed as a response to the rise of scientific management and other related forms of research that aimed to develop more efficient and productive

technologies by extracting the knowledge from research participants. Participatory design research aimed to transition the world of research and innovation from an extraction and replacement model to a model of participation and co-creation. Instead of observing craft workers and looking for opportunities to automate and replace their jobs, the first participatory design researchers sought to include the workers in the co-creation process to help develop technologies that would complement their tacit knowledge (Spinuzzi, 2005). By including the participants in the creative process, the participatory design methodology aspired to bridge “participants’ tacit knowledge and researchers’ more abstract, analytical knowledge” (Spinuzzi, 2005, p. 164). I find the participatory design framework useful for bridging the gap between academic researchers’ approach to understanding the way humans interact with technology and the way entrepreneurs approach developing new technologies.

Both entrepreneurial lore and the formal entrepreneurial curriculum taught at business schools share many similarities with the participatory design methodology. Codified in Eric Reis’ 2011 best seller *The Lean Startup*, entrepreneurs have embraced the idea that the technologies that people need or want can only be created by learning from the people who will use the technologies. This mindset has contributed to a wider movement of executives, developers, and entrepreneurs going out and talking to people to learn from their experience using the technologies. In the way participatory design aims to connect the tacit knowledge of workers with the analytical knowledge of researchers, the world of entrepreneurship has been using the principles of the Lean Startup to connect the tacit knowledge of the people who use technologies with the creative and strategic skills of entrepreneurs. This has led many entrepreneurial organizations to teach techniques similar to those used by participatory design researchers.

For example, the MN Cup, which is one of America's largest startup competitions, has a curriculum built around how to conduct customer development interviews. The customer development interview, a concept popularized by Steve Blank and Eric Ries, is grounded in the idea that you can only understand what types of products to develop if you interview people and understand their lived experiences. The customer development interview places an emphasis on letting people explain their current problems and how they are solving them. This emphasis helps entrepreneurs ensure they are designing products that will actually help people solve a real problem. The customer development interview is taught in a way that emphasizes going out and talking to people who are affected by the problem an entrepreneur is trying to solve. This approach to entrepreneurship requires a clear distinction between research and sales. When trying to learn about a potential customer's problem an interviewer should never pitch or project, but just listen to people tell stories about their lives (Constable, 2014).

There are some notable differences between the Lean Startup approach to entrepreneurship and participatory design. In the Lean Startup approach, it is assumed that the entrepreneurs will control the creation of the product. The people using the product will have opportunities to provide feedback on prototypes in a continuous iterative fashion, but the people using the product do not share in ownership of the product. This differs from the way Green (2021) described the values of participatory design, "participatory frameworks necessitate collaboration among researchers, designers, users, audiences, and/or community members to motivate change within community-based or organizational contexts" (p. 333). The Lean Startup approach to entrepreneurship values the feedback and opinions of the people who will use a technology but does not view participants as equal collaborators. In this way it might be more accurate to describe the prevailing practices of entrepreneurs as user-centered

design rather than participatory design. Rose (2016) described user-centered design as technology centric, focused on the artifact being created rather than the whole socio-techno interaction. And Spinuzzi (2005) explained that user-centered design “supposes only that the research and design work is done on behalf of the users” while participatory design “must be done with the users” (p. 165). Human-centered design uses a more holistic view of understanding the way people relate to technologies than user-centered design, but similar to user-centered design it does not necessitate that the people affected by the technology will contribute to creating it.

The differing perspectives on whether the people who use the technology should contribute to developing it are ideological, not incidental. The participatory design methodology is rooted in the belief that the tacit knowledge of the people who use the technology is an essential source of expertise for creating technologies that will meet their needs. The entrepreneurial approach, particularly the customer development interview process that explicitly directs interviewers not to solicit design ideas or feature requests, is rooted in the belief that the people who use the technology may have expertise in their current problem, but they are not the most qualified to design a solution. Designing the solution is what the entrepreneur is supposed to do. For example, Ries (2011) believed “most of the time customers don’t know what they want in advance” (Ch. 3). This is not a new sentiment for the business world. For example, real estate trainers repeat the adage “all buyers are liars” since people often buy houses very different from the desires they first describe to their Realtors. And business writers are wont to regurgitate the infamous horses quote, dubiously attributed to Henry Ford, “If I had asked people what they wanted, they would have said faster horses” (Vlaskovits, 2011). Ries was clear to explain though, that just because people using a technology may not be able to articulate the new type of technology they want, entrepreneurs must

not resort to just trusting their gut or designing what they would want. Ries instead advocated for continuous, iterative prototyping that gives the people using a technology an opportunity to provide feedback.

One of the advantages of Ries' approach is that it provides a check for relevance. As I discussed in chapter two, irrelevance is one of the perennial risk factors for humane technologies. The participatory design process faces the same risk. The process may incorporate the best ideas of all the stakeholders, but just because the technology is embedded with the desires of all the stakeholders does not ensure that people will actually use the technology. The Lean Startup approach places an emphasis on quick prototyping that can determine whether people will actually use a product. This can help save time and money by preemptively identifying if people's actual choices about what technologies they will use do not align with their expressed desires. There are risks associated with treating whether or not people use the technology as the primary indicator of the success of the technology. Green (2021) explained, "Viewing participants solely as users can reinforce industry-centered goals, rather than promoting the values of individuals whose lives intersect with technologies" (p. 333). Efforts that focus on just measuring whether or not a target population uses a technology will not necessarily provide the most relevant information for designers interested in serving that target population. Green (2021) demonstrated the value of learning why people do not use technologies and showed that a person's choice to not use a technology is often more complicated than whether the technology is easy to use. He explained, "Focusing on how individuals resist emerging technologies – rather than solely on how individuals comply with design infrastructures – opens space to critique digital landscapes that marginalize and render illegible the experiences of those subject to significant structural inequalities" (Green, 2021, p. 331). Whether or not people use a technology is an

important first layer of data to collect for participatory design projects; learning why people did or did not use a technology is an important second layer of data to collect.

One of the limitations of Ries' approach is that the people using the technology only get to provide reactive feedback on designs that were already made. This excludes many stakeholders from the creative process. There are practical advantages to this though that could either be viewed as productive to advancing humane technology or an unproductive reinforcement of existing power structures. For example, mentor program coordinators are already known to be overworked. Inviting them to contribute to developing a new technology would be a powerful step to ensuring their needs are reflected in the creation of the technology, but it also might be another burden for people already short on time. Taking the time to listen to their problems and then returning to solicit feedback on a prototype of a solution might be a better model for meeting their needs considering their time constraints. Giving people the option to participate though would be more respectful than just assuming they do not have the time or interest.

Time is a real limitation for participatory design projects. Spinuzzi (2005) explained, "Participatory design research takes an enormous amount of time, resources, and institutional commitment to pull off." (p. 169). A full participatory design project has three stages. The first stage is the initial exploration of work. In this stage the researchers familiarize themselves with the stakeholders, the technologies, and the problems they are encountering. The second stage is the discovery process. In this stage the researchers gather information and begin to identify priorities and ideate on potential solutions. The third stage is prototyping. In this stage the researchers, designers, and participants provide iterative feedback on the artifacts they co-created. Each of these stages could take a different amount of time depending on the context and the complexity of the problem. Every stage of the participatory design process generates

valuable information. A study need not complete every stage of the participatory design process to make a productive contribution to the academic discourse or the stakeholders involved in the study. Also, the third stage of the participatory design process may not end. If the designers and participants are committed to the methodology and invested in developing a technology that meets their evolving needs, the third stage of the process may go on for years.

For example, this participatory design project is still a work in progress. After two years of immersing myself in the world of mentor program management I am just beginning the ideating and prototyping process which are part of stages two and three of a full participatory design study. In the results and discussion section I focus on sharing what I learned from stage one of the participatory design process, which is focused on developing a comprehensive understanding of the stakeholders and technologies involved in mentor program management. The following two sections provide a detailed description of my approach to stage one of the participatory design process.

Phase 1 Initial Exploration of Work: Immersion

The first step of my research process was to completely immerse myself in the world of mentor program management and entrepreneurship. I wrote analytical memos about these experiences that were included in the data set I analyzed for this study. My immersion in the world of mentor programs included participation in a variety of mentor programs as a mentor, mentee, and program coordinator. I was already a participant in two mentor programs and part of a team that coordinated another mentor program prior to beginning this research project. My involvement with coordinating the mentor program for the Technical Communication Advisory Board at the University of Minnesota was a particularly valuable experience since prior to coordinating the program I had experience of being both a mentee (received mentorship from an alum) and a mentor (mentored an

undergraduate student) in the program. In addition to participating in mentor programs, I joined a Meetup Group for mentor program coordinators. I met regularly with this group of about eight mentor program coordinators to discuss challenges associated with running mentor programs. None of the names or conversation details from these experiences were recorded, only my memos about these experiences were treated as research data.

In addition to immersing myself in the world of mentorship I also immersed myself in the world of entrepreneurship. At about the halfway point of this research project I received a fellowship that provided support for graduate students to translate their research into a sustainable business venture. As part of this fellowship, I received mentorship from venture capitalists who specialize in investing in education technology. I also shared some initial ideas from this project in an application for the MN Cup Startup Competition, which is a state-wide startup competition sponsored by the University of Minnesota's Holmes Center for Entrepreneurship. I was chosen to advance to the semifinal round of the competition, which meant the MN Cup program connected me with two more mentors who were veteran entrepreneurs. Writing analytic memos about all these experiences was not only a helpful research tool, but it also helped me stay grounded in a project that had the potential to be overwhelmingly meta as I was coordinating a mentor program, meeting with mentors about how best to design a mentor program management product, and writing a dissertation about the process.

Phase 2 Discovery Process: Data collection and coding

For stage 2, I conducted semi-structured interviews with mentor program stakeholders (See Appendix A for the guiding questions). This study was approved by the University of Minnesota Institutional Review Board (Study #00012976). My primary goal in conducting the interviews was to understand the problems they experience with

mentor programs from their own perspective. Instead of pitching the idea of humane technology to mentor program coordinators, I just sought to understand the problems they encounter in running their programs, in their own words, as a means for identifying problems and opportunities to design a solution that better meets the needs of all stakeholders. The phrase *humane technology* was intentionally absent from the question script used for the interviews.

In seeking research participants, I aimed to primarily interview mentor program coordinators. I chose to focus on program coordinators, because they are the primary users of mentor program management systems and also the people who control whether or not to adopt a mentor program management software. They are also in the position to have the greatest influence on the design of mentor programs. I reached out specifically to mentor program coordinators and asked for recommendations of other people who had extensive experience with mentor programs. I used convenient sampling and the snowball method to contact potential interview participants while trying to prioritize institutional diversity. All research participants were adults living and working in the United States. Table 7 provides an overview of the research participants. Fifteen of the interviewees were mentor program coordinators, two were participants in mentor programs, but both of these people were part of multiple mentor programs, and one participant was an administrator that oversaw several employees who coordinated multiple mentor programs. Table 8 provides a summary of the roles of the research participants. Although not interviewing as many people who only have experience as a mentor program participant may be a limitation of this study, the vast majority of research participants who were mentor program coordinators explained in the interviews that they also have experience as a mentee or mentor either in their own program or another. Six participants were from large public universities, three were from small

private universities, four were from startup accelerators, one was from a government program, and one was from a corporate program.

Table 7: Number of research participants from each type of institution.

Type of Institution	Number of Participants
Large Public University	6
Small Private University	3
Startup Accelerator	4
Non-Profit	3
Government	1
Corporation	1

Table 8: Research participant's connection to mentor programs.

Participant Role	Number of Participants
Mentor Program Coordinator	15
Mentor/Mentee in Multiple Programs	2
Administrator Supervising Multiple Mentor Program Coordinators	1

The process of recruiting research participants went remarkably fast. I sent out email invitations to eight people involved in mentor programs in the Twin Cities area and that led to scheduling eighteen interviews with people from across the country. Research participants were generous in providing additional connections and many of the participants were involved in more than one mentor program (I will talk much more about

this phenomenon in the results section). A limitation of the research participant recruiting process is that I did not collect demographic data about the research participants. I did collect data about the role of the participant and the type of mentor program and institution the participant was affiliated with. In the results section, Chapter 4, I include a table with an alias, role description, institutional description, and mentor program description for each participant. The personal names and institution names were changed to protect the identity of the research participants.

The interviews were conducted and recorded via Zoom, except for one exception. One participant wanted to meet in person at a cafe that had a commitment to hiring people who were in drug and alcohol recovery programs. This detail is noteworthy as it is representative of a trend among research participants. This participant coordinated a mentor program at one institution, and during the interview shared about their support of the mentoring component of recovery programs. Interviewees who were chosen based on my knowledge about their participation in a mentor program in one domain often had knowledge and experience of mentor programs in other domains.

The guiding questions used for the interviews were modeled after the customer development interview model for asking questions. The questions were open-ended, so participants had the opportunity to reveal what was most important to them by what they chose to focus on in their answers. The questions also loosely mapped to the three domains for advancing humane technology as they related to the design, business model, and values of the mentor program. The connection between the humane technology framework and the questions was intentionally subtle since I wanted to give participants the ability to share what they thought was most important. For example, instead of asking directly about the values of their mentor program I asked, "Why does your organization have a mentor program?" And instead of asking about their ideas on

how to design an easier to use program I asked, “What is the most frustrating part of managing a mentor program?” Appendix A has a complete list of the questions used to guide the interviews. Interviews were scheduled for half hour slots and interviewees had the option to end the conversation early or chat longer. Most chose to chat longer than the scheduled interview time. After conducting the interviews, I watched the interviews while double checking the transcript that was automatically produced by Zoom. While correcting the transcripts I also wrote analytical memos about stories and ideas the participants shared that stuck out to me.

Once the transcripts were corrected, I implemented a two cycle coding strategy. In the first cycle I conducted a narrative coding method, then in the second cycle I did pattern coding. The narrative coding method seeks to understand phenomena via stories, which Saldaña (2014) describes as a legitimate way of knowing. Focusing on the stories that participants shared provided the opportunity to view the way participants engaged in mentor programs from a holistic perspective. They did not only share stories about the mentor program, but about how the mentor program and the facilitating technologies fit into their life as a whole. Choosing a coding method that allowed for a holistic understanding of participants was helpful for making sense of how people engage with mentor programs in complex ways that often do not align with traditional boundaries between work, academic, and personal identities.

I also chose the narrative coding method for the first cycle through the data, because the narrative coding method centers the importance of stories (Saldaña, 2014). This provided an opportunity to connect the coding process to entrepreneurial practices that also center the importance of stories. For example, stories about problems are the primary focus of entrepreneurs conducting customer development interviews (Constable, 2014). Stories provide a portal to understanding the experience and priorities of the

interview participants. Polkinghorne (1995) wrote, “Stories express a kind of knowledge that uniquely describes human experience in which actions and happenings contribute positively and negatively to attaining goals and fulfilling purposes” (p. 8).

The narrative method is informed by literary theory, so the coder looks for crises and conflicts in the stories participants share, similar to the way a reviewer of a piece of fiction might seek to identify the key conflicts or tensions that motivate the characters’ actions. Looking to identify the conflict in each story allowed me to ask more useful follow up questions as well. For example, if a participant said they are frustrated with how long it takes to run a mentor program, I could follow up to learn if the source of the frustration was under staffing, high maintenance participants, difficult to use technology, or something else.

Then in a second round of coding I went through the participant stories, and I identified the most common types of conflicts that occurred during the interviews. The final step was to put the stories and patterns that emerged from the research in conversation with the humane technology framework presented in chapter 2 (design, business model, and values) to develop a plan about what humane mentor program management software might look like. In chapter four I describe the patterns that emerged from these interviews, and in chapter five I share ideas about how mentor program management software could be cocreated with the research participants to address these problems.

Chapter 4 - Results: The internal and institutional conflicts of mentor programs

In this chapter I share the results of the one on one interviews conducted with eighteen mentor program stakeholders, each from different mentor programs. The results are presented primarily as direct quotes from the participants as they told stories about their experiences of either coordinating or participating in a mentor program. This chapter is divided into six sections, each section represents a focus area of the participants, meaning each of the six categories represents one of the patterns that emerged from the second cycle of coding. The interviews were designed to focus on four topics that, based on my research and experience with mentor programs, I suspected would be focus areas of the participants. Those areas were asking about 1) why the mentor program exists, 2) how success of the program is measured, 3) what challenges the participants encounter in managing their mentor program, and 4) what tools they use to manage the mentor program. When reviewing the data and looking for patterns it became clear that there were patterns of conflict associated within each of the four focus areas I anticipated, and also two other areas. The two other areas where patterns of conflict emerged were related to the process of matching mentees and mentors, and discussion of the way mentor programs intersect with other mentor programs. All together this added up to six patterns of conflict. These six patterns of conflict functioned as the six codes I used for the second cycle of coding. The data in this chapter are presented based on these six categories. Table 9 provides a summary of the key conflict patterns in each of these categories.

Within each section I share quotes that are representative of the key conflicts associated with the section. The stories the research participants shared revealed the focus of their attention and the values that influence the way they manage their mentor programs. My descriptions accompanying the quotes focus on identifying the conflict in

the stories that participants tell. I use the term conflict in the literary sense, meaning that a conflict is not necessarily between two people, but is just a struggle between two opposing forces. I chose to use the term conflict to represent the key issues the participants talked about, because that is the term Saldaña (2014) used when explaining the narrative method of coding, a method that focuses on listening to the stories participants tell and identifying the conflicts that motivate their actions and reveal their values. The conflicts presented represent participants' internal conflicts as well as struggles the research participants may have had with the institutions, technologies, and stakeholders they interacted with as part of their mentor programs. I also highlight instances where participant responses conflicted with one another.

Table 9: The conflicts associated with each of the six focus areas of mentor program stakeholders.

Question:	Main Conflicts
Why does your organization have a mentor program?	<ul style="list-style-type: none"> ● The official institutional reason for a mentor program is in tension with the personal motivations of stakeholders. ● The idea that a mentor program exists to help participants overcome a deficit is in tension with the idea that mentorship is for everyone, or that mentor programs should help high achievers go even further.
How do you measure the success of your mentor program?	<ul style="list-style-type: none"> ● Defining success by simply keeping the mentor program running is in tension with trying to measure more advanced metrics. ● The desire to measure standardized metrics is in tension with relying on personal anecdotes and collecting feel-good stories.
What are the biggest challenges of coordinating (or participating in) a mentor program?	<ul style="list-style-type: none"> ● The desire to improve the program is in tension with the reality of limited time and resources. ● The idea that mentor program coordinators should provide more structure is in conflict with the idea that participants should have more autonomy.

What tools do you use to help you manage the mentor program?	<ul style="list-style-type: none"> • The desire to put the personal touch on mentor program management is in tension with the desire to make managing a mentor program more efficient. • The desire to centralize mentor program communications and data is in tension with the desire to decentralize the mentor program experience.
How do you match mentees with mentors?	<ul style="list-style-type: none"> • The desire to make it easy for participants is in tension with the desire to give participants control. • The desire to give every participant the best possible match is in tension with the need to complete the matching process in a timely manner and acceptance that some elements of mentor matching are unpredictable.
How does the mentor program intersect with other mentor programs?	<ul style="list-style-type: none"> • Creating clear boundaries around a mentor program is in tension with the desire to embrace the overlapping and intersecting nature of mentor programs. • Defining mentorship as a program specific experience is in tension with embracing being a mentor and mentee as a skill or lifestyle.

In the remainder of this chapter, I dedicate a section to each of the six categories outlined in Table 9. Each section includes quotes from participants and a detailed description of the patterns of conflict that participants experienced related to each of the categories in the table. Table 10 provides a description of the research participants. It includes their alias, a description of their institution, and notes about the mentor program they were affiliated with.

Table 10: Alias, role, institution type, and notes for research participants.

Alias	Role	Institution Type	Program/Participant Notes
Ada	Mentor Program Coordinator	Startup Accelerator	Competitive program connecting startup entrepreneurs with

			experienced entrepreneurs.
Ben	Mentor Program Coordinator	Government, County	Connecting students on probation with adult mentors.
Carly	Mentor Program Coordinator/Administrator	Private Liberal Arts University	Involved in managing and/or overseeing several mentor programs.
Dan	Serial Mentor	N/A	Mentor in several entrepreneurial and academic mentor programs.
Eleanor	Mentor Program Administrator	Large Public University	Responsible for managing and/or providing institutional support for several mentor programs.
Frida	Mentor Program Coordinator	Large Public University	Connected students with alumni.
Glenda	Mentor Program Coordinator	Large Public University	Connected students with alumni.
Henrietta	Mentor Program Coordinator	Large Public University	Connected students with alumni.
Isaac	Mentor Program Coordinator	Startup Accelerator	Competitive program connecting startup entrepreneurs with experienced entrepreneurs.
Jackie	Mentor Program Coordinator	Private Liberal Arts University	Connected students with alumni.
Kyla	Mentor Program Coordinator	Private Liberal Arts University	Connected students with alumni.
Lucy	Mentor Program Coordinator	Non-Profit	Non-profit mentor program connecting professionals in a niche industry.
Maria	Mentor Program Coordinator	Large Public University	Connected students with alumni.
Nicole	Mentor	Corporate	Mentor in academic and

			corporate settings.
Olivia	Mentor and Mentee	Non-Profit	Mentor and mentee in nonprofit and corporate settings.
Paula	Mentor Program Coordinator	Startup Accelerator	Competitive program connecting startup entrepreneurs with experienced entrepreneurs.
Quinn	Mentor and Mentee	Non-Profit	Mentor and mentee in nonprofit and corporate settings.
Raquel	Mentor Program Coordinator	Large Public University	Connected students with alumni.

Conflicts Regarding Why Mentor Programs Exist

I started each research interview by asking participants why their institutions have a mentor program. The conversations about this topic revealed that for these research participants the conflict was not about whether an organization should have a mentor program. That debate seemed to be settled to such an extent that program participants often paused, sighed, or laughed before answering this simple question. Raquel, a participant who manages a mentor program with over 400 participants at a public university began her response with, “I’m laughing, because I’ve never been asked that.” In general, the participants viewed the need for their mentor programs as obvious, but as I asked them to articulate the actual reason it became clear that there was some conflict both internally and institutionally about why these mentor programs exist. There were two main conflicts that emerged related to describing why an institution has a mentor program. The first was a conflict between the institution’s official reason for having a mentor program and the personal motivations described by the mentor program participants. The second was a difference between participants, as some framed mentor

programs as existing to help the mentees overcome a deficit and others described the mentor programs as a valuable tool regardless of a person's deficiency or proficiency in a particular domain. In the following sections I will share quotes that illustrate the various ways these conflicts showed up in the interviewee's responses.

On Paper or From the Heart: Conflicting explanations about why mentor programs exist

When talking about why an organization has a mentor program, participants seemed to draw from two different sources. One of those sources was the official description from the organization about why they have a mentor program, and the other source was their own personal motivations describing why their organization has a mentor program. The comments coming from these two sources were not necessarily in opposition, in fact the two different sources often complemented each other, but when thinking about the design and values of an organization it is critical to understand whether people are motivated for intrinsic or extrinsic reasons. To understand these differences, I will provide some examples of mentor program coordinators explaining why their organization has a mentor program

First, I will share some examples of responses that explain the reason for a mentor program based on the goals of an organization. Isaac, a coordinator of a mentor program for a startup accelerator provided an example of this. He explained how his organization has a financial stake in each company in the program, so providing mentors that will help the companies succeed helps the accelerator meet its own goals related to return on investment saying, "We're an investment fund and we're judged by truly having skin in the game and being in it with our companies to see them be successful." Kyla, an administrator of several mentor programs at a small liberal arts university, provided another example of this. When asked why her university has a mentor program she said,

"The why is career exploration. The why is what's the value of the liberal arts. The why was connecting students early to the [university community] network." This quote demonstrates how the official reason for many mentor programs is to multiply or intensify an organization's mission and values. In Kyla's case the participant reported that the mentor program at a liberal arts college exists to help students recognize the value of a liberal arts education. For most sponsoring institutions the mentor programs exist to complement the sponsoring organization's primary mission. Many of the official responses about why an organization has a mentor program sounded nearly identical to the mission statements of the sponsoring organizations. This demonstrates the importance of knowing the values of a sponsoring organization, since a mentor program often functions to not only pass along information from one group of people to the next, but to intensify the values of the organization. For example, the implicit argument in the quote from Kyla, the mentor program administrator at a liberal arts university, is that participants of the mentor program will have a greater appreciation for, and identity with, a liberal arts education than non-participants.

A quote from Maria, a coordinator of a mentor program at a public university, demonstrated how passing along the values of the sponsoring institution also plays a role in sustaining and perpetuating the mentor program. She described how those who participated in the mentor program as students are more likely to volunteer as alumni, saying, "I've definitely been able to maintain relationships with students I've met over the past three plus years and have now worked to engage them as alumni. A couple of them are helping to lead one of our newest degree programs. They're helping to lead the alumni network." Like the other participants, the official reason Maria provided for the mentor program mirrored the educational mission statement of her college, but the

previous quote demonstrates how the mentor program helps advance other institutional goals, such as encouraging students to volunteer after graduation, as well.

Although participants all provided the official explanation for why their organizations had mentor programs, it appeared that their work coordinating a mentor program was driven more by personal passion. While on paper the programs exist to advance strategic institutional goals, in reality many of the programs exist and persist due to the passion of one person who takes ownership for the program. For example, Glenda, a mentor program manager at a public university described her experience of taking on a mentor program, “I took it on with okay yeah I'll manage it, and I've fallen in love with the program and so I've put a lot more into it just based on you know who I am and the pride I take in my role.” Frida, the manager of a mentor program that focused on serving undergrad students at a public university explained how the goals of a program can change depending on who is in charge of managing it:

It [the mentor program] has kind of been passed from department to department and so it came to us from the career services team, and so, the focus changes from like the career services team to the student engagement team. And we weren't as focused about the same things they were focused on because we just come in with different perspectives.

Frida also added, “I feel like it can keep getting passed based on where passions lie and who has the time or energy to do it.” Another program manager, Henrietta explained how her program getting passed from department to department led to her not knowing the full history of the mentor program she manages. She said:

It's been around since at least the 90s, I don't know exactly when it started, but it used to be a program run by our alumni board, as I understand it, so I think that

the initial idea was as a way for alumni to give back their time to help current students make that transition from college to their career.

Sometimes the personal motivations of the program coordinator may not be perfectly aligned with the department in which they are employed. For example, Henrietta continued:

I guess what I'm more concerned about is making sure the students are getting what they want out of it, even though I'm the director of alumni relations for our college. I want to make sure alumni have a good experience, but the program is only beneficial if it's benefiting the students, first and foremost. The alumni having a way to volunteer is great, but sort of secondary in my mind to what I hope that the program does.”

Henrietta's interest in prioritizing student needs while working as a director of alumni relations indicates that mentor program coordinators are in a position where their personal interests and passions can have significant influence over the structure and goals of a mentor program.

Many of the mentor program coordinators talked about being motivated by strong, personal beliefs about the value of mentorship. Jackie, a mentor program coordinator at a private liberal arts university said, “For me it's by far the most valuable part, the most rewarding part of my job. I absolutely love that piece of what I do.” Kyla, an administrator who is involved in several mentor programs at a private liberal arts university talked of being motivated by the special moments, like the amazing feeling she had after seeing a student in her mentor program present on research they co-authored with their mentor, “Those are the goosebump moments. I'm like okay this is why I do what I do.” Lucy, who participates in mentor programs and is also a mentor program coordinator for a non-profit said, “I feel called to it, I feel like it's a person's

responsibility.” In most cases the personal reasons motivating mentor program coordinators will not conflict with the institutional goals, however it is important to note that explaining why an organization has a sustainable mentor program might be as much about the personal commitments of the mentor program coordinator as it is about the formal institutional goals.

An Accommodation or a Foundation: Conflicting justifications for mentorship

The other conflict that emerged when talking about why institutions have mentor programs was how the concept of mentorship was framed. Some interviewees talked about mentor programs as something that is valuable for everyone, even the highest achievers in any domain, while others framed their mentor programs as existing to help a certain group of people overcome a deficit. Even though the whole premise of mentorship is based on one person having more knowledge or experience than the other, mentor programs can frame mentorship in a variety of ways. It can be presented as something earned by only the most worthy of mentorship, as something given to only those with the greatest need, or anywhere in between those two extremes. The difference in this framing can have major implications for the design and growth of a program, and how resources are allocated to the program. This conflict intersects with the previous section, since the framing of a mentor program as a temporary accommodation or a foundational good could take place at the institutional or personal level.

Sometimes the mission of the institution sponsoring the mentor program and the goals of the program reveal whether the mentor program was designed to help those who are struggling in a particular area. For example, one of the participants described the mentor program they managed as a county funded mentor program for students

transitioning out of juvenile detention centers with the goal of promoting pro-social interactions. The mentors work with students until they graduate high school. Regardless of the positive regard in which the mentor program coordinator viewed the program participants, institutional framing of the mentor program made mentorship seem like something students should not need, and something they can graduate from if they follow the rules. Other research participants managed mentor programs that framed mentorship as exclusive and desirable. For example, several of the research participants oversaw the mentor programs for startup accelerators. These programs were highly competitive, and only the entrepreneurs that wrote the most persuasive applications were granted access to the mentor program. Even if the mentor program coordinators happened to talk negatively of the program participants, the institutional framing of the mentor program presents mentorship as something highly valuable that is worth competing for.

The framing of mentorship might occur differently at the personal level as well. For example, two research participants who coordinated similar types of exclusive mentor programs for entrepreneurs described the need for their mentor programs differently. One described the mentorship as a response to a deficit, while the other described mentorship as something foundational for entrepreneurship. Paula, a mentor program coordinator for a startup competition said, “The reason we have a mentorship program is because so many of our competitors are really, really early stage, and so they don't just need general resources... but they actually need a little bit more hand holding.” Interestingly, Isaac managed a mentor program for more advanced entrepreneurs and did not frame the need for mentorship as a deficit. He framed mentorship as essential for persevering through the isolation of starting a business. He said his organization has a mentor program because, “You find yourself in isolation,

building your company as a company of one and so being able to rely on people that have done it before both to help you get through the challenges, but also to provide a support system for you, at a time that it is isolating and the startup scene sounds romantic but the early stages, they're pretty lonely.” He also framed giving back as a mentor as a natural part of the process, “Fundamentally, you know startup founders go through such a unique experience that they always want to give back, I know, very few startup founders that don't want to or are unwilling to go relay the war stories.”

Entrepreneurship was not the only domain that claimed mentorship to be essential. Interviewees who were part of addiction recovery programs made similar claims. Quinn, a participant of several different non-profit and corporate mentoring programs, explained the importance of mentor programs, “In recovery it's just foundational for making a change and being able to have somebody walk alongside you and guide you.” Although the differences in framing can be subtle, whether the mentor program is framed as something foundational or as a temporary accommodation will likely influence the way participants engage with the program.

Conflicts Regarding Measuring Mentor Program Success

Each of the research participants had the opportunity to share about how they measure the success of their program. In many ways the stories about measuring the success of the mentor programs were similar to the stories explaining why their mentor programs exist. When talking about the success of mentor programs there was a tension within each program about how much time and resources to dedicate to collecting and acting on standardized metrics and how much to just trust your gut. The lack of time and resources often led mentor program coordinators to rely primarily on their gut and personal anecdotes even though they might have been interested in measuring success in a more systematic way. Thus, the two main conflicts that emerged regarding

measuring the success of mentor programs might actually be on the same continuum. The first tension was about whether mentor program coordinators should just consider the existence and functioning of the mentor program as a success or whether they should invest in formal improvement initiatives. The second tension was related to the formal improvement strategies and conflict about what data to collect and use to determine the success of the mentor programs. In the following sections I will share quotes that demonstrate the different ways these conflicts arose when research participants talked about measuring the success of their programs.

To survive or thrive: Conflicting notions mentor program success

When asked about measuring the success of their mentor programs, the research participants demonstrated that it is far from an exact science. For many program coordinators who were operating with limited staff and resources, simply having a mentor program was considered a success. For example, Carly, who oversees several mentor programs at a private liberal arts college, explained that each year if they can just keep the programs going, they consider it a success. Raquel, who manages a large mentor program at a public university, explained that just persevering through the logistical challenges each year is considered a success. For a program with over 200 mentees she said, “We try to match everyone who applies with a mentor, so that’s one indication of success for us.” However, Raquel explained that they are interested in measuring success in a more detailed way. For example, she noted a lack of data made it difficult to determine if their program was successful, “There’s just not a lot of research or information out there to compare to, particularly for mentor programs in higher ed. If I’m looking at our numbers and I wasn’t sure, like are these good? Are these terrible?” When Raquel could not find statistics to compare her program, she just started reaching out to other mentor program coordinators. The informal networks provided suitable

support for her questions about year over year retention rate for the volunteer mentors. Getting more formal data and benchmarks was typically viewed as something that would be nice to have, but not a priority given the limited resources and the demands on the mentor program coordinators' time.

Numbers, stories, and relationships: Conflicting approaches to data collection

While some research participants viewed collecting more data to measure the success of their program as something they would do if they had the resources, many well-resourced programs made the intentional choice not to tie the success of their program to statistical tracking. The tension here was not about whether or not they could measure the success of their program based on hard data about mentor and mentee retention or other measurable factors, but whether they should. For example, Ada, the coordinator of a mentor program for a startup accelerator said:

I don't track relationships in any meaningful sort of way. I can give you anecdotal evidence that certain startups that were in our program in 2018 still have monthly meetings with their lead mentors that they had. Some have joined boards. We've had mentors invest in companies before. We've had mentors be employed by our companies before which is kind of crazy.

These anecdotes were sufficient signs of programmatic success for the mentor program coordinator and for the sponsoring institution. One program coordinator considered the success of a mentor program too personal of a thing to subject to formal monitoring. She said, "Success looks different for every student that comes through the program." While acknowledging that each participant might have different goals, one participant still attempted to develop a mechanism to track whether or not students were meeting their goals. Maria, a mentor program coordinator at a public university explained

one of her strategies was to make students submit “a mentorship agreement and goals documents, so that we knew that they had reached out and connected, at least once to get to kind of kick off.” Success of the program could then be measured based on the number of student participants that submitted that document on time.

When a mentor program is closely aligned with the mission statement of the sponsoring organization, measuring the success of the mentor program becomes obvious and thus additional data collection seems unnecessary. For example, the success of a mentor program for a startup accelerator can be assessed by whether the startups in the program go bankrupt or become profitable companies. Similarly, mentor programs attached to 12-step recovery programs have a built-in way to measure success. For example, Lucy talked about how she can tell if her work as a mentor in a recovery program is successful, “I know when a mentor program is successful when you hit measurable goals, right? So, if somebody is saying I don't want to drink this week, and they don't, I know that we're doing something right.”

How central a mentor program is to the sponsoring institution also affects the pressure mentor program coordinators face to track program success. For example, Ben the mentor program coordinator for a county funded juvenile justice program, had to carefully collect verification of every mentor meeting that took place and data related to school attendance and recidivism. The mentor program was not central to the operation and mission of the county funding the program, and each piece of data would be used to determine whether the program continued to receive funding. Unfortunately, this particular program ultimately got its funding cut. Mentor programs that exist at the center of the sponsoring organization do not face the same pressures to demonstrate success. For example, when I asked the mentor program coordinator from a startup accelerator whether he tracked if participants met with mentors or followed up with mentors he said,

“I don’t police it. We’re all adults.” In that setting the mentor program coordinator did not have pressure to demonstrate the legitimacy of the mentor program, and he could let the mentees and mentors figure out what worked best for them.

Conflicting Challenges of Coordinating Mentor Programs

When talking about the biggest challenges and most frustrating parts of coordinating a mentor program two clear themes emerged among research participants. The first theme of conflicts was related to limitations of time and resources. Mentor program coordinators wanted to dedicate more time and resources to their programs than they were able to. The second theme of conflicts were the result of the mentor program coordinators’ paradoxical efforts to give participants more autonomy and provide participants more structure. In this section I will share quotes demonstrating the different ways mentor program stakeholders talked about these challenges and how the perspectives of the interviewees differed dramatically when talking about balancing program structure and control.

I wish I could spend more time on it: Time as the biggest conflict for mentor program coordinators

When asked about the biggest challenges of coordinating a mentor program, it was common for participants to respond with circular responses that felt like they were begging the question. The most common responses basically said that coordinating a mentor program is the most difficult part of coordinating a mentor program. In these responses there was not one activity in particular that made coordinating a mentor program difficult. The perception of difficulty was due to the mentor program requiring much more time and energy than the program participants anticipated. For example, when asked about the most difficult part of coordinating a mentor program, Henrietta, a coordinator of a college wide mentor program said, “I’d say it just takes a lot of time to

run a good mentor program. It takes a lot of staff time.” She also provided a warning for other people considering starting a mentor program:

The thing I just always say to anyone new who's thinking of starting a mentor program is just realize how much staff time it takes, because I think a lot of people think like oh, once you match everyone up then that's all it is. But if you really care about the quality of the experience people have, then you have to provide more support than that.

There is an important nuance in Henrietta's quote that is representative of how mentor program coordinators talk about this frustrating part of their job. The conflict about how much time and energy to dedicate to the mentor program seems to be both institutional and internal. The program could benefit from additional institutional support, but part of the tension is the result of Henrietta wishing she could do more to give students the best possible experience. For example, none of the interviewees reported that a boss was disappointed with the number of participants or some other sign that would indicate that the program coordinators were not meeting institutional expectations as a result of being under resourced. Instead, it seemed that many of the participants had a personal desire to go above and beyond the minimum required by the sponsoring institution.

Some of this tension might be the result of mentor program coordinators feeling like they were not given the opportunity to create the best possible mentor program experience. Many participants described the time and energy it takes to manage a mentor program as disproportionate to the way the mentor program was described on their job description. Henrietta said, “It's like a couple bullets of like ‘manage the mentor program’ but what that actually entails and how much time it takes I don't think was accurately reflected in the job description.” Frida, who coordinated a college wide mentor

program at a public university said, "It wasn't even on my job description, it was like part of the 'support office initiatives' thing." For most participants, managing the mentor program was just one of their many responsibilities. Raquel, a coordinator of a college wide mentor program, said, "I, like most people on campus who are running a mentor program, this is not my only job." Eleanor, an administrator who supports many mentor program coordinators at a public university, explained how common the disconnect is between administration's abstract understanding of mentor program management and the actual work it takes to run a program. She said,

"Everybody that I work with in the mentor programs group talks about just how time intensive of a process it is to be a mentor program coordinator. And how challenging it is when leadership doesn't understand that, and how they wish they had more time to dedicate to it to do it well. Because the manager or the supervisors just kind of assume we should be able to whip one up real quick."

The seasonality of mentor programs seemed to be part of the reason providing appropriate staffing was difficult. Interviews from the academic and startup related mentor programs reported that the amount of time they dedicate to the mentor program varies by the time of year, with a very intense workload during the recruiting and matching process, and very little mentor program related work in the weeks after the mentor program concludes.

The solution or the problem: Conflicting perceptions of mentor program expectations and autonomy

In this section I will highlight how participant responses often conflicted from one another with regards to program expectations and participant autonomy. Some participants framed the inability of program participants to meet certain program expectations as the biggest challenge of running a mentor program, while other

participants considered enabling participants to establish their own expectations as the most important part of a mentor program. In this section I will use quotes from the way participants talked about the topic of mentee follow up and accountability to illustrate how mentor programs can frame the rights and abilities of program participants in dramatically different ways.

Several participants who coordinate mentor programs for college students described mentees not following up with mentors as the biggest challenge of coordinating a mentor program. For example, Jackie, the coordinator of a mentor program at a private liberal arts college, said, "The hardest part is really driving in how important follow up is. That's one thing that the students really struggle with." Henrietta, the director of a college wide mentor program at a public university, explained how the lack of student follow up is a complaint of mentors as well, saying:

Every year when we do our surveys, we still hear from mentors like, 'my student never contacted me' or 'we met once and never again' or whatever, just like the student sort of ghosted them or fell by the wayside and that's really frustrating because we try to give students a ton of resources.

Another mentor program coordinator at a public university explained that not knowing whether participants were doing the required activities was one of the biggest challenges. When asked about the most difficult part of coordinating a mentor program Maria said:

Probably just accountability with busy students, busy alumni, and making sure people are following through. You know it's probably that check in, and if you don't know you don't know. If you don't ask or, if you are asking, and nobody responds you're like oh my God, no one's meeting, nobody's doing anything, this is failing.

This inability to know if participants are doing the required activities and the desire to provide more structure to ensure that they do, led Maria's team to invest in mentor program management software that offered some tracking features. Maria explained, "That's probably the main reason why we want to keep using the tool is that we have easy access to the communication piece on it, and we have analytics so we can see when people open and click through." Jackie, a program coordinator at a private liberal arts university demonstrated her internal conflict about how involved she should be with ensuring students follow through with what they say they will do with the mentor program. She explained:

There's a zoom link that I create and then both the mentee and the mentor have that same link, but I also have it then too, so if we have a student that's a no show I can pop into that session and meet with that mentor or I can quickly send it out to our [group of mentees] and say hey we have a spot that needs filling, just so I have a little bit more control, instead of just letting the students kind of go. But I don't know, I might need to let go of that control and just be like you can do this.

Jackie's quote illustrates a mentor program coordinator's struggle about how involved to be with the minutiae of the mentor program. It also demonstrates that she places a high value on the mentor's time. She was willing to spend her time recruiting students at the last moment for the sake of not having the mentor feel that no one showed up to meet with them. This is an extreme example of a common pattern of mentor program coordinators putting pressure on themselves and the mentees to make sure the mentors feel appreciated and have good will toward the program. Isaac, the coordinator of a mentor program for entrepreneurs stated bluntly what is at stake for the mentor program coordinators, "Once in a while I'll hear from a mentor that's like 'hey my

team never reached out, what's up with that?' which makes me look bad." Some mentor program coordinators will go to great lengths to try to make sure the mentors continue to think highly of their program. This can be motivated by a variety of reasons including preserving personal relationships with the mentors, trying to increase mentor retention year over year, and trying to advance the brand of the sponsoring institution.

Although Isaac was aware of the risk that mentees not meeting with mentors could make him look bad, he viewed that risk markedly different than the mentor program coordinators who were trying to eliminate the problem by being more involved and adopting more technologies. He said, "I'm pretty hands off on all of that, I let nature take its course, once I tell everybody okay here's who you're matched with I expect that people will follow up." Here he refers to the potential of people not following up simply as nature taking its course. A similar sentiment came up across many interviews where participants used the phrase "at the end of the day" to accept the fact that even if they try their hardest there are going to be some participants that drop out, do not follow up, or otherwise defy the expectations of the program. Raquel, a coordinator for a mentor program for graduate students at a public university explained this challenge,

Managing a mentoring program you know, is about kind of creating this like universal or overall structure that is supposed to be like a one size fits all and that's hard. It's like, the customer service part of it is hard and that there are times when it's like this one size fits all just doesn't work for everyone and so managing people's expectations versus like okay, how can we tailor this program to meet everyone's individual needs can be a hard balance and can be challenging at times and then also just remembering at the end of the day I'm just not going to please everyone, and that's okay, too.

While some of the interviewees focused on the struggles of trying to get program participants to meet all the expectations of the programs, other interviewees focused on the importance of eliminating those expectations. To use Raquel's expression, they wanted to avoid trying to force people into a "one size fits all" mentor program. The responses from research participants who spoke from the perspective of program participants suggested that the mentor program coordinators' emphasis on completing the required follow up activities might be misguided. For example, Quinn, a person with experience in non-profit, corporate, and faith-based mentor programs, described the most important feature of a mentor program as, "I think it's important from what I've heard and from others, that it's good to have the unwritten rule or written rule, or whatever that if things aren't working out, that's fine. You know, like people can step away." Here Quinn described the right to discontinue a mentor program as an important starting point for building a mentoring relationship. That was in stark contrast to the way some mentor program coordinators framed participants discontinuing as dropping out, a form of failure. Choosing to stop meeting with a mentor can range from providing a polite explanation of why the participant is stepping away to just choosing to not respond to any more mentor program related activities. Maybe the mentor program coordinators who were worried about students dropping out or not following up would be okay if students chose to take a graceful exit from the program, but in the university based programs I did not get the impression that students had that option or that programs were designed to prioritize that type of mentee autonomy. The emphasis was placed more on trying to make sure the mentor meetings happen.

Several of the research participants framed the mentee taking responsibility for the frequency and depth of meetings as an essential component of a mentorship relationship. For example, Nicole, a person with experience mentoring college students

and middle career professionals, described how she always tried to let the mentee lead the way:

I would have been happy to do even more time with the mentee if they would have requested it, or needed it, but you know you're really there to guide the person and allow them to kind of make the decisions and set the tone of how things are going to go forward.

Lucy, who works as a mentor program coordinator and is also actively engaged in other programs as both a mentee and a mentor added some perspective about how personal the concepts of accountability and expectations are for a mentor program. When asked about the most difficult part of participating in mentor programs she said, "Taking away their autonomy, so that's my biggest fear as a mentor. As a mentee my biggest fear was being told what to do." How would mentor program coordinators think differently about their program requirements if they knew some participants' greatest fear was being told what to do? In contrast to the way mentor program coordinators often used the term expectations as a positive, Olivia, a participant in several non-profit mentor programs, framed having expectations for the behavior of the mentee as negative. When asked about the most difficult part of mentoring she said, "I would say I've gotten pretty good at letting go of expectations, but that's probably the big thing." Quinn provided a reminder of just how challenging even receiving help from a mentor can be when he said, "For me, initially, it was the vulnerability of taking that first step, and asking somebody for help, I think, that was the biggest obstacle for me as a mentee." It seems that mentor program coordinators concerned about participants dropping out of the program or otherwise not meeting expectations might benefit from reflecting on how those program expectations align or conflict with the need for mentees

to have autonomy over how they engage with a mentor program and what they get out of it.

Conflicting Approaches to Adopting Mentor Program Management Tools

When asked about the tools used to facilitate a mentor program, all of the research participants demonstrated an awareness of the significance of their tool adoption decisions. Their commitment to make the best possible experience for program participants was demonstrated by the intentional ways they approached using technology to support their mentor programs. As they talked about how they made these decisions there were two main types of conflict. First, a mentor program coordinator's desire to make the program run more efficiently was in conflict with the desire to maintain control over the program and to continue putting their personal touch on the program. The other common conflict discussed by research participants was the tension between the desire to centralize the mentor program, meaning mentor program interactions and communications would all take place via a centralized tool, and the desire to decentralize a mentor program where participants could decide what tools they used to engage with the mentor program. In this section I will share quotes that highlight the various ways the participants talked about these two conflicts.

How efficient should a mentor program be: Conflicting approaches to adopting mentor program management tools

Several of the research participants associated adopting technologies that could help make the program run more efficiently with making the program both less personal and smaller. Thus, choices about whether to adopt technologies that could make managing the program less time consuming were weighed against goals related to building community and expanding the overall impact of the program. For example, when talking about facilitating a county sponsored mentor program, Ben framed using

virtual communication tools as conflicting with the goal of creating a robust mentor program. He said:

The technology piece, up until this past year has been rather minimal, because we really wanted a robust program, where we meet in person and develop meaningful lasting relationships with volunteer mentors and mentees, and we found it to be very successful.

Glenda, a coordinator of a large mentor program at a public university, explained how switching the program to a virtual format limited opportunities for volunteers to contribute to the program. She said:

I've got all these people that want to help, but I don't really have anything physically for people to do. You know there's nobody checking people in, giving out name tags, mingling around helping with food or beverages or anything like that.

Switching to a virtual format potentially saved Glenda time and energy, but by eliminating jobs for volunteers the virtualization of the mentor program might have had a negative impact on the sense of ownership and identity the participants felt for the program.

Some interviewees reported that moving mentor program kick-off events to a virtual format allowed the mentor program to save money and allocate more resources to customizing the mentor program management software. Maria, a coordinator of a mentor program at a public university said, "We don't have to spend money on in-person events if we don't want to, you know we can be a little bit more strategic." For larger programs especially, the increased efficiency provided by software specifically designed for mentor program management was worth the risks of making the program less personal. For example, Maria said, "Without it, we would just be tabbing through Excel

sheets.” The tone in her voice made it clear that “tabbing through Excel” was not a pleasant alternative. For many of the interviewees, Excel and email were considered the default tools for managing a mentor program and were referred to as not using any tools for the program.

The sometimes surprising responses to the question about what tools people use to facilitate their mentor programs revealed how personal the mentor programs are to many people. For example, I was surprised when one participant answered the question about the tools they use by saying, “Well, personal relationships out of the gate. Really, just introducing myself.” When asked what tools she uses to facilitate her mentor program, Jackie, a coordinator of a mentor program at a private liberal arts university, said, “Um, it’s kind of me.” Mentor program coordination is often done by an individual or a small team that has a keen understanding of the unique needs of the program participants. The reluctance to adopt new communication technologies seems to stem not from the fear of getting replaced, they would be happy to be able to free up some of their time, but from the fear that the introduction of a new technology will change the nature of the mentor program in some undesirable way. For example, although he intentionally ran his mentor program in a low-tech fashion, Ben revisited the use of technologies at the very end of his interview saying, “I really hope there’s some technological initiatives that complement some of the other best practices we used throughout the years.” From his years of running a mentor program for youth transitioning out of the juvenile probation system, he witnessed a lot of special developmental moments that took place at in-person group events, and he was only willing to adopt a new technology for his program if he could be guaranteed it would not jeopardize those special moments.

Control or release: Conflicts about centralizing mentor programs

When talking about the tools used to facilitate mentor programs, research participants varied widely in how much they thought the mentor program coordinator should dictate which communication tools are used for the program. The conflicting perspectives about this issue represented two different approaches to thinking about mentor programs. One approach aspired for all mentor program-related activities to take place with the same tool. The other approach aspired for the program participants to determine what communication tools they used to facilitate their experience with the mentor program. Based on the responses from the research participants it sounded like only some mentor program coordinators and the software companies creating the platforms were interested in the tools that would centralize all mentor program related activities on one platform.

Several of the research participants had experience with the mentor programs associated with 12-step recovery programs. When I asked them about what tools they used to facilitate their experience with the mentor program the answers ranged widely. For example, the meeting places included Facebook chat, Facebook groups, Zoom, email, phone calls, coffee shops and walking trails. The frequency of meetings ranged from 4-5 times per week to about once per month. This variety is an example of a decentralized mentor program. There was not a mentor program coordinator that tracked whether these meetings took place or whether the participants met certain expectations. Which technology to use and the meeting rhythm were negotiated at a personal level between the mentee and mentor. This approach to a mentor program is about as decentralized as possible. Some mentor program coordinators view this model as the more natural approach to mentorship, so they aim to play as little role in the mentorship process as they can. Mentor program coordinators in this camp leverage technology to

expedite the recruiting and matching process, but then step back and let the participants determine what tools they will use moving forward.

The implications of the decentralized approach, of course, is that the mentor program coordinators give up control over the program. If program participants get to pick their own communication tools and meeting rhythms, the program coordinator has no way to track the data about whether meetings are taking place and whether mentees are achieving the programmatic goals. Some mentor program coordinators who embrace the decentralized approach to mentor program technologies still gather measurable data by using tools like Google forms. In lieu of being able to monitor participant behavior directly, they rely on self-reporting. Functionally, getting participants to open the emails and click through the forms to self-report the data is reduced to an email marketing problem as mentor program coordinators have to figure out the best subject lines and formatting that will increase survey response rates. This is a problem especially for large programs where the participants might not have a personal relationship with the mentor program coordinator. Thus, to figure out if the program is working, mentor program coordinators are drawn to software platforms that promise troves of useful data that result from interactions taking place on centralized platforms.

A mentor program coordinator for a startup competition shared her candid observations about how she thinks program participants view centralized mentor program management tools. Paula said:

They [the software developers] are trying to do a couple things, 1) create big, massive ecosystems on your platform. And 2), to have all of the communication, scheduling, and conversations, your website and anything else, they want all of it on their platform. What we've realized is nobody wants to do that. The mentees

don't want to do it. The mentors don't want to do it. They're like, fine, look at my profile, find me, then let's talk on email.

An administrator that supports several mentor programs at a large public university shared a similar story about their efforts to create a centralized mentoring platform for the university alumni to connect with students. Despite significant investments in developing the platform they were having difficulty determining whether the tool was effective. Eleanor explained why they are unable to assess how many people are actually benefiting from the mentor platform:

We just haven't had the resources to follow up, because another important thing to note is that while the user interactions might start on the [official university mentoring platform] it's very common that they quickly move off the platform. So, a very common user interaction is a student will reach out and say 'Your profile was suggested to me by the platform. I'm a sophomore majoring in blah blah blah, I'd love to learn more about your path.' The alum responds, 'Great, I'd love to connect with you, my email address is blank, let's find a time.' And so, then there's nothing else I can see, and I assume the students sent the person an email. But I don't have a way to confirm that unless we do you know individualized outreach follow up and say hey, I saw that you had a conversation start how's it going?

These stories suggest that mentor program participants do not see the benefit of using a centralized platform for their mentor program activities. The mentees and mentors appear to prefer the communication tools they already use for their other activities, and do not see a need to use the mentor program management software for anything other than the initial introduction.

Conflicting Approaches to Making Mentor Matches

Every single research participant said the process of matching mentees with mentors is important. Despite there being consensus regarding the importance of matching, the way mentor program coordinators talked about the matching process varied. Every participant had a slightly different approach to facilitating the matching process, and these differences in approach were reflective of the priorities of each mentor program. As the participants described their efforts to facilitate the matching process, there were two main patterns of conflict. First, mentor program coordinators experienced internal conflict as they aspired to make the best possible match for each participant while having limited amounts of time, data, and participants (too few of either mentors or mentees). Second, there was conflict between participant answers as some participants had different perspectives about who should control the matching process. In this section I will share quotes that illustrate the way these two conflict patterns occurred in the interviews.

The Messy Pursuit of Perfect Matches: Conflicts about time and quality in mentor matching

The interviewees described the process of matching mentors as important, messy, arduous, time consuming, and energizing. Although the process was difficult, the participants seemed to have a lot of pride in explaining how they conducted the matching process. Paula, a mentor program coordinator for a startup competition, said, "It's kind of like playing one of those logic problems." To my surprise, the messiness of the matching process was treated as an element of the process to be embraced. When I asked the research participants if they were interested in making the process more efficient, the participants were quick to defend their processes. For example, Raquel who coordinates a college wide mentor program at a public university, said, "Maybe it's

not the most efficient process, but I really found it to be really important. One of the strongest indicators of success in the program is that good matches are made.” Ada, a director of a mentor program for startup entrepreneurs, also spoke fondly of her imperfect matching process. She said:

The matchmaking process is a little bit clunky, but it's important that we have a lot of conversations with the startups around how they're thinking about their mentors. For that reason, so there's opportunities to smooth it out, but there's also a lot of human interaction that needs to happen to make sure that it goes well.

Ada's choice to embrace her current process even though she was aware of opportunities to potentially make the process smoother is representative of how many of the participants talked about their matching process. Achieving their personal, subjective standards of creating good matches was more important than going quickly.

The fact that most mentor program coordinators only do the matching process once a year might make them more willing to accept time intensive processes. Several participants shared stories that suggested the matching process has been informally ritualized as an annual, exciting personal challenge or communal celebration. For example, one participant talked excitedly as she shared stories about overcoming the logistical and silly challenges she encountered while making the matches for her mentor program:

I have a decent sized house, so it's like one bedroom is you know [one degree program] another bedroom is [another degree program], except, my dog would come up stairs and be like, hey I can walk on these papers, and it's like no.

For this participant, taking the time to print all the applications and spread them out around the house for the sake of getting the matches right was, without question,

worth the hassle. Another participant talked about how they make the matching process a communal activity. Henrietta explained, "Once the applications are submitted, we have a set of 12 different matching committees. Those committees are created from six to eight people who've been a part of the mentor program before in the past." Another described the matching process as a staff bonding opportunity. Isaac said, "[It's] a fun evening, the night that my staff comes together and matches everybody. We get some beers, and match them up, and we work for four or five hours, and it's done, and it's a nice time."

Mentor program coordinators implicitly described the values of their mentor program while sharing the details of how they make matching decisions. For example, one participant described a process that appeared to view getting everyone matched as the top priority. Paula explained her process for matching:

I go through, and I see, like is there a mentor that was only requested, maybe once or twice by a [mentee]? And if that's the case, I go and assign them usually first, especially if they were picked one or two. So, like if Jim was only selected by you, in your one or two spot, boom you're getting Jim. Like right away. Because no one else has really picked Jim and so that's like an easy way to fill spots.

In this matching process matching is not merit-based. Each mentee is treated equally as they are placed with potential matches in a way that makes matching quick and easy. This could have unintended consequences. For example, consider if a mentee selected the most popular mentor as their first choice, and the least popular mentor as their second choice. According to the process outlined by Paula, this mentee would not be considered to be matched with that popular mentor (even if they were the most

compatible), because listing the unpopular mentor as the second choice, would lead the mentor program coordinator to seize the opportunity to match the unpopular mentor.

Another interviewee explained a different philosophy to figuring out which mentee gets matched with the most popular mentor. Instead of looking at the matching process as a programmatic problem, where everyone needs to be matched, the mentor program coordinator viewed creating matches as a merit-based competition. If more than one participant requested the same mentor, the mentor program coordinator would look at the mentee applications to determine who would make the most of being matched with the desirable mentor. Maria explained:

We also ask people to describe why they want to be in the mentor program and if somebody has written barely a complete sentence, they must not care that much, so guess what, you're not going to get matched with that person.

Comparing these two matching processes demonstrates how the priorities of the mentor program coordinator doing that matching will influence who a mentee gets matched with.

Mentor program coordinators are often working off of limited data. In some smaller programs the mentor program coordinator might have personal relationships with all the mentees and mentors in the program. For bigger programs it is common for the mentor program coordinator to make matching decisions based on brief intake forms or online profiles. When information about the participants in the mentor program is in short supply, mentor program coordinators extrapolate from the limited information they have to make predictions about participants' commitment to the program and compatibility for matching. For example, several mentor program coordinators treated the speed in which people reply to emails as a proxy for how effective of a mentor they will be. For example, for Paula, who runs a mentor program for a startup competition,

more people want to be mentors than she can have in the pool. As a way to sort through all the applications to be a mentor, she has begun to treat the speed in which people respond to emails as a proxy for whether they would be good mentors. She explained:

I send them a profile survey and that's what I use to pre-populate their profile on [our platform]. If they don't respond quickly to those kinds of things, then I usually just sort of drop them from my list, because it means they're not going to be great at responding to other people.

Some mentor program coordinators also use the speed in which participants fill out their mentor request forms to determine who gets matched with the most desirable mentors. Maria said, "There's always going to be students that don't get in there in time to do it, and so we tell them, well that's on you, if you don't get a good match, you know, that's your fault." Mentor program coordinators typically have a small time window, usually about a week, between when all the profiles of mentees and mentors are collected and when the matches need to be announced. As a result, time and the timing of participants completing actions can be a major factor influencing the matching process.

Who knows best: Conflicts about who controls the matching process

The mentor program coordinators I interviewed all agreed that making good matches was important, but there were notable differences in opinion about who (or what) was in the best position to determine what a good match is. The authority for determining matches existed in a slightly different location in each mentor program. Many different people or forces were considered to be worthy of influencing the mentor matching process. Mentor program coordinators, mentors, mentees, algorithms, spontaneity, magic, and God/a higher power were mentioned as forces affecting mentor

matches. Each program granted a different level of authority to each of the forces involved in the matching process.

Mentor program coordinators expressed varying levels of confidence in their ability to create the best matches. Some mentor program coordinators weighed their own opinions about what matches would be best more than the input of the program participants and the algorithmic recommendations provided by mentor program matching software. For example, a mentor program coordinator who used the matching feature built into their mentor program management software explained that she found it necessary to override the system recommendations. She said, “We found that matching just based on program and some of our keyword searches is just not enough, and I didn't like the matches that were recommended.” This program coordinator thought her ability to analyze the subjective content in the mentees' applications would help her create more compatible matches. For example, she explained:

Maybe they're in the epidemiology program, but they're really interested in community health promotion. And so, they're looking to use their epidemiology lens to do community health promotion, and so then it's like oh, maybe this person belongs more in the other group.

Another participant who used the same software program also expressed how she found it necessary to override the automated recommendations. Frida said:

We used a lot of the algorithm, which was really helpful, but you needed to have that backup information that we had, of like what is a little more about students and mentors than the computer knows that we can use to make better matches.

Limitations with the technology platform also led to instances where the mentor program coordinator thought mentees were not making appropriate mentor requests, so the system needed to be changed. Paula provided an example of this when she said:

Last year, we had a lot of awesome mentors who weren't selected by [mentees], as one of their top choices. I was like, why is that? And then you go look at their profile and you go, oh, their profile is pretty skinny. It doesn't have much in it, and this is a fantastic person, so they just didn't put in the time and effort. They put their LinkedIn link, and no one went to it probably. And so, because of that we realized, like oh, we have to really present in that profile, the information that's probably going to be relevant to mentees.

By leveraging their experience, these mentor program coordinators aimed to overcome the limitations of the technology and help mentees who might have been misled by the technology. Not every mentor program coordinator had the same level of confidence about their ability to create the best matches or identify the best mentors. Several demonstrated a high level of humility about whether they could predict what type of mentor would work for each participant and viewed their role more as the facilitator of serendipitous interactions than the final matchmaker. Ada, a mentor program coordinator for a startup accelerator, eschewed matchmaking all together, she said:

We do not match-make mentors with startups beforehand. We make everybody meet everybody. We think there's some magic in the serendipity that happens. I don't know who everybody else knows. And sometimes we don't know everything about their background, and so a personal connection can be made that we didn't see coming.

Here Ada's perspective contrasts with the previous quote from Frida. Both talked about the importance of non-obvious characteristics for match making. Their perspectives were different though. Frida viewed it as the mentor program coordinator's responsibility to know all the participants well enough to uncover and predict potentially great matches. Ada designed the whole matching process based on an acceptance that

she would never be able to predict all the possible good matches. The different perspectives about the matching process were aligned with the overall design of the two mentor programs as well. Ada's program was marketed to entrepreneurs as a full-time immersive experience. Acceptance into the program required demonstrating the willingness to commit full attention to the program for several months. Frida's program, as is the case with many university based mentor programs, was marketed to participants as an add-on to their formal academic commitments. Frida's idea that mentor program coordinators should be responsible for the matching process was aligned with the program's goal to make it really easy for students to participate in the program.

Most interviewees explained that they had a blend between leaving the matching up to spontaneity and having the mentor program coordinator just take care of all the matching. Several participants explained that they would take care of matching, except they would aim to weigh the requests of mentees as much as possible. For programs that did not give participants a chance to request mentors, there might be a few special cases where a mentee went out of their way to submit a special request. That special request would then be given top priority. Ben provided an example of the way many mentor program coordinators are willing to go out of their way to meet the requests of participants. He said:

If the youth tells me that, I want to be clear on this, I don't care what anyone else tells me I don't care. I don't care what the research says, if I should cross match or you shouldn't mismatch race and ethnicity, if the youth tells me one it doesn't matter, the race or ethnicity, that's my driving ingredients, but if they tell me 'I'm Native American I'd like a Native American mentor,' I will not match that kid until I

find a Native American mentor period, because this is what the youth has asked me.

This quote is notable as it demonstrates that if a mentee makes a specific request the program coordinator will weigh the mentee's request more than other forms of authority. This quote also provides an example of a mentor program coordinator not viewing the pool of mentors as a fixed data set. In the example he provided, Ben was going to go recruit a new person to be a mentor that was not already part of his program. The ability to find mentors outside of the fixed list of mentors is another reason mentor program coordinators choose to override recommendations provided by the matching algorithms. For example, if a mentee wants to meet with a Native American mentor, but there are no Native American mentors in the mentor pool, a matching algorithm cannot fix that problem. Maria shared a story about how sometimes it is necessary to not match mentors in your pool if you can find participants a more useful mentor from somewhere else. For example, she shared:

The past two years we've actually had more mentors than we did students, and we've had to recruit some mentors outside of the pool of available mentors, because they just didn't match our student interests. For instance, we had one of our students who was interested in going into a dental specialty, and I actually connected her with my dental person, because she was actually an alum, so you know, had to make some weird connections like that.

This quote demonstrates how mentor program coordinators solve matching problems in creative ways. Making matches depends on the personal networks of the mentor program coordinators.

Matching processes often reflect the unique characteristics of the population the mentor program serves. For example, a mentor program coordinator for an engineering

program said that mentees get to request mentors from a list. Then she described what the mentees can see. Henrietta said, “[Mentees] select the mentor they want from the list, they don't see people's names or anything. But they'll see what their job is.”

Providing a list of mentors without names seemed to be working perfectly well for this engineering program, but that likely would never even be considered for an entrepreneurial program where names and connections are one of the primary focuses of the mentor programs. One mentor program had a unique model as a result of the geography of the program. Since the college campus was in a rural area and most of the mentors did not live close to the campus, the program was designed around when mentors could come to campus. Jackie, the coordinator of the program explained, “The majority of the mentors will be set dates and times before the semester even starts and then it's just that management piece, because sometimes students don't understand that.” The challenges presented by the geographic location of the mentor program led the matching process to be inverted from the traditional model. The meeting dates and times were set first, and then the matches were made second.

If a mentor program focuses on serving a highly specialized population with shared skills and values, the matching process can become much less critical. For example, Isaac coordinates a mentor program where all the mentees are new entrepreneurs, and all the mentors are experienced entrepreneurs. As a result, he expressed some ambivalence about the matching process when I asked him how important it was. He said, “It's important. I mean, I would qualify that. I don't think it's that important.” He went on to explain that since all the mentees are facing a pretty similar situation, a situation that all the mentors have been through, any mentor could be a good fit with any mentee:

The magic of the startup and the magic of your idea and the magic of the industry specific-ness of your idea is pretty small compared to all of the work that needs to happen to make the startup grind. You still have to incorporate. You still have to build a sales engine. You still need to establish a product market fit. You still need to talk to investors. You still need to raise money... And so, no [the match] doesn't matter a lot I don't think. And we certainly don't get it right. We try to get it right, but you know we'll find that mentors organically just kind of find their way to other startups.

This quote suggests that if a mentor program is sufficiently focused, a lot of the stress about matching mentees and mentors can be avoided. For the big university-wide mentor programs with over 200 matches to be made, the program coordinators are not afforded the same luxury of knowing that every mentor will be relevant to every mentee. The final line of Isaac's quote also acknowledges that no matter how hard mentor program coordinators try to make the perfect matches, they will never be able to get it right, because the matching process requires making decisions about conflicting goals related to efficiency, autonomy, and the elusive notion of a good match.

Conflicts Regarding the Boundaries of Mentor Programs

When I started this project, I conceptualized mentor programs as independent entities. I thought interviews with mentor program coordinators would lead to them talking about their experiences with discrete mentor programs. However, the interviewees talked about their mentor programs as overlapping and intersecting with other mentor programs. While answering questions, the participants would routinely draw on experiences from many different mentor programs. As the interviewer, I often found it difficult to keep track of all the mentor programs a participant listed. Mentor programs exist at different levels within institutions and institutions may have many

mentor programs at the same level. In this section I focus on how the participants described the conflicts that resulted from the complexity of the mentor program landscape. There were two main conflict patterns that emerged as participants talked about the overlapping and intersecting nature of mentorship and mentor programs. The first conflict was practical and the second philosophical. The practical conflicts result from mentor program coordinators needing to make material decisions about where to establish the boundaries of a mentor program and whether to share resources. The second conflict is philosophical and occurred as the research participants alternated between conceptualizing involvement in a mentor program as a program specific activity or as a general skill and way of life. In the following sections I share quotes demonstrating how these two conflicts appeared in the way participants talked about their experience with mentor programs.

Can my class be added to the mentor program: Conflicts regarding the boundaries of mentor programs

In chapter three I explained how a mentor program could be housed in a lot of different places within an institution. For example, a mentor program at a university could be housed in an alumni office, an academic department, a career resource center, a center or institute within a college, or really any other place in a university. When an institution has more than one mentor program it can quickly get confusing for all the stakeholders involved. The mentor program coordinators might not be sure who has access to what resources and the mentors and mentees might not know which mentor program to sign up for. This confusion can lead to conflict for everyone involved.

Paula's experience of running a mentor program within a center for entrepreneurship in a public university's business school provides an excellent example of how the layers of mentor programs can quickly lead to confusion. Paula worked to

establish a pool of mentors for a specific program, and then other people within her organization were under the impression that the mentors were available for their programs as well. Paula explained that she has to spend a lot of time checking in with mentors to make sure they are okay being added to the pool of each mentor program that takes place within the business school. She provided an example of how this situation can get a little tricky:

I actually just got an email about the summer courses. And I had to essentially tell [the instructor] who's running the ones for this summer, she's like great we're ready to go, I'm going to have these students join the mentor program. I'm like, okay? Who are your mentors for this? Do you know who's agreed to be a mentor for the summer? Because I know some had agreed before the [the last program] started and there's a good chance, some of those don't want to do it now, because they're already attached to [mentees], so they need to know that.

This quote shows that the instructor of the course did not have a clear understanding of where the boundaries of the mentor program started or stopped. The instructor thought her class could have access to the mentors recruited for a previous program, but Paula was under the impression that the instructor would be responsible for recruiting their own mentors.

In a previous section I talked about how administrators are often out of touch with how much work it actually takes to run a mentor program, but Paula's experience demonstrated that her peers are also not aware of how much work is involved in creating and servicing a mentor program. The boundaries of her job responsibilities as the mentor program coordinator for a specific program were also unclear to her peers. She provided another example of a professor who wanted to incorporate a mentor program into his course. She said, "[Professor name] actually tried to put me as a TA on his class

on Canvas and I was like, no thank you.” When an institution lacks a comprehensive mentor strategy, conflicts like this are likely to persist.

The business model of the companies that sell mentor program management software can also exacerbate the confusion related to an institution’s mentoring ecosystem. A popular software platform for mentor program management tools sells their software on a program by program basis. This can result in an institution having many mentor programs that are all competing for alumni and student attention. For example, one of the research participants explained that they were currently working through how to align all the mentor programs at their university. At the time of the interview, the alumni association was paying for one program and the business school was paying for another, so alumni were getting confused. Alumni either did not realize or did not understand why there were two separate platforms they were receiving invitations to join. Eleanor, a director of an alumni association at a public university shared her experience of talking with her peers at other institutions about this problem. She said:

I know a lot of other schools that have [this software platform] have struggled with individual schools and departments going out and having their own platforms and creating a really decentralized, segmented, confusing marketplace. The [other public university] is a great example. They had so many [software name] platforms, that their alumni association actually had to say, you know what we're out.

A side effect of that software provider’s business model is that it created competition between mentor programs at the same institution. This created confusion for the participants of the mentor programs and frustration for the staff responsible for coordinating and growing the mentor programs. These stories from the business school

and the alumni association provided some examples of the conflicts that emerge when mentor programs are overlapping.

There are also problems that occur when mentor programs within the same institution do not formally engage with each other. The following quote from a director of a college wide mentor program illustrates how an institution might have layers of mentor programs that do not interact with each other. She explained:

I don't have anything to do with any of the other programs, so one of them is like a peer to peer program that pairs more senior students with more junior students. Somebody in our student services staff manages that one. And then there are quite a few programs housed within our student groups. Our Society of Women Engineers student group has a mentor program that pairs their student participants with the local chapter, and our LGBTQ student group has a mentor program.

Based on the participant saying she has nothing to do with these groups, it sounded like none of the institutional knowledge, resources, or expertise about managing a mentor program was shared between these programs. Increasing communication between these programs could benefit the stakeholders of all the programs. The lack of data sharing also creates a problem for assessing the institution's overall ability to serve students. For example, if participation numbers are down in one program there is no mechanism to know if that means students are not getting mentorship or if they are getting their mentoring needs met by another department or student group. For institutions that have a robust mentor program landscape there are many opportunities for sharing templates, aligning calendars to avoid direct competition, and referring participants back and forth.

It's not a program, it's a lifestyle: conflicting notions of the role of mentor programs

Research participants presented conflicting notions about the role of a mentor program in a person's life. Whether to view participation in a mentor program as a means to a specific end was a common source of contention. For example, one program coordinator talked about having an issue with students not recognizing the importance of building a relationship in a mentor program. She said:

I think some students just come into the program with something in their mind that they want to do, like get an internship. And then, once they do, they just don't feel they have a need for a mentor anymore, even though we tried to make it clear you're committing to meet with this person through the end of March, and if you've already accomplished your goal here are some other things you could be using your mentor for or other discussion topics and things like that.

In this quote the mentor program coordinator and the students in her program have different perspectives about the purpose of the mentor program. The students viewed meeting their personal goals as the top priority, while the mentor program coordinator viewed fulfilling the commitment to the program and meeting through the end of March as the top priority. Another mentor program coordinator, Frida, talked about her efforts to try and make the program less transactional. She said, "We were working on programs that were changing to help students find mentors and community and like less of that networking piece and more of like those deeper longer relationships." Frida wanted the program to focus on facilitating the development of long lasting relationships with their mentors.

Several other participants talked about mentorship as a skill or process and put less emphasis on the program component of mentorship. For example, where Frida

aimed to have the mentor she assigned to mentees become a long-lasting relationship, others viewed developing a trusting relationship as an ingredient for an effective mentor match, not the result. Quinn, for example, a person with experience as both a mentor and mentee in non-profit, corporate, and religious mentor programs, talked about the most important part of mentor programs being relationships in general. He shared that he sought out mentors that he already respected and trusted. He said, "I think relationships are so important right in terms of personal happiness and things like that, and so, to be able to have a deep relationship through like a mentoring program I think that just is really important." Lucy, someone with experience as a mentor, mentee, and program coordinator framed developing the relationship with a mentor almost as secondary to the general ability to find mentors. Reflecting on her experience being mentored in a 12-step recovery program, she explained that one of the best parts of being in a mentor program is learning how to be mentored. She said, "Once you kind of lose that fear of authority you start seeking out mentors everywhere in all dimensions of your life. So, the mentorship program and any anonymous program has actually opened me up to being teachable." The way so many research participants provided long lists of the diverse mentor programs they are involved with added some validity to Lucy's suggestion that participating in a mentor program leads to continuing to seek mentorship. When talking about her peers in her mentor program she said, "I think most people are involved in at least two [mentor programs] that I've met."

The research participants who spoke from their perspective as a mentor made it clear that they were also mentees in various programs. For example, Olivia framed it as a given that she was both a mentor and mentee when she said, "I am sponsoring one person in [my program], and of course I'm also being sponsored." She added that simultaneously being a mentor and mentee allows her to learn much more and it also

allows her to be a more effective mentor, since what it feels like to be on the other side is always fresh in her mind. Nicole, a volunteer mentor in both academic and corporate programs explained that the programs she volunteers in are not the central focus, but more of a vehicle for giving back. She framed mentorship as a societal issue rather than a programmatic issue when she said, "I think that we as a society need to understand that really helping people along if they're open to it just creates a better environment for all of us." These quotes about the big picture implications about mentor programs create challenges for mentor program coordinators who have to spend their time on the ground level dealing with nitty gritty details of managing a mentor program. They have to make difficult decisions about how to balance the benefits of focusing their mentor programs on specific subject area goals or the general process of developing the skill of being a mentee or mentor.

Conclusion

In this chapter the quotes from the research participants revealed that mentor program coordinators experience internal or institutional conflict in six main areas- 1) explaining why the mentor program exists, 2) defining the success of the mentor program, 3) articulating and overcoming challenges associated with coordinating a mentor program, 4) determining how technology may support a mentor program, 5) creating mentor matches, and 6) navigating the boundaries of mentor programs. The conflicts in each of these areas presents opportunities for designing a mentor program management platform that reflects the humane technology framework. Chapter 5 will focus on discussing these opportunities.

Chapter 5 - Developing a Humane Mentor Program Management Software

In the introduction to this dissertation, I presented my research question as: **how might mentor programs be designed to reflect a humane technology framework?**

In chapter two I provided a detailed description of my humane technology framework that includes efforts focused on changing the design of technology, changing the business models of technology, and changing the values embedded in technology. Then in chapter three I made theoretical connections between that framework and the work of coordinating mentor programs. In chapter four I identified the conflicts and concerns of mentor program coordinators. Now, after immersing myself in the world of mentor program management and carefully listening to the stories and experiences of those who do the work of coordinating mentor programs, this chapter, chapter five, focuses on discussing possible answers to the research question I posed in chapter one.

Resolving Conflicts through Design, Business Models, and Values

In this chapter I focus on how the conflicts described by the research participants present opportunities to create a mentor program management platform that better meets the needs of the stakeholders of mentor programs (institutional sponsors, mentor program coordinators, and participants). This chapter functions both as the concluding chapter for this dissertation and the starting point for building a technology platform that can help mentor program coordinators navigate the conflicts they encounter while coordinating or participating in mentor programs. I begin the chapter by returning to the research question and explaining how the principles of humane technology can be useful for thinking about how to create a mentor program management platform that aligns with the goals of the stakeholders of mentor programs. Then, building from the framework I created in chapter two, I will present the conflicts the research participants described in chapter four as opportunities to alter both mentor programs and the

technologies used to facilitate mentor programs in terms of 1) the design, 2) the business models, and 3) the values embedded in the programs and technologies. As a way of responding to these opportunities I present a description of what a mentor program management platform developed to meet the needs outlined by the research participants might look like. Then I conclude the chapter with a brief discussion of the limitations of this approach to developing a mentor program management platform.

How mentor programs might benefit from humane technology: Connecting participant stories to the research question

I started this project based on my observations that something was amiss with many mentor programs. There was consensus that mentor programs were valuable and beneficial, yet many mentor programs were still struggling and many people did not have access to mentorship. My observations that many mentor programs were struggling combined with the reality that technology was playing an expanding role in facilitating complex social phenomena led me to wonder how the principles of humane technology could be used to address the problems mentor program coordinators were experiencing. Specifically, I was thinking about the guidelines published by the Center for Humane Technology that encouraged technologists to approach developing new technologies in a way that:

- Obsesses over the values embedded in the technology
- Strengthens the existing brilliance of those using the technology
- Makes the invisible values, goals, and financial incentives of a technology visceral
- Enables the users of a technology to make wise choices
- Nurtures the mindful and self-reflective use of the technology

- Binds the growth of the technology to the developers' responsibility to the common good (Center for Humane Technology, 2021)

These principles led me to the research question: **how might mentor programs be designed to reflect a humane technology framework?**

The results presented in chapter four laid the foundation to transition from thinking about this question in theoretical terms to thinking about it in terms of addressing the real problems that mentor program stakeholders are experiencing on a daily basis. The stories the research participants shared gave a clear picture of the stakeholders involved in mentor programs and the conflicts they encounter. The next three sections are dedicated to providing examples of how a software platform for facilitating mentor programs could be made in a way that meets the noble ambitions outlined in my research question and also the practical concerns expressed by the research participants.

In chapter two I explained that there are three primary leverage points for advancing humane technology: 1) efforts that focus on the design of the technology, 2) efforts that focus on the business model and economics of a technology, and 3) efforts that focus on the values embedded in the technology. The stories from the research participants demonstrated that any attempt to meet the needs of all the stakeholders of a mentor program must consider each of these three leverage points. What follows is a discussion of how a mentor program management software could address the conflicts the research participants presented by focusing on each of these three categories.

Design: Addressing mentor program conflicts by focusing on design

In this section I will cover two sets of opportunities related to the design of mentor program management technologies that could be used to address some of the conflicts presented by the research participants. The first set of opportunities relate to the

importance of understanding the goals of all stakeholders when making decisions about the functionality of the platform. The second set of opportunities are related to expanding ease of use initiatives to include the goals of all the stakeholders.

Design to facilitate only the activities people want to do

As mentioned in the previous section, several mentor program coordinators indicated that participants were not interested in using the communication tools provided within the mentor program management platforms. The participants would use the mentor program management platform to find mentors but would then use the communication tools they already knew and were comfortable with for the rest of their interactions. This disconnect was possibly due to the design criteria that inspired the creation of the mentor program management platform. The research participants indicated that these platforms were designed to provide structure to participants and control for mentor program coordinators. The design specifications were created in response to administrators and program coordinators who were interested in collecting the data about the behavior of program participants. The participants did not share the same commitment to making sure their actions were tracked, so they did not make it a priority to use the mentor program management software to schedule or conduct their meetings. This led the mentor program coordinators to feel as though their efforts and resources were wasted, since their efforts did not give them any greater control over the program.

Incorporating program participants into the design process could have helped avoid some elements of this problem. For example, designers could have learned that participants viewed messaging functionality within a mentor program management software as a competitor with their other communication tools. For participants to adopt the messaging feature within the mentor program management software it did not just

have to be easier to use than other mentor program management software, it would need to be easier to use and more convenient than other messaging tools available such as text messages or email. Also, if the designers of the platform shared their surveillance related goals with program participants, program participants would have a better understanding of the goals and values of the mentor program. This could help them make more informed choices about whether they want to be part of the program or how they will engage with the program. Incorporating the needs of mentor program participants may undermine some of the short term surveillance goals, but it would help create a stronger sense of community and shared values for the mentor program as a whole.

Expand ease of use goals to support healthy relationships

The responses from research participants demonstrated that many of the current efforts to make mentor programs easier to use are misguided, or at least incomplete. The responses from the research participants revealed that mentor programs should not only be easy to opt-in to, they should also be able to opt out of. Several participants expressed that mentees having the right to choose their mentors and to discontinue a relationship with one mentor for the sake of seeking a better fit is foundational for developing a healthy mentoring relationship. Thus, a mentor program coordinator or designer of a technology for managing mentor programs should design the platform in a way that makes it as easy for people to end mentor matches as it is for them to begin mentor matches.

Achieving this goal would require the designers of mentor programs and the technologies used to facilitate mentor programs to move beyond designing for programmatic goals and transition to thinking about designing for healthy relationships. For example, automating the matching process and not giving participants the option to

switch mentors halfway through the program could help make the program run more efficiently. However, the stories from the research participants demonstrated that there is a lot of value in making the matching process strategically inefficient and also designing to protect the right for participants to end relationships when they find it necessary to do so.

Business Models: Addressing mentor program conflicts by focusing on business models

In this section I provide three examples of how the business model of the technologies designed specifically for managing mentor programs could be redeveloped in a way that would help address some of the conflicts presented by the research participants. Each of these examples of how the business model could be changed is a response to one of the conflict themes that emerged from the research interviews. The first example focuses on developing a business model that embraces mentorship and mentor programs as a phenomenon that transcends institutional boundaries. The second and third examples provide two options for resolving institutional conflict that results from intersecting mentor programs and the desire for participants to use the communication tools that they are already most comfortable with.

Incentivize People to Spread Mentorship

One of the main takeaways from talking to mentor program stakeholders is that mentorship and mentor programs are not isolated entities. The research participants talked about being part of many different types of mentor programs, sponsored by many different types of institutions. In this section I provide an example of a business model for a mentor program management software that could profit from supporting mentor

program participants' desire to spread the practice of mentorship beyond institutional boundaries to all different parts of their life.

Despite the pattern of mentor program participants being part of more than one mentor program there was no talk about a mentor program management technology that provided inter-institutional support for people that were part of more than one mentor program. Some university based mentor programs used robust tools for facilitating their mentor program, but those tools provided no functionality to support the alumni mentors in those programs who might also be part of a mentor program at their company or faith group. The tools used by universities were designed for the specific needs of each university and sold as white label offerings, meaning the universities were able to put their own brand on the software. Unless a volunteer mentor were carefully examining the software, they would likely only view it as something created by the university, not something they might be able to use at their company. These mentor program management tools were sold as enterprise level offerings designed to meet the complex needs of large institutions. The mentor program management features were just add-ons to tools that provided other types of support for managing alumni relations like tracking alumni contact information and donation history. Thus, the mentor program management software was designed and marketed in response to the needs of large universities rather than a tool for mentor programs in general or mentor program coordinators specifically.

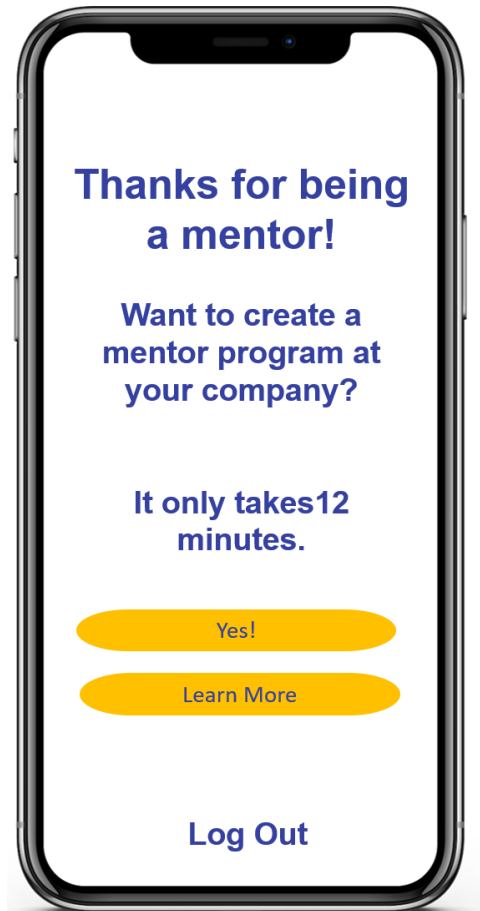
Shifting the business model of a mentor program management software to be a standalone service that focuses just on mentorship could allow the software to facilitate the spread of mentor programs. For example, if the product was sold directly to mentor program coordinators instead of institutional administrators, the product could encourage mentors and mentees to start their own mentor programs. One of the research

participants shared that they were following this path. Lucy recognized the positive potential of mentor programs from her experience in a 12-step program, so she decided to create a mentor program for people in recovery who worked in her industry. Lucy's commitment to follow through with the plan is exceptional, but the recognition that there are opportunities for mentorship outside of each participant's mentor program was common. The people who volunteer as alumni mentors in university mentor programs are typically leaders at their companies and possibly in a position to create a mentor program, but they do not have an easy way to do so. Using a business model that sold a smaller software offering, meaning it only provided the mentor program management piece and not all the other alumni relations features, would make the software desirable and affordable to program participants, participants who have already demonstrated their belief in the value of mentor programs based on their participation in a mentor program. This business model would also allow people who embrace the value of mentorship in many different aspects of their life to keep track of all of their mentor programs in one place. Figure 14 provides an example of what a user interface of a mentor program management platform practicing this business model might look like for a college student who is a mentee in a program connecting students with alumni and a program for students preparing to take the MCAT, while also serving as a mentor in a program connecting college students with local high school students. Figure 15 shows what an interface might look like that encourages volunteer mentors to start a mentor program at their companies.

Figure 14: A dashboard for someone who is a mentee in two programs and a mentor in one program.



Figure 15: A user interface encouraging a mentor to start a mentor program at their organization.



This example would require a very different business model than existing mentor program management software. Instead of focusing on selling large enterprise level contracts to the highest level administrators at an organization, this model would be based on making lots of small sales to mentor program coordinators. The change in business model would mean that the company creating the software would have to be driven to meet the needs of mentor program coordinators in general, not just the needs of large institutions. Since the product offerings would be relatively small, probably just a

mentor gallery and request forms for participants, the company could not spend heavily on recruiting each new client. The platform would have to grow based on network effects, meaning the success of the business would depend on the software spreading organically as people who join mentor programs as mentors or mentees would be converted to mentor program coordinators willing to pay for a service to make their life a little easier. However, considering the participant responses, this business model, focused on providing very minimal features, could still succeed since mentor program participants reported not wanting a platform that does a lot (multiple mentor program coordinators reported participants did not use the centralized tools they provided) and mentor program participants seemed to have an inclination to share resources and participate in more than one mentor program.

Create an Amazing Single Purpose Tool for Enterprise

Mentor program coordinators at large institutions talked about the conflicts that emerged due to the overlapping and intersecting nature of mentor programs. These conflicts included confusion about resource allocation and competing demands for the time and attention of mentor program participants. Since the existing mentor program management software tools were sold on a program by program basis, the business model of the software companies providing support to these mentor program coordinators exacerbated the conflicts related to limited resources and stakeholder attention. In this section I will provide an example of a business model for a mentor program management tool that could help eliminate the conflicts that emerge from the intersecting and overlapping nature of mentor programs at large institutions.

The conflict related to the intersecting and overlapping nature of mentor programs resulted for two reasons. First, institutions lacked a unified vision and technology strategy for their mentor programs, and second, the technologies used to

facilitate mentor programs put too much responsibility on the mentor program coordinators and gave too little agency to the mentor program participants. Developing a business model rooted in the belief that the creation of mentor programs will support an institution's overall mission and is something that everyone at an organization should have the ability to do can overcome both of these conflicts.

The business model of Zoom Video Communications, Inc. (Zoom) provides a useful example for understanding this opportunity for mentor program management software. Zoom has the mission statement to "make video communications frictionless" (Zoom, 2022). As such the company has been narrowly and obsessively focused on making it as easy as possible for people to conduct video meetings. They provide enterprise offerings that make it easier for everyone within an organization to set up a video meeting. For example, when a university pays for an enterprise account with Zoom, everyone within the university including all staff and all students have the ability to attend video meetings or create their own video meetings. When thinking about a basic organizational communication activity like setting up a video meeting, it would seem ridiculous for one person to be a video meeting coordinator and be responsible for controlling who attends which meetings and predicting which groups of people would be the best matches for meeting each other. Instead, with Zoom each individual person gets to decide what meetings to create and what meetings to attend. A university paying for a Zoom contract, does not tie their perception of the effectiveness of Zoom to recruiting, retention, or graduation rate goals. The choice about whether or not to keep using Zoom is likely based on whether or not the people using the tool continue to think it is the best option for facilitating their communication needs. Large institutions could benefit from thinking about mentor programs in the same way.

If a mentor program management platform had a business model similar to Zoom, then universities might be able to develop a unified mentor strategy and also give mentor program participants more agency. Instead of selling mentor program management software to administrators on a program by program basis, a mentor program management platform using this business model would sell institution wide accounts in a way similar to Zoom. Then once an institution adopted the platform every member of the institution could have the opportunity to create a mentor program and join or leave mentor programs as they wish. For example, a graduate student who noticed that their peers in their program were all stressed about preparing for preliminary exams could quickly create a mentor program much as they would create a Slack channel, Facebook Group, or Zoom meeting. They could send invitations to their peers who are studying for exams to join the mentor program as mentees, and send invitations to a handful of recent grads or students who already completed the exam process to join the program as mentors. The person who takes the lead in creating a mentor program could have the ability to adjust the amount of freedom program participants have. For example, they could set recommendations like “meet twice per month for two months” in a similar fashion to the way people sending a Zoom invite determine how long a meeting will be prior to sending the meeting invitations. Or they could take a hands-off approach where their only contribution to facilitating the program was to send the invites and generate the list of mentees and mentors. This approach would empower student groups and niche communities who do not have access to institutional funds to develop mentor programs.

This business model would depend on selling large institution-wide contracts. It would also require a substantial amount of client-facing education materials to help potential customers to start conceptualizing mentor programs as a basic organizational

communication activity that everyone should have the right to create, join, or leave. However, based on the research interviews that indicated institutions have complex overlapping needs for mentor programs, this approach to selling mentor program management software could be appealing for institutions interested in resolving the conflicts they encounter related to their mentor programs.

Add Mentor Program Management to the Existing Suite of Tools

In this section I will explain how adding a mentor program management platform to an existing suite of communication tools could help make mentor programs more accessible and sustainable. This business model could only be practiced by companies that already provide communication tools to large institutions, such as Google or Microsoft who each offer a suite of workplace tools. Adding a mentor program management tool to an existing offering could resolve the problem of mentor program participants wanting to use the communication tools they are already comfortable with and help make it easier to create and sustain mentor programs.

Distributing a mentor program management software by adding it to an existing offering of communication tools would be a likely response to the business model mentioned in the previous section. If a company were able to offer an enterprise-wide mentor program management tool that everyone at an institution had access to (like discussed in the previous section), the companies that provide the other communication tools that everyone has access to might just add mentor program management tools to their suite of offerings. In the previous section I used Zoom as an example, and that example is relevant here as well. As Zoom grew in popularity it became a competitor to Google and Microsoft who provided the rest of the communication tools an institution might use. Instead of competing against Zoom with a standalone video meeting platform, Google and Microsoft each just added all the features that Zoom offered to their existing

suite of offerings. Microsoft did a similar thing in response to the rise of Slack's popular team chatting features. Instead of competing against Slack with a one-off product, Microsoft added Teams, a nearly identical product offering, to everyone's computer that was already paying for Microsoft's suite of office tools.

This approach to distributing a mentor program management software could resolve a common concern from mentor program coordinators who used software specifically designed for facilitating mentor programs, which was that program participants did not want to use the software for meeting or communicating. People would find their mentors on the platform, but then eschew the scheduling and meeting tools built into the platform in favor of using the communication tools they already use. For example, one participant explained how people only have their first interaction on the platform they spent thousands of dollars customizing, and then they set up their meetings via email or Zoom. One way a mentor program management software could avoid this problem was if the mentor program management tool was a part of the suite of communication tools an institution already uses.

This third business model illustrates one of the key struggles of efforts to advance humane technology. Adding a mentor program management feature to a large company's existing software offerings might be the most effective way to increase access to mentorship. However, there are always tradeoffs. This strategy might also contribute to the existing company's ability to control user behavior or abuse their monopolistic power.

Values: Addressing mentor program conflicts by focusing on values

In this section I will cover three opportunities to address the conflicts participants presented by focusing on the values embedded in mentor programs and the

technologies used to facilitate mentor programs. These opportunities were based on the conflicts that I identified when the interviewees talked about their experience facilitating mentor programs. The first set of opportunities relates to how a mentor program could be more concise and transparent in the way they articulate the values of their mentor program. The second set of opportunities relates to the importance of making sure the values of a mentor program align with the values of the sponsoring organizations. The third set of opportunities relate to the importance of creating opportunities for participants in mentor programs to strengthen their identity with the values of a mentor program by giving back to the program. Taken together these three sets of opportunities provide insight into how a mentor program might transparently embed values into a mentor program in a way that meets the needs of all the program stakeholders.

Be Concise and Transparent about the Goals and Values of a Mentor Program

The interview with a coordinator of a mentor program serving students from a college of engineering demonstrated how a technology could be used to help clarify the values of the mentor program. In this program the mentor program coordinator shared that one of the main problems was a disconnect between the goals of the mentees and the programmatic goals. One of the goals of the program coordinator was for students to develop a relationship with the mentor and discuss general career development topics for the duration of the several month mentor program. A problem emerged because students would quit participating in the mentor program as soon as they secured a summer internship or met some other personal milestone that, for the students, signaled they were no longer in need of mentorship. This phenomenon occurred in several of the research interviews. Sometimes the participants framed it as shallow or disingenuous behavior on behalf of the mentees. However, I think this problem could be avoided if the

values of the mentor program were communicated more clearly or participants were given the opportunity to be more transparent about their needs and goals.

When I took a deeper look at the example from the mentor program for engineering students, I realized this was the same program where the students requested mentors from a list of mentors that did not include the mentors' names, it only included their job titles. The design of that matching process sent a message that the job title of the mentor was more important than the name of the person, thus I do not find it surprising that the mentees did not realize that building a lasting relationship with the mentor was one of the goals of the program or was to be considered more important than securing a summer internship. It is also not uncommon for university based mentor programs to advertise for their programs by saying that participating in a mentor program could help a student secure an internship, so students might feel misled when, after they join a program, they are expected to make a greater interpersonal commitment to the program than they expected based on the marketing materials.

The literature about mentor programs demonstrated that students could benefit from establishing a deeper, long-term relationship with their mentors in many ways, however that does not mean that there is not a time and place for a mentor program that has the single aim of helping students secure a summer internship. Sometimes a mentor program could benefit a participant the most by just helping with one specific practical or technical task. A quote from a participant at a conference for entrepreneurs in the education technology space highlighted how people can approach mentorship with different needs. At a panel about providing support for black entrepreneurs, one of the attendees expressed her frustration of being offered yet another supportive mentor. She said, "As a black woman entrepreneur I feel I am over mentored and underfunded." This

participant explained that she had sufficient emotional support in her network, but she really just needed someone to introduce her to some investors.

The diversity among the research participants demonstrated that there are many different types of mentorship and mentor programs. Each mentor program need not try to provide the benefits that come from every different formulation of mentorship. The conflict in the engineering mentor program could be avoided if all the stakeholders of the mentor program were on the same page about what the values of the mentor program were. Was the program rooted in a commitment to building a tight knit community of engineering professionals to provide emotional support and career guidance as mentees advance through career milestones over the next decade? Was the program rooted in valuing efficiency to help each mentee find a new job quickly while taking as little of the mentor's time as possible? Did some stakeholders think it was the former and others the latter?

Research about the different types of social relationships is helpful for thinking about this issue. In an effort to define the concept of social support, Kahn and Antonucci (1980) developed the convoy model of social support. The convoy model was revolutionary for research related to studying social support systems, which includes research related to mentor programs, because it provided a vocabulary for thinking about the different types of relationships within a person's support network (Antonucci, Ajrouch, & Birditt, 2013). Humans have a convoy of relationships that support them as they move through the different stages of life and within that convoy of support there are relationships that vary in closeness, quality, function, and structure (Antonucci, Ajrouch, & Birditt, 2013). The quality of a person's support network cannot be determined by the quality of any one relationship. Each relationship plays a role in creating a person's support convoy. The size and quality of a person's convoy of support prior to entering a

mentor program would likely influence the way participants engage in a mentor program and what they seek to gain from participation. This vocabulary could be helpful for mentor program coordinators that are looking to define the type of relationship they hope to facilitate in their mentor programs.

Once mentor program coordinators are aware of the different types of mentor relationships, they have several options of how they can use that information to inform the development of their programs. First, they could just be transparent about the type of relationship the mentor program is designed to facilitate. If the program is designed to help participants get from professional point A to professional point B, then they can market the program and design the matching process accordingly. If the goal of the program is to help people develop deep, life-long connections, the program can be marketed and designed to reflect those goals. The second option would be to give participants within the program the ability to determine what type of support they are looking for. For example, within the mentor program for engineering students some mentees might be looking for a lasting relationship, while some might just seek help related to a narrow, domain specific topic. Designing a program that was either completely transparent about the values of the program or allowed participants to indicate what they valued in a mentor program would help avoid these types of conflicts.

Align the Values of a Mentor Program with the Sponsoring Organization

Institutional conflict emerged when mentor program coordinators had goals for their programs and personal values that were either in conflict with or went above and beyond the mission of the sponsoring organization. Participants who managed mentor programs that were closely aligned with the mission of the sponsoring organization talked about their programs with calm confidence and experienced high levels of institutional support. This indicated that mentor programs are an excellent tool for

intensifying and spreading the values of a sponsoring organization, but they are not an effective tool for changing the mission or values of a sponsoring organization. Mentor program coordinators interested in developing sustainable mentor programs must ensure that the values of the mentor program align with the sponsoring organization.

Two of the research participants served as explicit examples of the risks associated with trying to instill a set of values in the mentor program that differed from the institutional values. For example, Frida who coordinated a mentor program in a business school explained how she was working to move the mentor program away from a focus on networking. She explained with disgust how many students viewed the mentor program, “A lot of students will tell you straight to your face it is like meeting someone having them vouch for you later and you get a job.” In the interview she shared how she was working to move the mentor program to be more focused on developing community and long term relationships, but it is worth noting that at the time of the interview she had moved on to a new position, because her position within the business school was eliminated. Ben, who managed a county sponsored mentor program, also aimed to facilitate the development of long term relationships. The nebulous, prosocial goals of his program may have contributed to the county cutting the program’s budget. Both participants had noble ambitions and demonstrated skill and expertise related to running mentor programs, but their efforts were not sufficient for overcoming the disconnect between their personal vision for the program and the ethos of the sponsoring institutions. A mentor program proved to be an ineffective tool for trying to convince a business school to transition away from teaching networking, and a mentor program was also ill suited for reinventing the role of county government.

Mentor programs seemed to be most sustainable when the goals of the mentor program were obviously aligned with the goals of the sponsoring institutions. The 12-

step recovery groups provided the greatest example of this. The 12-step group exists for the sole purpose of helping people overcome their personal addictions, so the mentor program is an organic extension that helps members of the organization meet the goals they are already striving towards. The mentor programs for startup accelerators had a similar high degree of alignment. The sponsoring organization existed to help the companies succeed, and the mentor program was one of the components created to support the organization's mission.

Mentor program coordinators were put in a tough situation when their sponsoring organizations did not have a clear mission. For example, mentor program coordinators at academic institutions functionally bore the responsibility of defining the purpose of a college education. As mentor program coordinators, the way they designed the program would reflect their stance about current debates about education. They had to determine whether the mentor program would prioritize facilitating critical discussion and lifelong learning or expediting students' transition to the corporate world. The stories from Frida and Ben suggest that mentor programs are not an effective place to settle such debates. Instead, they are best suited to propagate an institution's stated positions.

Intensify a Program's Values by Creating Opportunities to Give Back

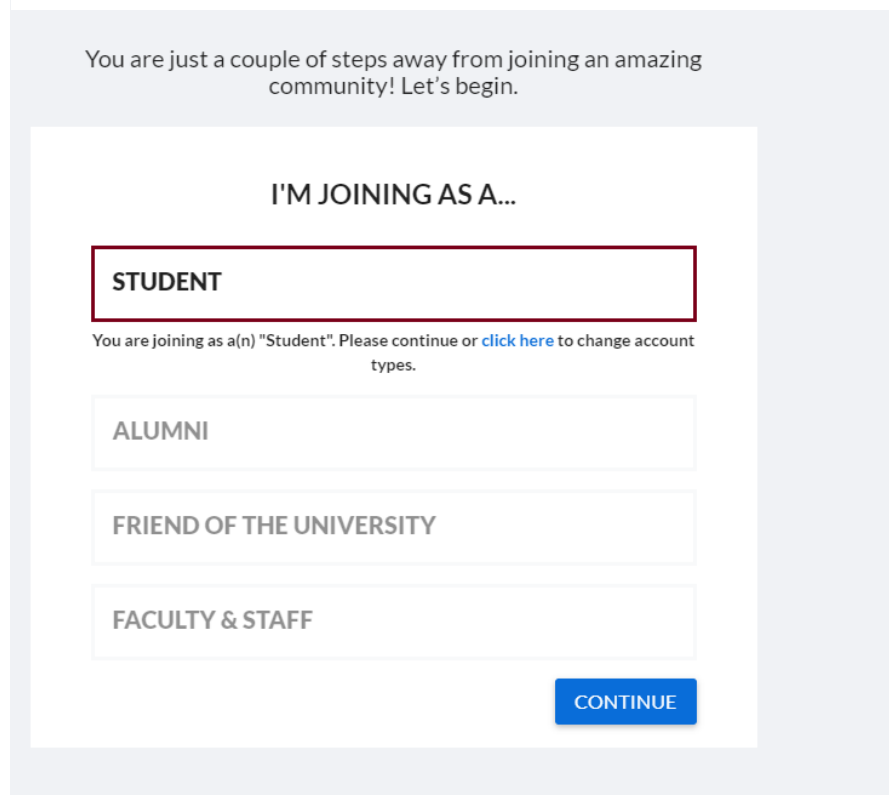
Mentor programs that had clearly defined values that were aligned with their sponsoring institutions were also self-sustaining, because they had built in processes for mentees to become mentors. Once again, the 12-step program model and the mentor programs for entrepreneurs provide an example of how this works. For example, Olivia who was a mentor in a 12-step program said, "I am sponsoring one person in [my program] and of course I'm also being sponsored." The values embedded in the institution indicated it was the expectation that participants would function as both a mentee and mentor. In the case of 12-step recovery groups, it is actually written into

their guiding literature, as the twelfth step of the process reads, “Having had a spiritual awakening as the result of these Steps, we tried to carry this message to alcoholics, and to practice these principles in all our affairs” (Alcoholics Anonymous, 2022). This frames the mentor program as an extension of a commitment to the community within the sponsoring organization. Isaac, the coordinator of a mentor program for entrepreneurs indicated that within his organization there was a similar sense of shared experience and communal identity, when he said, “Fundamentally, you know startup founders go through such a unique experience that they always want to give back.” Both the 12-step recovery groups and the entrepreneurs had programs designed around a shared identity and shared experience, and both framed the uniqueness and the intensity of that shared experience as a motivator for people to give back to the program.

Mentor programs that struggled to sustain themselves had less intense notions of shared identity and experience. When the themes that bond the community of mentor program stakeholders are less obvious, more burden is placed on the mentor program coordinator to articulate the shared values and identity of the program participants. Developing opportunities for participants to give back to the program could be an effective way to strengthen the shared identity of participants within a mentor program. For example, the problem of students quitting a mentor program as soon as they get a summer internship might be resolved if there was a clear path created for those students to become mentors for the younger students who have not yet started applying for internships. Making the opportunities to give back clear from the very beginning of the mentor program would shift the framing of the mentor program from a personal means to an end, to the joining of a community. Once again, achieving this idea of a community within a mentor program is much easier if that notion already exists within the institution and aligns with the institutional vision for shared community values.

The importance of facilitating the opportunity to give back to mentor programs connects to the important role of the technologies used to facilitate mentor programs. In chapter two I explained how users of a technology reproduce the values and business model of the technologies they use. The super users of Instagram reproduce the attention merchant tactics practiced by Instagram as they create sponsored posts, and the most prominent users of Wikipedia give their content away for free just like Wikipedia as a whole. Most mentor programs do not give the participants the opportunity to reproduce the values of the mentor program, even though the participants might be interested in doing so. The 12-step and entrepreneurial mentor programs had systems in place that would allow a person to transition from a mentee to mentor or, more often the case, continue being a mentee while also becoming a mentor. In order for a program to facilitate the participants' desire to reproduce the values of the program the technology has to support that idea. The existing technology platforms used by academic institutions force users to choose whether they are a mentor or mentee as the first step in the onboarding process. Figure 16 shows a screenshot of an onboarding process that forces a new participant of a mentor program to indicate whether they are a student, alumni, or staff member. This does not support the ability for participants to identify with the mentor program at a level deeper than their current position, such as based on their identity to a discipline or cause. It also does not support the nuanced positionality of many potential members of the mentor program. For example, a PhD student working as a graduate instructor might be a student, alumni, and staff member at the university and in a good position to mentor undergraduate students while seeking mentorship from alumni of their PhD program.

Figure 16: A screenshot of the onboarding process for a mentor program platform at a public university. Screenshot taken by author August 2021.



Existing mentor program management technologies also do not support the ability for participants to develop their own mentor programs, which is one of the major opportunities I addressed in the business model section.

Limitations

There are several limitations of approaching the design process from the perspective of humane technology. First, the principles of humane technology somewhat avoids explicitly describing any particular values. For example, one of the guiding visions of the framework is to align technologies with humans' deepest values. This assumes that a person's deepest values are ethical or at least more ethical than the current values guiding the design of a technology. However, it is certainly possible that a

person's deepest values might be to cause harm to some segment of society. Thus, a design process that starts with a more explicit statement of the values it wants to promote might be a more effective approach to developing a mentor program management platform that makes mentor programs more accessible, sustainable, and overall beneficial for the program participants.

The second limitation is related to how interconnected the world is. It would be nearly impossible to create a new, standalone technology that is not enmeshed with all the technologies that came before and therefore complicit in propagating inhumane technologies. Those interested in developing a humane technology will constantly encounter ethical tradeoffs.

Next Steps

The ideas outlined in this dissertation provided a framework for thinking about how to navigate any effort to make technologies more humane. Any effort to advance a humane technology must consider the design, business model, and values embedded in the technology. The next step for this project is to continue the participatory design process I started. I will continue working with the community of mentor program coordinators for the iterative prototyping process. The research participants will have the opportunity to share their opinion about every design, business, and ethical conflict I encounter as I continue the effort to develop a new mentor program management platform.

Reference List

- Agboka, G. Y., & Matveeva, N. (Ed.). (2018). *Citizenship and advocacy in technical communication: Scholarly and pedagogical perspectives*. Routledge.
- Alcoholics Anonymous. (2022). The twelve steps. AA.org. Retrieved from <https://www.aa.org/the-twelve-steps>
- Anti-Defamation League. (2020). Hate, conspiracy theories and advertising on Facebook. Adl.org. Retrieved from <https://www.adl.org/blog/hate-conspiracy-theories-and-advertising-on-facebook>
- Antonucci, T., Ajrouch, K., & Birditt, K. (2013). The convoy model: Explaining social relations from a multidisciplinary perspective. *The Gerontologist*, 54(1), 82-92.
- Aristotle. (2007). *On rhetoric: A theory on civic discourse*. (G. Kennedy, Translation.) Oxford University Press.
- Bagnoli, L., & Estache, A. (2022). Mentoring migrants for labor market integration: Policy insights from a survey of mentoring theory and practice. *The World Bank Research Observer*, 37(1), 39-72.
- Baldwin A.N., Johnson R. (2018) Black women's co-mentoring relationships as resistance to marginalization at a PWI. In: Perlow O., Wheeler D., Bethea S., Scott B. (Eds.), *Black Women's Liberatory Pedagogies*, (p. 125 - 140). Palgrave Macmillan.
- Bazerman, M., & Moore, Don. (2012). *Judgment in Managerial Decision Making, 8th edition*. Wiley Publishing.
- Bell, A., & Treleaven, L. (2011). Looking for professor right: Mentee selection of mentors in a formal mentoring program. *Higher Education*, 61, 545-561.

- Benz, K. (2014). Pittsburgh Meetup members use the internet to get off the internet. Triblive.com. Retrieved from <https://archive.triblive.com/lifestyles/more-lifestyles/pittsburgh-meetup-members-use-the-internet-to-get-off-the-internet/>
- Boyd, J. (2021). The top 20 most followed Instagram Accounts. *Brandwatch*. Retrieved from <https://www.brandwatch.com/blog/top-most-instagram-followers/>
- Breuch, L. K. (2019). *Involving the audience: A rhetorical perspective on using social media to improve websites*. Routledge/ATTW.
- Bridle, J. (2019). The age of surveillance capitalism by Shoshana Zuboff review - we are the pawns. *The Guardian*. Retrieved from <https://www.theguardian.com/books/2019/feb/02/age-of-surveillance-capitalism-shoshana-zuboff-review>
- Brooms, D. & Davis, A. (2017). Staying focused on the goal: Peer bonding and faculty mentors supporting black males' persistence in college. *Journal of Black Studies*, 48(3), 305-326.
- Burke, K. (1969). *A Rhetoric of Motives*. University of California Press.
- Burton, E., Farrier, K., Hill, K., Codde, J., Airey, P., & Hill, A. (2018). Effectiveness of peers in delivering programs or motivating older people to increase their participation in physical activity: Systematic review and meta-analysis. *Journal of Sports Sciences*, 36(6), 666- 678.
- Campbell, J. (1949). *The Hero with a Thousand Faces*. Pantheon Books.
- Canavor, N. (2018). *Business writing today: A practical guide, Third edition*. Sage Publishing.
- Carliner, S. (2012). Using business models to describe technical communication groups. *Technical Communication*, 59(3), 124-147.

- Carliner, S., Qayyum, A. & Sanchez-Lozano, J. C. (2014). What measures of productivity and effectiveness do technical communication managers track and report? *Technical Communication*, 61(3), 147–172.
- Carlson, L., Huang, S., Degen, C. M., & Folsland, S. (2016), More than increased numbers: A mentoring program for females in science and engineering. *American Society of Engineering Education Annual Conference & Exposition*.
- Center for Humane Technology. (2021, December 1). For technologists. Humanetech.com. Retrieved from <https://www.humanetech.com/technologists>
- Center for Humane Technology. (2021, December 1.) Humane design guide. Humanetech.com. Retrieved from <https://www.humanetech.com/designguide>
- Center for Humane Technology. (2022, February 1). Who we are. Humanetech.com. Retrieved from <https://www.humanetech.com/who-we-are#story>
- Chaudhuri, S., & Ghosh, R. (2011). Reverse mentoring: A social exchange tool for keeping the boomers engaged and millennials committed. *Human Resource Development Review*, 11(1), 55-76.
- Chevrolet. (2022). 2022 Chevy Silverado - Boyfriend|Chevrolet. Chevrolet [YouTube video] Retrieved from https://www.youtube.com/watch?v=9IIWJMrjG_c
- Clark, D. & Andersen, R. (2005). Renegotiating with technology: Training towards more sustainable technical communication. *Technical Communication*. 52(3), 289-302.
- Clement, J. (2020). Facebook: Number of monthly active users worldwide 2008-2020. Statista. Retrieved from <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/#:~:text=With%20over%202.7%20billion%20monthly,network%20ever%20to%20do%20so.>

- Cohen, U. (2021). Cryptocurrencies and inequality. In Goutte, S., Guesmi, K., & Saadi, S. (Eds.) *Cryptofinance: A new currency for a new economy*. World Scientific Publishing Co.
- Constable, G. (2014). *Talking to humans: Success starts with understanding your customers*. Talkingtohumans.com.
- Crumpton, M. (2014). Can a mentoring program save you money? *The Bottom Line*, 27(2), 60-63.
- Davis, J. (2011). The crypto-currency: Bitcoin and its mysterious inventor. *The New Yorker*. Retrieved from <https://www.newyorker.com/magazine/2011/10/10/the-crypto-currency>
- Dellerman, D., Lipusch, N., Ebel, P., Leimeister, J.M., (2019). Design principles for a hybrid intelligence decision support system for business model validation. *Electronic Markets*, 2, 423-441.
- Dobrin, D. N. (1983). What's technical about technical writing? In P. V. Anderson, R. J. Brockmann, & C. R. Miller (Eds.), *New essays in technical and scientific communication: Research, theory, practice* (227–250). Taylor & Francis.
- Duin, A.H., Armfield, D., & Pedersen, I. (2019). Human-centered content design in augmented reality. In Getto, G., Labriola, J., & Ruskiewicz (Eds.) *Content Strategy in Technical Communication*. Routledge.
- Duin, A.H., Lammers, E., Mason, L., & Graves, M. (1994). Responding to ninth-grade students via telecommunications: College mentor strategies and development over time. *Research in the Teaching of English*, 28(2), 117–153.
- Duin, A.H., & Pedersen, I. (2021). *Writing futures: Collaborative, algorithmic, autonomous*. Springer.

- Eby, L., Allen, T., Evans, S., Ng, T., & DuBois, D. (2008). Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *Journal of Vocational Behavior, 72*(2), 254-267.
- Educational Testing Services. (2022). ETS's Writing Mentor. Mentormywriting.org. Retrieved from <https://mentormywriting.org/>
- Ezarik, M. (2021). Students need mentors, and more help in making those connections. *Inside Higher Ed*. Retrieved from https://www.insidehighered.com/news/2021/10/28/teaching-students-how-mentors-can-help-expanding-mentorship-programs?utm_source=Inside+Higher+Ed&utm_campaign=8ff6b500aa-WNU_COPY_01&utm_medium=email&utm_term=0_1fcbc04421-8ff6b500aa-235872213&mc_cid=8ff6b500aa&mc_eid=9b70e16b61
- Feld, B., & Mendelsohn, J. (2019). *Venture Deals: Be smarter than your lawyer and venture capitalist*. Wiley Publishing.
- Ferman, T. (2002). Academic professional development practice: What lecturers find valuable. *The International Journal for Academic Development, 7*(2), 146–158.
- Finch, J. K., & Fernández, C. (2014). Mentoring graduate students in teaching: The FCCIC model. *Teaching Sociology, 42*(1), 69-75.
- Fister, B. (2019). The age of surveillance capitalism: A mixed review. *Inside Higher Ed*. Retrieved from <https://www.insidehighered.com/blogs/library-babel-fish/age-surveillance-capitalism-mixed-review>
- Fogg, B. (2003). *Persuasive technology: Using computers to change what we think and do*. Morgan Kaufmann Publishers.
- Foss, S., & Griffin, C. (1995). Beyond persuasion: A proposal for an invitational rhetoric. *Communication Monographs, 62*(1), 2-18.

- Fraiberg, S. (2020). Introduction to special issue on innovation and entrepreneurship communication in the context of globalization. *Journal of Business and Technical Communication*, 35(2), 175-184.
- Flynn, G., & Nolan, B. (2008). The rise and fall of a successful mentor program: What lessons can be learned? *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 81(4), 173-179.
- Giroux, H. (1997). White Squall: Resistance and the pedagogy of whiteness. *Cultural Studies*, 11(2), 376-389.
- Glickman, J. (2012). Get ahead with a mentor who scares you. *Harvard Business Review*. Retrieved from <https://hbr.org/2012/03/get-ahead-with-a-mentor-who-sc.html>
- GNU. (2021). GNU Operating System. *Gnu.org*. Retrieved from <https://www.gnu.org/>
- Google. (2020). Loretta|Google Super Bowl commercial 2020. Google [YouTube video]. Retrieved from <https://www.youtube.com/watch?reload=9&v=6xSxXiHwMrg>
- Green, M. (2021). Resistance as participation: Queer theory's applications for HIV health technology design. *Technical Communication Quarterly*, 30(4), 331-344.
- Guraya, S., & Abdalla, M. (2020). Determining the effectiveness of peer-assisted learning in medical education: A systematic review and meta-analysis. *Journal of Taibah University Medical Sciences*, 15(3), 177-184.
- Haraway, D. (1985). A Cyborg Manifesto. *Socialist Review*. 80, 65-108.
- Harris, T. (2019). CHT presents H\humane: A new agenda for tech. *Center for Humane Technology* [Vimeo Video] Retrieved from <https://vimeo.com/331897593>
- Henning, T. & Bemmer, A. (2016). Reconsidering power and legitimacy in technical communication: A case for enlarging the definition of technical communicator. *Journal of Technical Writing and Communication*. 46(3), 311-341.

- Hern, A. (2018). Cambridge Analytica: How did it turn clicks into votes? *The Guardian*. Retrieved from <https://www.theguardian.com/news/2018/may/06/cambridge-analytica-how-turn-clicks-into-votes-christopher-wylie>
- Herrman, J. (2021). The great amazon flip-a-thon. *The New York Times*. Retrieved from <https://www.nytimes.com/2021/03/17/style/amazon-brand-flippers.html>
- Hong, M., Chu, T., & Ding, D. (2017). How the silent mentor program improves our surgical level and safety and nourishes our spiritual life. *Gynecology and Minimally Invasive Therapy*, 6(3), 99-102.
- Hu, C., Baranik, L., & Wu, T. (2014). Antidotes to dissimilar mentor-protege dyads. *Journal of Vocational Behavior*. 85(2), 219-227.
- Humane Tech Community. (2022). Judge My App. community.humanetech.com. Retrieved from <https://community.humanetech.com/c/central/judge-my-app/9>
- Ismail, S., Malone, M., & Van Geest, Y. (2014). *Exponential Organizations: Why new organizations are ten times better, faster, and cheaper than yours*. Diversion Books.
- Ivey, G., & Dupré, K. (2020). Workplace mentorship: A critical review. *Journal of Career Development*, 1-16.
- Jeste, D., Lee, E., & Cacioppo, S. (2020). Battling the modern behavioral epidemic of loneliness: Suggestions for research and interventions. *JAMA Psychiatry*, 77(6), 553-554.
- Johnson, D. (n.d.). @therock Instagram Photos and Videos. Retrieved May 28, 2020 from <https://www.instagram.com/therock/>. Screenshot by author.
- Johnson, J., Niemi, A., Green, M., & Gentry, L. (2014). Management and assessment of a successful peer mentor program for increasing freshmen retention. *American Society of Engineering Education Annual Conference & Exposition*.

- Johnson, W. B., & Ridley, C. R. (2018). *The elements of mentoring: 75 Practices of master mentors* (3rd ed.). New York, NY: St. Martin's Press.
- Johnson, W.B., & Smith, D. (2015). *Athena rising: How and why men should mentor women*. Bibliomotion.
- Jones, J. (2010). The creepy treehouse problem. *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/blogs/profhacker/the-creepy-treehouse-problem/23027>
- Jones, N. N., Moore, K. R., & Walton, R. (2016). Disrupting the past to disrupt the future: An antenarrative of technical communication. *Technical Communication Quarterly*, 25, 4, 211-229.
- Kahn, R. L., & Antonucci, T. C. (1980). Convoys over the life course: Attachments, roles, and social support. In Baltes, P. B., & Brim, O. G. (eds.), *Life-Span Development and Behavior, Volume 3*. Academic Press.
- Kahneman, D. (2011). *Thinking, Fast and Slow*. Farrar, Straus and Giroux.
- Katz, S. (1992). The ethic of expediency: Classical rhetoric, technology, and the Holocaust. *College English*. 54(3), 255-275.
- Kethineni, S., & Cao, Y. (2019). The rise in popularity of cryptocurrency and associated criminal activity. *International Criminal Justice Review*, 30(3), 325-344.
- Klinenberg, E. (2018). Is Loneliness a Health Epidemic? *International New York Times*. Retrieved from <https://www.nytimes.com/2018/02/09/opinion/sunday/loneliness-health.html>
- Lancaster, A., & King, C. (2021). Call for papers: Special issue on: 'Localized usability and agency in design: Investigating advocacy in technical communication'. *Technical Communication*. Retrieved from <https://www.stc.org/notebook/2021/08/12/call-for-papers-special-issue-of->

technical-communication-on-localized-usability-and-agency-in-design-
investigating-advocacy-in-technical-communication/

Lauren, B. & Schreiber, J. (2018). An integrative literature review of project management in technical and professional communication. *Technical Communication*, 65(1), 85-106.

Laidler, J. (2019). High tech is watching you. *The Harvard Gazette*. Retrieved from <https://news.harvard.edu/gazette/story/2019/03/harvard-professor-says-surveillance-capitalism-is-undermining-democracy/>

Lee, O. & Kim, D. (2018). Bridging the digital divide for older adults via intergenerational mentor-Up. *Research on Social Work Practice*, 29(7), 786-795.

Lee, S., McGee, R., Pfund, F., & Branchaw, J. (2015). Mentoring Up: Learning to manage your mentoring relationships. In: Wright, G. (Ed), *The Mentoring Continuum – From Graduate School Through Tenure*. The Graduate School Press of Syracuse University.

Lefera, M., & Swart, A. (2020). Reflecting on the success of a peer mentorship program – A scholarly personal narrative. *IFEES World Engineering Education Forum - Global Engineering Deans Council*.

Leising, M. (2017). The ether thief. *Bloomberg*. Retrieved from <https://www.bloomberg.com/features/2017-the-ether-thief/>

Liu, W. (2020). *Abolish Silicon Valley: How to liberate technology from capitalism*. Repeater Books.

Lung, J. (2012). Ethical and legal consideration of reCAPTCHA. *IEEE 2012 Tenth Annual International Conference on Privacy, Security and Trust*, 211-216.

Madrigal, A. (2013). What is Medium? *The Atlantic*. Retrieved from <https://www.theatlantic.com/technology/archive/2013/08/what-is-medium/278965/>

- Massa, L., Tucci, C., & Afuah, A. (2016). A Critical Assessment of Business Model Research. *Academy of Management Annals*, 11(1).
- Matyszcyk, C. (2015). The Internet will vanish, says Google's Eric Schmidt. C|Net. Retrieved from <https://www.cnet.com/news/the-internet-will-vanish-says-googles-schmidt/>
- Medium. (2018). Ad-Free Medium. Medium.com Retrieved from <https://blog.medium.com/ad-free-medium-ae4e8ef5dacf>
- MeetUp. (2021). Meetup creates possibilities. Meetup.com Retrieved from <https://www.meetup.com/about/>
- McGuire, G. M., & Reger, J. (2003). Feminist co-mentoring: A model for academic professional development. *National Women's Studies Association Journal*, 15(1), 54-72.
- M.I.T. Technology Review. (2004). Innovators under 35: Scott Heiferman, 32. MIT Technology Review. Retrieved from <http://www2.technologyreview.com/tr35/profile.aspx?TRID=151>
- Morozov, E. (2019). Capitalism's New Clothes. *The Baffler*. Retrieved from <https://thebaffler.com/latest/capitalisms-new-clothes-morozov>
- Mullen, C. (2000). Constructing co-mentoring partnerships: Walkways we must travel. *Theory Into Practice*, 39(1), 4-11.
- Nakayama, T. & Krizek, R. (1995). Whiteness: A strategic rhetoric. *Quarterly Journal of Speech*, 81, (3), 291-309.
- National Mentoring Resource Center. (2021). OJJDP's investment in mentoring. Nationalmentoringresourcecenter.org. Retrieved from <https://nationalmentoringresourcecenter.org/about/ojjdps-investment-in-mentoring/>

- Neely, A. R., Cotton, J., & Neely, A. D. (2017). E-mentoring: A model and review of the literature. *Association of Information Systems Transactions on Human-Computer Interaction*, 9(3), 220-242.
- Nielsen, J. (1993). *Usability Engineering*. Morgan Kaufmann.
- O'Donnell, B. R. J. (2017, October 13). The Odyssey's millennia-old model of mentorship. *The Atlantic*. Retrieved from <https://www.theatlantic.com/business/archive/2017/10/the-odyssey-mentorship/542676/>
- Owen, L. H., (2019). The long, complicated, and extremely frustrating history of Medium, 2012-present. *NiemanLab*. Retrieved from <https://www.niemanlab.org/2019/03/the-long-complicated-and-extremely-frustrating-history-of-medium-2012-present/>
- Packard, B.W.L., (2003). Web-based mentoring: Challenging traditional models to increase women's access. *Mentoring and Tutoring: Partnership in Learning*, 11(1), 53-65.
- Patel, V. (2018). One way to be a better mentor to grad students? Try an advising statement. *The Chronicle of Higher Education*. Retrieved from <https://www.chronicle.com/article/One-Way-to-Be-a-Better-Mentor/244764>
- Plato. (1998). *Gorgias*. (J. Nichols Jr., Translation.) Cornell University Press.
- Polkinghorn, D. (1995). Narrative configuration in qualitative analysis. *International Journal of Qualitative Studies in Education*, 8(1), 5-23.
- Pope, R., Tham, J. & Moses, J. (2019). Introduction to special issue: Design-thinking approaches in technical and professional communication. *Journal of Business and Technical Communication*. 33(4), 370-375.

- Raposa, E., Rhodes, J., Stams, G., Card, N., Burton, S., Schwartz, S., Yovien Sykes, L., Kanchewa, S., Kupersmidt, J. & Hussain, S. (2019). The effects of youth mentoring programs: A meta-analysis of outcome studies. *Journal of Youth and Adolescence*, 48, 423-443.
- Ratcliffe, K. (1999). Rhetorical listening: A trope for interpretive invention and a 'code of cross-cultural conduct'. *College Composition and Communication*, 15(2), 195-224.
- Redish, J. G., & Barnum, C. (2011). Overlap, influence, intertwining: The interplay of UX and technical communication. *Journal of Usability Studies*, 6(3), 90-101.
- Research and Markets. (2021). Report: Mentoring software market. Researchandmarkets.com. Retrieved from <https://www.researchandmarkets.com/reports/4829490/mentoring-software-market-research-report-by>
- Rhodes, J. (2018). Who exactly was Mentor?: A stunning revelation and some important lessons. *The Chronicle of Evidence-Based Mentoring*. Retrieved from <https://www.evidencebasedmentoring.org/who-was-mentor-a-stunning-revelation-with-important-lessons/>
- Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Crown Business.
- Ries, E. (2020). Eric Ries co-founder & author. Lean Startup Co. Retrieved from <https://leanstartup.co/team/eric-ries/#:~:text=Eric%20Ries%20is%20an%20entrepreneur,into%20more%20than%20thirty%20languages.>

- Rose, E. J. (2016). Design as advocacy: Using a humane-centered approach to investigate the needs of vulnerable populations. *Journal of Technical Writing and Communication*, 46(4), 427-445.
- Rosselot-Merritt, J. (2020). Fertile grounds: What interviews of working professionals can tell us about perceptions of technical communication and the viability of technical communication as a field. *Technical Communication*. 67(1), 38-62.
- Rosselot-Merritt, J., & Bloch, J. (2020). Mentoring in business and professional communication: Case study of a multiyear dynamic. *Business and Professional Communication Quarterly*, 83(1), 5-33.
- Ruparelia, R. (2016). The invisibility of whiteness in the white feminist imagination. In Kirkland, E. (Ed.). *Shades of Whiteness*. (pp. 77-89). Brill.
- Saldaña, J. (2013). *The Coding Manual for Qualitative Researchers, 3rd edition*. SAGE Publications, Inc.
- Scola, N. (2020). Inside the ad boycott that has Facebook on the defensive. *Politico*. Retrieved from <https://www.politico.com/news/magazine/2020/07/03/activists-advertising-boycott-facebook-348528>
- Selber, S. & Johnson-Eilola, J. (Eds.) (2013). *Solving Problems in Technical Communication*. University of Chicago Press.
- Sells, D., Curtis, A., Abdur-Raheem, J., Klimczak, M., Barber, C., Meaden, C., Hasson, J., Fallon, P., & Emigh-Guy, M. (2020). Peer-Mentored Community Reentry Reduces Recidivism, *Criminal Justice and Behavior*. 47(4), 437-456.
- Single, P.B., & Single, R. (2005). E-mentoring for social equity: Review of research to inform program development. *Mentoring & Tutoring: Partnership in Learning*, 13(2), 301-320.

- Scheiber, N. (2009). Barack Obama (d-behavioral Economics). The New Republic.
Retrieved from <https://newrepublic.com/article/48848/barack-obama-d-behavioral-economics>
- Shunk, D. & Mullen, C. (2013). Toward a conceptual model of mentoring research: Integration with self-regulated learning. *Education Psychology Review*, 25, 361-389.
- Shteir, R. (2015). Taking the men out of mentoring. *The Chronicle of Higher Education*.
Retrieved from <https://www.chronicle.com/article/Taking-the-Men-Out-of/151201/>
- Sneyers, E., & De Witte, K. (2018). Interventions in higher education and their effect on student success: a meta-analysis, *Educational Review*. 70(2), 208-228.
- Söderberg, J. (2015). Hacking capitalism: The free and open source software movement. Routledge.
- Spinuzzi, C. (2005). The methodology of participatory design. *Technical Communication*. 52(2), 163–174.
- Spinuzzi, C. (2016). Introduction to the special issue on entrepreneurship communication. *IEEE Transactions in Professional Communication*, 59(4), 316-322.
- Spinuzzi, C. (2017). Introduction to special issue on the rhetoric of entrepreneurship: Theories, methodologies, and practices. *Journal of Business and Technical Communication*, 31(3), 275-289.
- St. Amant, K. (2018). Of access, advocacy, and citizenship: A perspective for technical communicators. In Agboka, G. Y., & Matveeva, N. (Ed.). (2018). *Citizenship and advocacy in technical communication: Scholarly and pedagogical perspectives*. Routledge.

- Star, S.L. (1991). Power, technologies and the phenomenology of standards: On being allergic to onions. In Law, J. (ed.), *A sociology of monsters: Essays on power, technology and domination*. Routledge.
- Stop Hate For Profit. (2020). #StopHateForProfit. Stophateforprofit.org. Retrieved from <https://www.stophateforprofit.org/>
- Stop Hate For Profit. (2021). Recommended next steps. Stophateforprofit.org. Retrieved from <https://www.stophateforprofit.org/productrecommendations>
- Thaler, R. & Sunstein, C. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Caravan Books.
- Tham, J. (2016). Rhetorical web design: Thinking critically about ready-made web templates and the problem of ease. Xchanges.
- Time Staff. (2017). The 25 Most Influential People on the Internet. *Time*. Retrieved from <https://time.com/4815217/most-influential-people-internet/>
- Tinoco-Giraldo, H., Torrecilla Sánchez, E., & García-Peñalvo, F. (2020). E-mentoring in higher education: A structured literature review and implications for future research. *Sustainability*, 12(11), 4344.
- Truby, J. (2018). Decarbonizing bitcoin: Law and policy choices for reducing the energy consumption of blockchain technologies and digital currencies. *Energy Research & Social Science*, 44, 399-410.
- Turkle, S. (2015). *Reclaiming conversation: The power of talk in a digital age*. New York: Penguin Press, an imprint of Penguin Random House LLC.
- Turner, C. S. V., & González, J. C. (Eds.). (2015). *Modeling mentoring across race/ethnicity and gender: Practices to cultivate the next generation of diverse faculty*. Sterling Publishing.

- Twenge, J., Haidt, J., Lozano, J., & Cummins, K. (2022). Specification curve analysis shows that social media use is linked to poor mental health, especially among girls. *Acta Psychologica*, 224, 1-11.
- U.S. Bureau of Labor Statistics. (2021). Technical Writers. *Occupational Outlook Handbook*. Retrieved from <https://www.bls.gov/ooh/media-and-communication/technical-writers.htm>
- Villar, A., & Strong, M. (2007). Is mentoring worth the money? A benefit-cost analysis and five-year rate of return of a comprehensive mentoring program for beginning teachers. *ERS Spectrum*, 25(3), 1-17.
- Voetmann, K., & Kendall, D. (2019). Seeking quality mentors: Exploring program design to increase mentor participation. *Journal of Organizational Psychology*, 19(3), 93-102.
- Volodymyrovych, P.V, Volodymyrovych, P.A., & Mykhaylovych, B. (2020). Technology of mentor selection for a beginning specialist. *Modern Approaches to the Introduction of Science Into Practice*. Primedia eLaunch.
- Walton, R., Moore, K., & Jones, N. (2019). *Technical communication after the social justice turn: Building coalitions for action*. Routledge.
- Watson, S. (2016). Toward a Constructive Technology Criticism. *Columbia Journalism Review*. Retrieved from https://www.cjr.org/tow_center_reports/constructive_technology_criticism.php
- Welsh, E. T., Bhave, D., & Kim, K.Y. (2012). Are you my mentor? Informal mentoring mutual identification. *Career Development International*, 17(2), 137–148.
- Wikimedia Foundation. (2020). Our work. [Wikimediafoundation.org](https://wikimediafoundation.org/our-work/). Retrieved from <https://wikimediafoundation.org/our-work/>

- Wikipedia: List of Wikipedians by number of edits. (2020, July 13). In Wikipedia.
https://en.wikipedia.org/wiki/Wikipedia:List_of_Wikipedians_by_number_of_edits
- Williams, E. (2017). Renewing Medium's focus. Blog.medium.com. Retrieved from
<https://blog.medium.com/renewing-mediums-focus-98f374a960be>
- Winner, L. (1980). Do artifacts have politics? *Daedalus*, 109(1), 121-136.
- Wong, L., Tan, S., Alias, H., Sia, T., & Saw, A. (2021). Longitudinal follow-up of death anxiety and psychophysical-symptom experience of participants in the Silent Mentor Program. *OMEGA - Journal of Death and Dying*.
- Wu, T. (2017). *The attention merchants: The epic scramble to get inside our heads*. Atlantic Books.
- Yam, K. (2019). Toni Morrison's most powerful quotes on racism. *Huffington Post*. Retrieved from https://www.huffpost.com/entry/toni-morrison-s-most-powerful-quotes-on-racism_n_5d49b529e4b0244052e226ea
- Zerzan, J., Hess, R., Schur, E., Phillips, R., & Rigotti, N. (2009). Making the most of mentors: A guide for mentees. *Journal of the Association of American Medical Colleges*, 84(1), 140-144.
- Zoetewey, M. (2013). The rhetoric of free: Open source software and technical communication during economic downturns. *Technical Communication Quarterly*, 22(4), 323-342.
- Zoom. (2022). Investor FAQs. investors.zoom.us. Retrieved from <https://investors.zoom.us/resources/investor-faqs>
- Zuboff, S. (2015). Big other: Surveillance capitalism and the prospects of an information civilization. *Journal of Information Technology*, 30(1,) 75-89.
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. Public Affairs.

Appendix A: Mentor Technologies Interview Questions

Questions for Mentor Program Coordinators

1. Why does your organization have a mentor program?
2. How will you know if your mentor program is successful?
3. What is the most difficult part about coordinating a mentor program?
4. What makes that difficult?
5. What tools or resources do you use to coordinate the mentor program?
6. How much time do you dedicate to running a mentor program?
7. How does this correspond to how your responsibilities related to the mentor program are described on your job description?
8. What are the most time consuming parts of coordinating a mentor program?
9. What is the most important part of coordinating a mentor program?
10. How are you matching people?
11. How important is matching?
12. What else should I know about coordinating a mentor program?
13. Is there anyone else you think I should interview about mentor programs?