Into the deep end:
Navigating deep understanding and operationalization
of human-centred design for sustainable,
purpose-driven innovation

by

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ABSTRACT

Increasing popularity of 'design thinking' and 'human-centred design' among business and managerial audiences has driven many employees and leaders of large, mature (and often semi-static) organizations toward self-serve online resources and executive training programs to learn the methods and tools that 'promise' transformational innovation and lucrative business outcomes. Despite interest in what those design methods may deliver in terms of tangible business outputs and revolutionary products, many organizations remain resistant to the complexity of 'wicked' design problems and the nonlinear processes for creative problem solving. Through partnering with an executive design education company to conduct participant-observation and ethnographic interviews, this research explores how employees express value in design thinking through paid educational/training engagements. By investigating people's individual and collective understanding of design processes within the context of their organization, this research seeks to identify opportunities for organizations to invest in deep understanding (human-centred design, with a focus on problem finding and framing) toward sustainable innovation.

Keywords: human-centred design, HCD, design thinking, applied social science, organizational change, integral theory, cognitive model

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1.0 Introduction

This project emerged from a nagging curiosity about how large, established organizations use applied social science methods and design approaches. I noticed the popularity of 'design thinking' and 'human-centred design' across industries in the last several years; and having gone through the Strategic Foresight & Innovation program, I had seen the intersection of business and design up close and personal. Yet, I still wondered about the space that seemed to exist between business and design. In my own consulting work, I had witnessed the tensions between expectations, metrics, and linear processes in business and the characteristically nonlinear, open-ended, exploratory processes of design. I had seen the use of the term 'ethnography' - a word with significant meaning to a student with a degree in Anthropology - across many different business contexts, where it means something different in every case, depending on the location, scope and scale of the project, available resources, and understanding of the method. For all of these reasons, I became emboldened to dig deeper into the space where business and design collided. Thus, this research functions as a call to action of sorts - for mature, somewhat static organizations to take a beat for introspection, and reflect on their own practices, perceptions, and creations of meaning. This research is a call for deeper understanding of the context and culture of one's own organization in order to shed light on not only its protocols and efficiencies, but its processes and purpose.

1.1 Sense intent

101 Design Methods: A Structured Approach for Driving Innovation in Your Organization (Kumar, 2012) emphasizes the importance of taking time in the initial stage of conducting a design research project to pause and consider our surroundings and how this research might fit into our environment. This phase of research is called "Sense Intent" (Kumar, 2012), where we are meant to scan our environment and take note of trends related to our research topic, imagine how we may innovate, and set our intention moving forward in the research process. In conducting this research, the 'sense intent' phase was somewhat long and nonlinear, as is characteristic of design research in general (Cross, 1999; Kumar, 2012; Owen, 2007). Initially, in engaging my curiosity about how large organizations use applied social sciences to address complex problems, I conducted an environment scan through diverse literature sources. This scan revealed trends of increased hiring of social scientists in public and private sectors (Baer, 2014; Madsbjerg & Rasmussen, 2014; Tett, 2019) and increasing popularity of design thinking, human-centred design, and behavioral economics (Louridas, 1999; Martin, 2009; Reid & Schmidt, 2018). These discoveries prompted further questions, specifically related to an apparent and paradoxical level of organizational resistance to complexity, despite all of these trends pointing towards organizations investing in building design capabilities. Something was missing here. This research

would seek to investigate what existed within that gap between business and human-centred design.

1.2 Defining design

In the initial review of literature during the 'sense intent' phase of research, a pattern was revealed across popular discourses: there was a lack of clear and precise definitions of key terms, and many disparate terms were being used interchangeably (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Hernandez-Ramirez, 2018). For instance, the terms 'design thinking', 'user-centred design', and 'human-centred design' could often be found referring to the same process within an article on a popular media source for business/managerial audiences (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013). The nonlinear nature of design processes, the design thinking approach, and scholarly and popular discourses on design contributes to confusion among audiences (Kimbell, 2011). Therefore, at the outset of this research, this paper will differentiate between some of these key terms by providing some definitions and context to them. Additional definitions of key terms referenced in this paper or relating to the subject matter can be found in **Appendix A**.

1.2.1 What is 'design'?

To begin, Herbert Simon (1969) defined 'design' as a process by which one 'turns existing situations into preferred ones'. This definition expanded the idea of design beyond simply the creation of physical artefacts to include the

shaping of services, processes, strategies, or other intangible products as well (Brown, 2005; Simon, 1969). The expansion of the concept of design to include the design of intangible things like services and strategies brought design into the arena of innovation, becoming highly relevant to organizations (Brown, 2005; van der Bijl-Brouwer & Dorst, 2017). Furthermore, van der Bijl-Brouwer & Dorst (2017: p.1) highlight that "human-centeredess is a core quality of design", thus demonstrating the key role of understanding human needs and designing for humans in the field of design.

1.2.2 What is 'human-centred design'?

'Human-centred design' refers to a series of principles and methods with the aim of supporting the design of products and services meant to be useful and meaningful for the people using them (van der Bijl-Brouwer & Dorst, 2017). These methods are characterized by their ability to assist practitioners in 'gathering and applying knowledge about human beings' and the ways they interact with their environments (van der Bijl-Brouwer & Dorst, 2017). The goal of human-centred design (HCD) is to design products or services that meet humans' needs (Kimbell, 2011).

1.2.3 What is 'design thinking'?

'Design thinking' is an approach or way of thinking wherein a practitioner, or designer, typically uses abductive reasoning to analyze and synthesize

information, and invent new patterns or concepts to address problems (Dunne & Martin, 2006; Kolko, 2010; Owen, 2007). IDEO President and CEO Tim Brown defines 'design thinking' as "a human-centred approach", which draws from a toolkit and follows an iterative process, 'focused on solutions' for business success and innovation. Brown's distinction of 'design thinking' as "a human-centred approach" is an important one, as it highlights the role of design thinking as a methodology in service to the discipline of human-centred design - a contextual relationship which is not often understood by managerial audiences seeking innovation in terms of business outcomes. In recent years, design thinking has become popularized (as shown below in **Figure 1**) among business audiences, with prominent figures such as former Dean of Rotman School of Management, Roger Martin, discussing the power of 'approaching managerial problems in the way that designers approach design problems' (Dunne & Martin, 2006; Martin, 2009).

Figure 1 | Google Trends: Search interest in "design thinking"
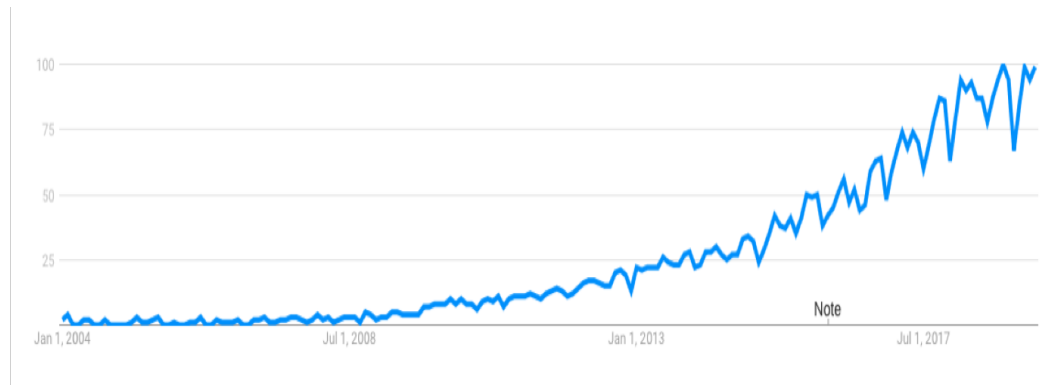
Google Trends graph showing increasing search interest in the term "design thinking" over time between 2004 and 2017. (Source: Google Trends).

Figure 1 demonstrates the steadily increasing popularity of the search term "design thinking", according to Google Trends data between 2004 and 2017.

1.2.4 Role of design in innovation

As indicated below in **Table 1**, Crossan & Apaydin (2010) define 'innovation' as '*both* a process and an outcome'. This acknowledgement is particularly relevant to this study's consideration of the role of design in innovation within business contexts, as managerial discourses frequently use terms and buzzwords associated with 'design', 'design thinking', and 'innovation' without offering context-specific definitions. Distinguishing 'innovation' as not only a business outcome, but as a process involving 'production or adoption and exploitation of a novel value-add' as well as the 'renewal and enlargement of products and services' and the 'development of new methods of production and managerial systems' (Crossan & Apaydin, 2010) introduces the

opportunity area for design to play a meaningful role in enacting the innovation process and creating innovation outcomes. Verganti (2009) describes 'design-driven innovation' in terms of 'radically innovative concepts' embedded within new products or services. In this definition, Verganti (2009) acknowledges the role of design research in identifying 'emergent behavioral patterns' which the design-driven innovations address. In this way, design and innovation (by definition) appear to have a symbiotic relationship throughout an iterative process: as human-centred design research identifies relevant contextual information for a broad range of human stakeholders, and the iterative design process works toward offering a useful solution for identified problems (Zhang & Dong, 2009; Verganti, 2009), serving to yield both innovative incomes and the adoption of innovation processes led by design.

Table 1 | Defining key terms

Key term	Author	Definition
design	Herbert Simon (1969)	a process by which one 'turns existing situations into preferred ones'
human-computer interaction	Card, Newell & Moran (1983)	the research, design, and use of technology which 'focuses on the interactions or interfaces between users and computers'
human-centred system interaction	International Organization for Standardization (2010)	'approach to systems design and development that aims to make interactive systems more usable by focusing on the use of the system and applying human factors/ ergonomics and usability knowledge and techniques'

user-centred design	Norman (1988)	design process which emphasizes the users' needs and interests, with the goal of 'making products easily understandable and usable' for users
human-centred design	Krippendorff (2004)	design process which focuses on the meaning and purpose of an artefact or service as it serves humans (broader stakeholders beyond users)
human factors	Sanders & McCormick (1987)	in engineering and design, often referred to as 'ergonomics', or the concepts and considerations used in 'designing for human use'
design thinking	IDEO	"a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success"
innovation	Crossan & Apaydin (2010: p. 1155)	the "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems" - considered "*both* a process and an outcome"
design-driven innovation	Verganti (2009)	a new product or service which 'embeds radical concepts' arising not from market requirements or technological developments, but from possibilities of new ways of living (leveraging emergent behavioral patterns identified using design)

Defining key terms.

Table 1 defines key terms relevant to this research study to provide context.

1.2.5 Focusing the research

In summary, this section distinguishes between design as an overall discipline based on a process of 'turning existing situations into preferred ones' (Simon, 1969), the field of human-centred design (HCD) under the umbrella of design (van der Bijl-Brouwer & Dorst, 2017), and design thinking as an approach to creative problem solving (Kolko, 2010; Martin, 2009) to provide clarity on key terms relevant to this research. For further clarification, key terms are defined above in **Table 1** as well as in a more expansive table of terms defined in **Appendix A**.

The terms defined in **Table 1** were specifically selected to make distinctions between often-confused or seemingly ambiguous terms relevant to this research. Each of these terms is closely related under the umbrella of the design discipline and managerial discourses on design in business contexts (which often focus on innovation). **Table 1** also shows an evolution in scholarly thought around 'human-centred design', beginning with its roots in ergonomics and user-computer interactions. The table distinguishes between 'user-centred design' and 'human-centred design', highlighting the scope limitations in 'user-centred design' as its goal-oriented focus primarily on users reinforces the optimization of characteristics of a predetermined

product or service to better serve the user (Gasson, 2003), as opposed to considering a broader range of human stakeholders and impacts (Krippendorff, 2004).

This section effectively seeks to 'define design' and related key terms as relevant within the scope of this research. Specifically, this section delineates between the greater discipline of design, the sub-discipline of human-centred design, and 'design thinking' as an approach to human-centred design (as defined by IDEO CEO Tim Brown). Additionally, this section highlights the role of design in innovation, speaking directly to managerial discourses on design-driven, or design-led innovation, clarifying the definition of innovation as '*both* a process and an outcome' (Crossan & Apaydin, 2010). Thus, by briefly 'Defining design', Section 1.2 of this report has begun to direct attention toward key research focus areas: the intersection of business and design, the use of human-centred design and design thinking in organizational contexts, and the role of design in innovation.

1.3 The role of semiotics

Semiotics, or the study of signs (Barthes, 1988), is not only relevant to design as a practice, but to understanding design itself as well (Louridas, 1999; Kolko, 2015). Ferdinand de Saussure (1983) defines a sign as a representation of a concept, consisting of two component parts: the *signifier*, the form or image which is referring to something, and the *signified*, the actual concept being referred to by the image. As Stuart Hall (1997) defines it, 'representation', is the

production of meaning of concepts and language, and the linkage of those meanings to culture.

As a fairly abstract concept (as indicated in the previous section), the field of design and its accompany terminology may cause confusion amongst audiences reading about it without much experience in its practice (Kimbell, 2011). Thus, this research recognizes the significance of people's perceptions of design terminology in constructing meaning around those abstract concepts and their physical forms (Kolko, 2015; Krippendorff, 2004; Louridas, 1999). Through understanding the semiotics of design and its various representations in popular discourses, we may gain further insight into how people use human-centred design within organizations or what factors contribute to resistance toward its methods or complexity.

1.4 Value, purpose + return on investment

The value of human-centred design, its methods and principles, and a design thinking approach may be found in its direct link to purpose-driven innovation (Louridas, 1999; van der Bijl-Brouwer & Dorst, 2017). As Kumar (2012) and Sanders & Stappers (2012) highlight in their respective books on design research, having a clear purpose for design research (or any design process) is necessary to drive meaningful exploration and results. Due to the ambiguous nature of a design thinking approach to problem-solving, the

process can become unclear and overwhelming without objectives guiding the way (Kolko, 2015). Furthermore, this characteristic ambiguity often presents a challenge for large organizations seeking to build a core competency in design because the value of creating 'preferred states' (Simon, 1969) can be difficult to calculate, along with the return on investment in creative problem solving (Kolko, 2015). Without a firm understanding of the projected return on investment for building capacity in human-centred design, leaders of risk-averse organizations may resist the types of mindset and culture shifts needed to successfully 'embrace design as a core competency' (Kolko, 2015).

2.0 Review of discourses on design

Debates surrounding design thinking span across decades and disciplines. The characteristic buzzwords of innovation have settled into boardrooms around the world, leaving mixed impressions of the ambiguous concept of design thinking and its results (Dunne, 2019). With historical roots dating back to the 1960s, design as a discipline has garnered a reputation for being paradoxical and abstract (Cross, 1999). This literature review aims to explore the evolution of theory and practices related to human-centred design and design thinking to provide context for a deeper exploration of their current uses in large, mature, semi-static organizations. In order to contextualize complex applications of human-centred design, this literature review will reflect the dualism in design discourses between cognition and practice, and probe contradictory views across those discourses (Cross, 1999; Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Kimbell, 2011). Exploring the dialectics of human-centred design discourses and the paradoxical nature of design thinking will contextualize contemporary applications of design thinking as a 'human-centred approach' (Brown, n.d.) and point toward areas for further research and deeper understanding.

This literature review will cover the following sections: (1) an overview of the evolution of design thinking as described in academic and managerial discourses; and (2) an evaluation of contemporary discussions on the value of design thinking in organizations, highlighting tensions and barriers.

Identifying and comparing key contributions to the theoretical and practical areas of design thinking in this way is needed in order to contextualize an often ambiguous concept for further exploration. The conclusion of this literature review will identify perceived gaps in the existing literature and suggest further exploration to contribute to the body of knowledge on this topic, thereby laying the groundwork for this research project. Following this section, the research question guiding this investigation will be introduced.

2.1 Discursive analysis

Resulting from a comprehensive scan across diverse source materials on design, Johansson-Skoldberg, Woodilla & Cetinkaya (2013) distinguish two main streams of discourses: 'designerly' thinking, academic and theoretical in nature, and 'design thinking', simplified descriptions of designers' methods adapted primarily for managerial audiences. Their analysis includes a review of all demographics of available literature on the topic of design thinking, ranging from academic theory and journal articles to conceptual articles and popular literature targeting both general and managerial/business audiences (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013). Notably, this scan of diverse design discourses yields a key insight: there appear to be little, if any, meaningful links between the two main streams of discourse - nothing to bridge theory of the discipline with its practice in business applications (Cross, 2001; Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Kimbell, 2011). In light of this established lack of connections between 'designerly' and

'design thinking', this section will explore three main patterns identified across both streams of discourse on design, effectively describing the characteristic tensions of design thinking through its published texts.

2.1.1 Human-centred approach

'Human-centred design' is a field of design based on methods and principles aimed at supporting the creation of useful and meaningful products and services for people (van der Bijl-Brouwer & Dorst, 2017). This field of design employs methods (often borrowed from social science approaches) to gather knowledge about humans and their interactions with their environments in order to apply that knowledge in the design of products and services to meet people's needs (van der Bijl-Brouwer & Dorst, 2017). The field of human-centred design (HCD) emerged from the respective fields of human-computer interaction and ergonomics (Zhang & Dong, 2008). The emphasis in these fields of study during the 1980s was on functionality, and eventually, the user or consumer (Giacomin, 2014; Zhang & Dong, 2008). However, limitations of user-centred design, which focuses on optimization of predetermined features of products and services to improve usability for users, eventually gave way to an expansion into 'human-centred design' in the 1990s and early 2000s, to explore the impacts of design on broader stakeholders beyond users (Gasson, 2003).

Discourses on 'human-centred design' often conflate it with 'design thinking'. However, IDEO President and CEO Tim Brown makes a significant distinction in his definition of 'design thinking' as "a human-centred approach", drawing from a toolkit and following a solutions-focused, iterative process. Distinguishing 'design thinking' as an approach is important, as it provides clarity on the role of 'design thinking' in serving greater goals of enacting human-centred design (HCD) in order to better serve people with 'context-oriented' research and design, as well as design-led innovation within organizations (van der Bijl-Brouwer & Dorst, 2017).

2.1.2 Cognition-practice dualism

Scholarly explorations of design thinking in 'designerly' discourses (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013) exist simultaneously with practical discussions of methods in 'design thinking' discourses. However, these discourses on the cognition and practice of design neglect to establish a concrete meaning of the concept to bridge both streams of design thinking discourses (Di Russo, 2016; Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Hernandez-Ramirez, 2018). As discussed in the review of the historical context of design, the tension between two design movements focused on cognition and on practice pervades scholarly discourses and manifests a dualism between cognition and practice in design thinking that persists today (Cross, 2001; Eisenberg, 2006; Weick & Sutcliffe, 2001). The cognitive musings on an 'idealized future of design education' and reflexive scholarly design discipline

put forth by Archer, Buchanan, and Schon are now significantly removed from the realities of design thinking in practice, emphasizing instant gratification through IDEO's toolkits, design-led consulting practices, and popular articles geared toward business audiences (Dunne, 2019; Hernandez-Ramirez, 2018). Johansson-Skoldberg, Woodilla & Cetinkaya (2013) describe the 'design thinking' stream of discourse as a 'simplified version' of 'designerly thinking' by way of describing methods and tools to be integrated into business contexts. In translating this information from one stream of discourse to another, some contextual meaning is lost (due to lack of bridging between theoretical and practical discourses of design thinking), leaving managerial audiences to equate design thinking with an 'ahistorical', creative toolbox rather than a dynamic and complex discipline (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Kimbell, 2011). This limited understanding of design thinking as a set of linear or universally-applicable tools can lead to frustration in business contexts as senior executives support the idea of design outcomes, but not the time-intensive, cognitive processes involved in iterative design (Dunne, 2019; Kolko, 2015). For a concept rooted in complexity and the importance of context, all that is "lost in translation" (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013) in management discourse may sow seeds of discord for business audiences seeking to apply design thinking while lacking a fundamental understanding of the discipline and the richness of its context. Thus, both 'designerly thinking' and 'design thinking' discourses must be analyzed in relation to themselves and each other in a manner which

currently eludes contemporary discourses in order to begin to untangle the complexity of design thinking as a concept and a practice.

2.2 Between business + design

This section will explore the discursive area between business and design, focusing on three main topic areas of contemporary design thinking discourses: (1) design and organizational culture; (2) organizational resistance to complexity; and (3) the value of experiential learning in applying design thinking within organizations.

2.2.1 Human-centred design + organizational culture

Culture plays a "constituting role" (Bruner, 1990: 11-13) in how people define themselves and create meaning, weaving 'webs of significance' (Geertz, 1994) as they interact with the world around them. In much this same way, organizational culture plays a defining role in shaping the cognitive and practical aspects of a business (Madsbjerg & Rasmussen, 2014). Anthropologist Pierre Bourdieu's (1984) term "habitus" describes the socialized norms which shape our thinking and behavior. Madsbjerg & Rasmussen (2014) highlight the effects of companies' habitus, wherein, over time, certain concepts or ideas about the world are considered a given and no longer viewed critically. These ingrained perceptions and ideas play a recursive role in constructing organizational cultures and identities, which in

turn, reinforce those norms (Bourdieu, 1984; Madsbjerg & Rasmussen, 2014).

Thus, it is important to understand the complex 'webs of significance' (Geertz,

1994) weaved throughout an organization's culture when seeking to enact

change or introduce new concepts like 'human-centred design' or a 'design

thinking' approach (Beckman & Barry, 2007; Elsbach & Stigliana, 2018;

Madsbjerg & Rasmussen, 2014).

Where early theorists have noted the importance of "infusing" design into the

organizational fabric in order to maximize its effectiveness (Dumas &

Mintzberg, 1991), design discourses noticeably neglect to provide meaningful

insights into how HCD practices might become ingrained in the culture of

different organizations (Elsbach & Stigliana, 2018). Junginger's (2009) model

of the position of a design function with respect to an organization (see **Figure
2**) demonstrates the varying types of relationships organizations may have

with design and highlights the implications of that positionality of design.

Figure 2 | Relationship between design function and organization

Possible relationships between a design function and the larger organization that it supports

Separate	Peripheral	Central	Integrated
Design as external resource	Design as part of the organization	Design at the core of the organization	Design integral to all aspects of the organization
Design thinking and methods have no continuous presence in the organization.	Design thinking and methods practiced somewhere within the organization.	Design thinking and methods are highly visible and take a central position.	Design thinking and methods are being applied at an organization's top level as means to inquire into a wide range of organizational problems with the aim to develop integrated solutions.
They are add-ons, limited to traditional problems: form, communication, function.	They apply to specific products and services.	They unify products and services across an organization; apply to corporate design and brand strategy.	

Possible relationships between a design function and the larger organization that it supports (Junginger, 2009).

Figure 2 depicts four possible relationships between a design function and the larger organization that it supports (Junginger, 2009): (1) separate and external; (2) peripheral and part of the organization; (3) central and at the organization's core; and (4) integrated into all aspects of the organization.

However, beyond the functionality of design within an organization as a practical or tactical concern, the recursive relationship between organizational culture and the use of design thinking tools/activities has been shown to have profound impact on the effective adoption of design (Canato, Ravasi, & Phillips, 2013; dmi Design Value Index, 2015; Elsbach & Stigliana, 2018; Sheppard, Kouyoumijian, Sarrazin, & Dore, 2018).

Elsbach & Stigliana's (2018) case studies identify key patterns in the ways organizational cultures influence the use of design thinking tools, and vice versa. For example, organizational cultures based on perfectionism, productivity, and specialization separated by siloes are likely to inhibit the effectiveness of design thinking in that organization (Elsbach & Stigliana, 2018). Conversely, cultures characterized by an openness to failure, testing, and embracing ambiguity are more likely to support the development of design thinking (Elsbach & Stigliana, 2018). These findings are consistent with those of the DMI's (design management institute's) 2015 Design Value Index report, which measures the value of the best design management practices, including support of design from senior leadership and growing investment to support growing influence of design functions. The DMI's (2015) report calls out trends crucial to the success of design approaches in design-centric companies, such as scaled training, repetition of team praise and acknowledgement, and co-creation with customers. These trends are indicative of the impact of key organizational cultural activities and values on the effectiveness of design.

While the above-mentioned studies demonstrate the critical interplay between organizational culture and design thinking practices, there are gaps in the body of knowledge. Carlgren, Elmquist, & Rauth (2014) identify a gap in design thinking literature to be filled by exploring the social aspects of organizations 'working with design thinking', particularly the impact on organizational culture, norms, values, and identities. Furthermore, Sam Ladner

(2014: 42) highlights the existence of a "cultural gap" between user research participants, or users/customers, and the organization itself. This gap signifies the potential for competing priorities and divergent understandings of the same product or service space, and therefore, represents a crucial consideration for practitioners seeking to apply design thinking methods within an organization. Thus, existing literature identifies an important relationship between organizational culture and the adoption of design methods and a need to embed design thinking in the organization. However, further research is required to better understand those social and cultural components and how they influence design thinking practices.

2.2.2 Resistance to complexity

If "design is the rendering of intent" (Jared Spool, n.d.), then anxiety is the distortion of that intent, pulling focus from goals to address perceived threats and distractions (Hall, 2017). Most North American organizations take their cues from the way Western culture characterizes Modernity: as a period of 'unfettered progress', technological reliance, capitalist pursuits, and above all, a 'flight from ambiguity' (Buck-Morss 1989; Eisenberg, 2006; Levine, 1985). Erika Hall (2017) refers to this period as the "Age of Anxiety", which presents a paradox as design gains popularity and influence in shaping the future while organizations retain a level of risk-aversion and fear of uncertainty. The significant role of organizational culture in determining strategic choices, usage of tools/practices, and resistance to complexity or ambiguity (Beckman

& Barry, 2007; Vicente, 2004) is evidenced by the 'fragility' of an organization's innovation capacity "in the face of entrenched habits and unspoken fears" (Hall, 2017). This organizational 'habitus' (Bourdieu, 1984), or socialized norms and assumptions, fosters a kind of 'default thinking' that resists change and complexity (Madsbjerg & Rasmussen, 2014).

Contemporary literature on 'human-centred design' and 'design thinking' explicitly calls out large organizations' challenges in developing a core competence of design. Specifically, these challenges include limited financial and human resources, slow processes for cultural change within established organizations, difficulty accepting ambiguity, and organizational values diametrically opposed to design values (e.g., perfection and productivity vs. openness to iterative prototyping, ambiguity, and learning from failure) (Elsbach & Stigliana, 2018; Kolko, 2015; Ladner, 2014; Madsbjerg & Rasmussen, 2014). Further compounding the issue of organizational receptiveness to complexity, most modern design literature centers on the solutioning process, providing tools to produce innovative and actionable ideas (Beckman & Barry, 2007; Brown, 2009; Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Martin, 2009). This focus on solutioning rather than needfinding and problem framing is indicative of an organizational resistance to complex and time-intensive practices, supported by practitioners' own field observations, with clients regarding ethnography as "luxury" (Ladner, 2014) or a "proinnovation" bias (Abrahamson, 1991). Further to this point, design discourses of recent years reflect organizations' simplified view of design as a

set of tools operating as a 'silver bullet' to solve all management problems simply and efficiently, rather than a core competence to be developed and nurtured over time (Brown, 2009; Dunne, 2019; Hambeukers, 2018; Hernandez-Ramirez, 2018; Morris, 2018). Without a clear understanding of human-centred design as a complex concept (and design thinking as a HCD approach) and a clear intent for using HCD and its methods strategically, organizations risk remaining entrenched in risk-averse cultural practices which inhibit the success of implementing design beyond the use of surface-level, ad hoc tools and frustrate users with lack of results (Dunne, 2019; Fiasova, 2018; Hernandez-Ramirez, 2018).

2.2.3 Value of experiential learning

Descriptions of design as "thinking by doing" (Lawson, 2006) demonstrate the 'experiential nature' of HCD tools and practices (Elsbach & Stigliana, 2018). Understanding the complex and ambiguous HCD process, and the iterative nature of design thinking, to lead innovation necessitates a dynamic process of knowledge development, moving from abstract concepts to concrete experiences, and from analysis to synthesis (Beckman & Barry, 2007; Owen, 1997, 2007). In an effort to make sense of existing literature on design 'thinking' and design 'doing', this subsection will highlight knowledge paradigms of design thinking and discuss benefits of applying the experiential learning cycle to design thinking tools in organizations.

Charles Owen's (1997, 2007) paradigmatic models of inquiry and application of knowledge demonstrate the "dual nature" of knowledge building and usage. For example, he posits that the design discipline exists to fill a "need for form to create order" (Owen, 2007: 21). Since design operates in the 'artificial world' of humans, its values are associated with human and environmental needs, and thus, the measures of design works typically address fit, sustainability, appropriateness, whether it works/does not work, or is better or worse than the previous state (Cross, 2007; Simon, 1969). Thus, Owen's (2007) description of design thinking emphasizes its iterative and dialectical knowledge building and usage processes, crossing between analytic and synthetic realms of theory and practice. In this way, design thinking appears to be a strong candidate for education by experiential learning (Beckman & Barry, 2007; Kolb, 1984).

The discipline of design is experiential by nature, as designers develop an understanding of complex problems and environments through direct, intentional experiences with them (Elsbach & Stigliana, 2018; Kolko, 2010; Lawson, 2006). According to David A. Kolb (1984), such real-world experiences are crucial to the learning process, as outlined in the experiential learning cycle. This experiential learning style appears to be in further alignment with a design thinking approach, as it shares an emphasis on 'reflection in action' with design scholar and 'reflective practice' advocate, Donald A. Schön (1983). Using this apparent compatibility between design thinking tools and experiential learning practices, Elsbach & Stigliana (2018) developed a

framework to research design thinking in organizations with a combination of

physical artifacts and emotional experiences elicited through using tools:

Table 2 | Design thinking + stages of experiential learning

Experiential learning cycle stage* *(Kolb, 1984)	Design thinking application* *(Elsbach & Stigliana, 2018)
1) Real-world experience + feedback	1) Use of specific design thinking tools (e.g., rapid prototyping)
2) Reflection on Stage 1 experience	2) Reflection to understand *why* design thinking tools were effective in problem-solving based on physical artifacts and emotional experiences
3) Forming general theory/assumption	3) Development of general theory about *why* they do what they do in the organization based on Stage 2 reflections
4) Testing the theory through further real-world experience + feedback	4) Use of additional design thinking tools to test the Stage 3 theory

Design thinking + stages of experiential learning, comparing experiential learning stages (Kolb, 1984) to design thinking applications (Elsbach & Stigliana, 2018).

Table 2 shows each of the four stages of the experiential learning cycle (Kolb, 1984) and the corresponding application of design thinking tools or activities that may be employed in experiential learning environment for people to learn design thinking (Elsbach & Stigliana, 2018).

As shown above in **Table 2**, the use of design thinking tools in experiential

learning settings within an organization can become an iterative, cyclical

process in which regular reflection and active testing reinforce design

thinking knowledge building and usage for the employees (Elsbach & Stigliana, 2018; Kolb, 1984). Using the experiential learning cycle, Elsbach & Stigliana (2018) were able to explore the recursive relationship between use of design thinking tools at the team level and the beliefs and norms held at the organizational level. By incorporating reflection on the organization's values and norms into the experiential learning process, Elsbach & Stigliana (2018) not only showcase the efficacy of experiential learning of design thinking tools/practices, but they also probe into the organizational culture component of how and why organizations may successfully adopt design thinking methods. This reflexive exploration underscores the value of experiential learning in design thinking, particularly in organizational settings with non-designers.

2.3 Conclusions

In conclusion, this review of literature spans across diverse source materials and discursive demographics to examine how 'human-centred design' and 'design thinking' are discussed in scholarly and theoretical contexts as well as in texts for managerial and popular audiences. This literature review examines: (1) the patterns across streams of design discourses focused on cognition and practice; and (2) key tensions and areas of exploration for applications of design thinking within organizations. In examining the cognitive and practical discourses of HCD and design thinking, an apparent gap emerges in which contemporary design discourses appear to have

divorced the tools and practices (including 'design thinking' as a 'human-centred' approach) from their historical and designerly context (specifically, their roots in the field of HCD). Further compounding the problem, popular business discourses often use terms such as 'design thinking', 'user-centred design', and 'human-centred design' interchangeably (Hernandez-Ramirez, 2018; Johansson-Skoldberg, Woodilla & Cetinkaya, 2013), adding to the confusion amongst those unfamiliar with the world of design. While some mention is made of the liminality of design and the discursive gap between the areas of design and business (Hernandez-Ramirez, 2018; Johansson-Skoldberg, Woodilla & Cetinkaya, 2013; Kimbell, 2011), existing literature does not reflect an exploration of how design thinking applications in business may be (re-)contextualized and connected to earlier scholarly discussions. Furthermore, the literature places significance on understanding the role of organizational culture in embedding human-centred design practices within the organization (Elsbach & Stigliana, 2018), however, further research appears to be required into the following areas:

- How organizations' values, norms, and assumptions align with the theories and practices of HCD and sensemaking

- What barriers to needfinding, problem framing, and exploratory research exist within organizations (beyond available resources and entrenched risk-aversion)

- How meaning and identity construction within organizations impact the success of understanding, embedding, and operationalizing HCD

- How to leverage complementary, 'human-centred', exploratory social science practices in applying design thinking within organizations in a cohesive, 'non-fragmented' way

The above-mentioned gaps suggest areas of further exploration to contribute to and enrich a currently fragmented body of knowledge on the 'ill-defined' topics of HCD and design thinking (Buchanan, 1992; Kimbell, 2011). This review of literature and identification of existing research gaps lay the groundwork for this research project. In the following pages, the research question guiding this research will be introduced.

3.0 Research Question

demonstrated via paid
exchanges with a design-
led executive education
consultancy for services
related to design thinking
training and/or consulting

How might we use organizations' **expressed value in design thinking** to identify opportunities to invest in **deep understanding** toward sustainable innovation?

characterized by a focus
on empathy with users,
human-centred design,
and an emphasis on
problem finding /
framing

4.0 Methodology

For the purposes of understanding phenomenology (the study of human experiences) within its cultural context and visually representing those insights, this project combines select methods and tools from anthropology, design thinking, systems mapping, and foresight.

This project uses the methodology of design thinking as a framework for organizing research efforts, specifically, the gathering of divergent information and subsequent analysis and synthesis, converging data towards a solution model. Thus, this study's methodology is organized into three key phases: (1) problem finding, (2) problem framing, and (3) solutioning - with an emphasis on problem finding and framing.

The research questions outlined in **Table 3** framed discovery and analysis at each stage:

Table 3 | Project methodology structure

Research stage	Research question(s)	Method(s) used
problem finding	How are human-centred design methods and design thinking approaches currently socialized and practiced within large organizations in Canada and the US? What trends and drivers are influencing the way these methods are being used?	Literature review Environment scan Expert interviews (6)
problem framing	What is the current value proposition of executive design education organization, and why is this short-term model the preferred method of engaging with design thinking for clients? How do tensions between a design practitioner's theory/practice and the constraints of a client's scope of work impact the efficacy of executive design education? What barriers to complexity exist for large client organizations?	Ethnography + interviews Participant-observation Autoethnography Systems mapping
framing solutions	How might we identify opportunity areas for organizations to build capacity for deep understanding and empathy? How might we broaden client organizations' understanding of design thinking competencies?	Integral Futures framework

Project methodology structure.

Table 3 outlines the research sub-questions guiding each stage of research, following the design thinking framework of problem finding, problem framing, and framing solutions. This table also lists the methods used to address research questions at each stage.

4.1 Research focus

This project focuses on the value of purpose-driven, human-centred design, characterized by intentional selection of design research methods, prioritizing problem finding and framing to feed into a solution tailored to address real/understood human needs. Specifically, this project seeks to identify opportunities to educate and support large, mature, semi-static organizations in recognizing the value of executing human-centred design with an emphasis on the empathy-building and deep understanding developed in problem finding and framing phases of research. This research paper defines large, mature, semi-static organizations as those with 500+ employees, which have been operating for at least 10 years, and are primarily focused on core and adjacent innovations, optimizing existing services and products for existing customers or branching out into 'new to the business' products or markets (Gibson, Leung & Rispoli, 2011; Tuff & Nagji, 2012). This selection criteria was used in identifying appropriate client organizations to interview as part of the ethnographic research conducted with a participating design-led executive education consultancy.

The participating executive design education consulting company observed during the course of this research project does not fit the profile of a large, mature, semi-static organization. However, many of their clients who seek their educational and consulting services do fit this selection criteria, and were therefore selected for interviews and further investigation. This research

focuses on exploring the value of human-centred design for large, mature, semi-static organizations by examining two key lenses of design-led executive education consultancy: (1) observing how the executive design education company designs their offerings and provides value, and (2) exploring the needs, aspirations, and behaviors of those large, mature, semi-static organizations as they relate to their expressed interest in 'human-centred design' or 'design thinking'.

4.2 Research approach

By understanding how organizations view and value 'human-centred design' or 'design thinking' (however they perceive/define those terms, or associated approaches, processes, and methodologies), this project aims to link business interests in the design thinking approach back to its roots in human-centred design to identify opportunities to provide effective design education and support to large organizations, enabling organizations to invest in deep understanding toward transformational and sustainable innovation. To examine the above-mentioned topic areas, this researcher conducted ethnographic research, focusing on a participating company which specializes in executive design education, with specific curricula built around 'design thinking' (and related methods, tools, approaches, etc.). This participating company is used as a case study to understand the value of human-centred design in business innovation by examining the relationship

between design practitioners and managerial audiences seeking to use human-centred design to drive innovation outcomes.

To begin this research, an environmental scan and review of popular business and design literature revealed the popularity of the concept of "design thinking" and the use of 'ethnography' as 'the new core competence' (Ladner, 2014; Martin, 2009) within business discourses. The literature review also revealed inconsistencies in academic and business discourses around an exact definition of 'design thinking', with paradoxical explanations of a nonlinear process with IDEO's step-by-step methodology of its iterative process.

Resulting from these inconsistencies in the literature, the environmental scan also revealed inconsistencies in practice (e.g. organizations' attempts to employ 'design thinking' methods/tools) and lack of guidance or oversight, which resulted in increased skepticism of the effectiveness of the design thinking approach and frustration over lack of results following a bias toward solutioning in organizations' various implementations of their interpretation(s) of 'design thinking' and related human-centred design and applied social science methods/tools, like ethnography.

Once the initial approach and focus areas for research had been identified, data collection was organized in three phases consistent with design thinking methodology: (1) problem finding, (2) problem framing, and (3) solution

framing. The specific methods for data collection in each of these phases is outlined below in Section 4.2.

4.3 Data collection

4.3.1 Problem Finding

Literature review

To begin gathering information pertinent to this study, an extensive literature review was conducted to gain insight into areas including design thinking and human-centred design, applied ethnography, organizational change behavior, behavioral economics and choice architecture, and problem complexity. This literature review provided a basis for conducting an environmental scan for trends and signals of change in the world of 'design thinking' as applied and experienced in organizations. Furthermore, the literature review yielded four key tensions to outline and explore during the course of ethnographic fieldwork.

Environment scan

An environment scan was conducted to identify signals of change as well as emerging and developing trends in the application of design methods in large organizations in Canada and the United States. The purpose of this scan was to understand the changing landscape of design research and applied social science methods in organizations. Using the STEEP-V framework from

strategic foresight (Loveridge, 2002), signals and trends were classified in categories ranging from social, technological, environmental, economic, political, and values. While these STEEP-V strategic foresight categories were used to identify and gather information across a broad range of categories, the environment scan that was conducted was primarily geared towards understanding the current landscape and potential directions certain industries may be moving in with respect to the use of 'design thinking', design research, or human-centred design.

Expert interviews

Expert interviews were conducted to help illuminate trends and develop a foundational understanding of the landscape of design thinking as applied in large organizations. These semi-structured expert interviews explored the following key topic areas: how 'design thinking' and/or 'human-centred design' are currently applied in large organizations, observed barriers to complexity and long-term research methods, and perceived value of applied social science and design methods in organizational change and innovation.

Six expert interviews were conducted with subject matter experts whose expertise varied across major industries, including work with both public and private sector clients. The experts interviewed include:

1 | Director of a design team at a major Canadian bank

2 | Design team at a major Canadian bank

3 | Behavioral insights specialist at an independent research organization

4 | Design innovation consultant at a global digital media consultancy

5 | Director of design at a healthcare-based consultancy

6 | Service design and UX specialist at a European healthcare-based service

4.3.2 Problem Framing

Ethnography + interviews

Ethnography is an anthropological method of studying and writing about culture (Malinowski, 2007). This method involves observing a particular group within its own environment and cultural context, documenting, and interpreting the meaning of identified "webs of significance" (Geertz, 1994). The patient, descriptive, and interpretive nature of ethnography (Ladner, 2016) is intended to yield deep insights into the complexities of human life, making this tool increasingly valuable to businesses as well (Madsbjerg & Rasmussen, 2014).

This anthropological method of deep understanding builds empathy by embedding the researcher in the culture being studied. Ethnography has also become increasingly popular in the business world, often hailed as "'an essential tool' for innovation" (Ladner, 2016). As such, this method was deemed most appropriate for primary research in this study.

This study recruited a design-led executive education consultancy to participate in four weeks of ethnographic observation and interviews in order to understand the value of 'design thinking' methods to large organizations that are paying this consultancy for its design services and 'boot camps'. This ethnographic study included embedding the researcher in daily operations at the consultancy, to observe team meetings, decision-making processes, and methods of design practice.

Staff members who agreed to participate were observed and interviewed one-on-one with the researcher over the course of four weeks. Select client organizations who agreed to participate were also interviewed to gain direct insight into their experience with the consultancy itself and its design methods.

Participant-observation

As part of this ethnographic research, the researcher engaged in 'moderate participant-observation' - a method of participating to a certain extent in the activities being observed (Lynch, 1996). By working part-time on a project for the design-led executive education consultancy, the researcher was able to glean insights from an emic perspective as a design practitioner providing a service to a client. By incorporating an autoethnographic lens (Ellis & Bochner, 2000) into this project, the researcher was able to log and analyze reflexive insights as a design practitioner experiencing theoretical and

practical tensions first-hand while working within the participating executive design education company to deliver a project for a client with a limited understanding of human-centred design. These reflexive participant observation and autoethnographic insights supplement those gained from direct observation of research participants in the field.

Systems maps + archetypes

Systems maps and diagrams were created to visually represent complex information about the system of design-led consulting services and applied design thinking to begin to identify areas of opportunity for organizational investment in deep understanding and long-term problem-finding and framing capabilities.

4.3.3 Framing solutions

Integral Futures framework

The Integral Futures framework (Hines, 2004) is a foresight model used to consider and integrate multiple perspectives on a singular topic. In practice, this framework is typically used in strategic planning, to deepen strategic considerations beyond the exterior perspectives often driving traditional strategic plans (Hines, 2004). In 1998, Richard Slaughter's "Transcending Flatland" offered suggestions for how Ken Wilber's (1996) integral theory could be applied to futures studies. Following that suggested combination of futures and integral theory, there was some debate amongst scholars and

practitioners around how best to apply integral perspective (Hines, 2004). As integral futures theory evolved over time, debate continued as to whether the focus should be on the use of integral futures to serve as an explanatory framework depicting multiple perspectives, or as a method for direct application to futures practice and the creation of worlds or scenarios.

The Integral Futures framework draws heavily from Integral Theory developed by Ken Wilber (1996), which considers an individual's subjective experience along with objective, intersubjective, and interobjective experiences. Hines' (2004) framework depicts four quadrants, along two axes: interior-exterior, and individual-collective. Each of Wilber's four perspectives are captured within those four quadrants: (1) interior-individual, Intentional/subjective; (2) exterior-individual, Behavioral/objective; (3) interior-collective, Cultural/intersubjective; and (4) exterior-collective, Social/interobjective. In effect, each quadrant influences the others. As indicated in **Figure 3**, the quadrants on the left side are oriented towards people and the invisible organization of their thoughts and beliefs, while the right side depicts visible processes and quantifiable behaviors.

Figure 3 | Integral Futures framework

Recreated representation of the Integral Futures Framework (Hines, 2004).

Figure 3 depicts a recreated image of the *Integral Futures Framework (Hines, 2004)*, highlighting the key inputs and features of the four perspectival quadrants.

The overall frame effectively connects people to processes, and values people's beliefs, values, and ideas as relevant data in thinking about the future (Hines, 2004). Thus, the Integral Futures framework provides a meta-view, holistic, explanatory approach that avoids reductionism through incorporating multiple perspectives (Hines, 2004). In this research, this framework will be used to provide a holistic understanding of the topic area which incorporates multiple stakeholders' points of view in order to yield richer strategic implications relevant to all stakeholders involved.

4.4 Study limitations

The scope and scale of this study was primarily limited by time and resource constraints due to the nature of this Major Research Project and its requirements. Additional time for exploratory research and funding may have enabled expansion of this research, including recruitment of more diverse participants and longer-term ethnographic study of participants.

As this research is based on ethnographic participant-observation at one design-led executive education consultancy and interviews with its clients, the results, while potentially useful to organizations with similar demographic profiles and business needs, may not necessarily be generalizable across all large organizations not consulted in this study. This research may have benefited from extension of its pool of recruited participants, had the necessary time and resources been available.

This research seeks to address large, mature, and semi-static organizations (focused primarily on core and adjacent levels of innovation) who are attempting to develop design-led innovation functions. As such, this research focuses on a design-led executive education consultancy, working to deliver training on design thinking methods and practices to executive clients. This participating executive design education company serves as a case study for this research, enabling the exploration of its educational offerings, internal behaviors and attitudes of practitioners, and a limited number of its clients

(prospective, existing, and past clients) who agreed to be interviewed as part of this ethnographic study. Findings from these clients represent their own large, mature, and semi-static organizations with an expressed interest in human-centred design or design thinking (as evidenced by their paid involvement in executive design education), and may be applicable to other organizations with similar profiles, structures, interests, and behaviors. However, these findings may not be generalizable to all large, mature, semi-static organizations, as the cultural contexts of individual organizations play a significant role in their capacity to adopt and execute design methodologies (Madsbjerg & Rasmussen, 2014; Martin, 2009).

Lastly, the methods used in this study are based on the researcher's expertise and accessible skill-set in qualitative and design research, and therefore may limit the scope of information gathered through these means. For instance, additional quantitative analysis of organizations' financial records may have illuminated levels of investment and quantifiable amounts of expressed value in different areas of research and development, talent acquisition, and employee training.

5.0 Findings + analysis

Participant-observation at an executive design education company, paired with conducting expert interviews and ethnographic interviews with employees and clients yielded key insights into current perceptions of human-centred design (HCD) and organizational barriers to complexity. This section will outline the findings of this research in the form of thematic tensions and patterns observed during fieldwork. In seeking to understand the challenge for large, mature, semi-static organizations to embed, operationalize, and scale human-centred design, this research has broken down findings into four main cognitive categories: (1) perspectives, (2) purpose, (3) approaches, and (4) value. These categories represent four core components of obtaining a holistic, contextual understanding of the process in order to fuel its strategic execution in embedding and operationalizing human-centred design within an organization.

5.1 Barriers to complexity + focus areas

5.1.1 Organizational barriers to complexity

In seeking to understand current attempts to embed human-centred design (HCD) or 'design thinking' approaches within large, mature, semi-static organizations, this research drew from expert interviews in addition to an observational case study on an executive design education organization.

Through interviews with experts, design education specialists and facilitators, and executive clients, common patterns emerged in describing perceived barriers to employees' respective organizations strategically employing HCD (shown below in **Figure 4**). These barriers fall under the following four categories: (1) lack of awareness of HCD, (2) "proof of concept purgatory", (3) buzzwords and unclear terminology, and (4) resource (including budget) and time constraints - being the most heavily referenced.

Figure 4 | Barriers to complexity
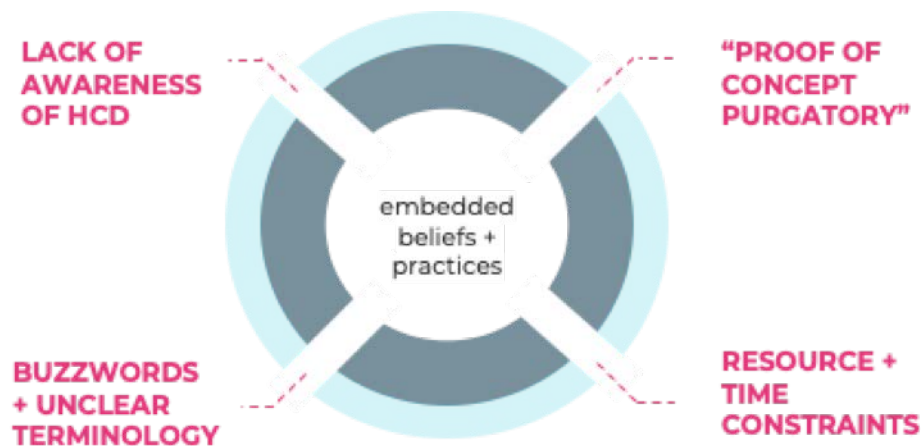
Four barriers to complexity within large, established, semi-static organizations.

Figure 4 shows four main barriers to complexity identified within organizations during the course of this research.

Table 4 | Organizational barriers to complexity

Barrier category	Definition of barrier	Impact to business
Lack of awareness of HCD	Individual employees at varying levels within the organization, including leadership, lack a cohesive understanding/awareness of what HCD is, what it entails, and its significance - this may manifest as lack of awareness or divergent perceptions of HCD	Lack of awareness or shared understanding of HCD due to divergent perspectives, may make leaders unable/ unwilling to support necessary internal mindset or cultural shifts to enable HCD capacity building
"Proof of concept purgatory"	Organizational culture drives the purpose of using new methods/tools only to validate pre-existing hypotheses, or provide "proof of concept" - with a clear lack of emphasis on problem finding or framing	Getting caught in "proof of concept purgatory" leaves the organization with a narrow view of the purpose of HCD methods, thereby missing out on its long-term strategic benefits
Buzzwords + unclear terminology	Employees' understanding of HCD or 'design thinking' methods may be inextricably linked to buzzwords or key terms they have read about that they may not fully understand	Limited exposure to methods/tools through buzzwords and terms used in popular media sources may create confusion about HCD approaches and how they can best be used
Resource + time constraints	Budgetary, resource, and time constraints are the most common culprit in reducing scope and scale of capacity building and decisions on methodologies	Along with the barriers listed above, resource and time constraints typically lead to reduced scope which may compromise the results of HCD tools/ approaches, reinforcing a lack of appreciation of the significant value of HCD

Organizational barriers to complexity.

Table 4 shows the four main organizational barriers to complexity identified in this research, the definitions of each barrier, as well as the impact to business. In the 'Impact to business' column, the terms highlighted in blue and bolded represent key focus areas for enacting HCD within large, mature, semi-static organizations by addressing these barriers to complexity.

Above, **Table 4** displays the core organizational barriers to complexity

identified by interviewees, which effectively constrain an organization's ability

to adapt mindsets to accept a nonlinear human-centred design process and

build associated core competencies to drive results. The terms highlighted

and bolded in the "Impact to business" column in **Table 4** are also the names

of the identified themes/key focus areas or cognitive components of

understanding and enacting HCD in mature organizations seeking to build

sustainable innovation capabilities. Shown below, **Figure 5** emphasizes the

business impacts of the four organizational barriers to complexity, which also

appear to impact an organization's willingness and ability to successfully

adopt human-centred design methods and practices.

Figure 5 | Business impacts of barriers to complexity

LACK OF AWARENESS OF HCD	UNABLE TO ALIGN ON MINDSET / CULTURE SHIFT
"PROOF OF CONCEPT PURGATORY"	NARROW SCOPE MISSES LONG-TERM BENEFITS
BUZZWORDS + UNCLEAR TERMINOLOGY	CONFUSION ABOUT TOOLS + APPROACHES
RESOURCE + TIME CONSTRAINTS	COMPROMISED METHODS + RESULTS
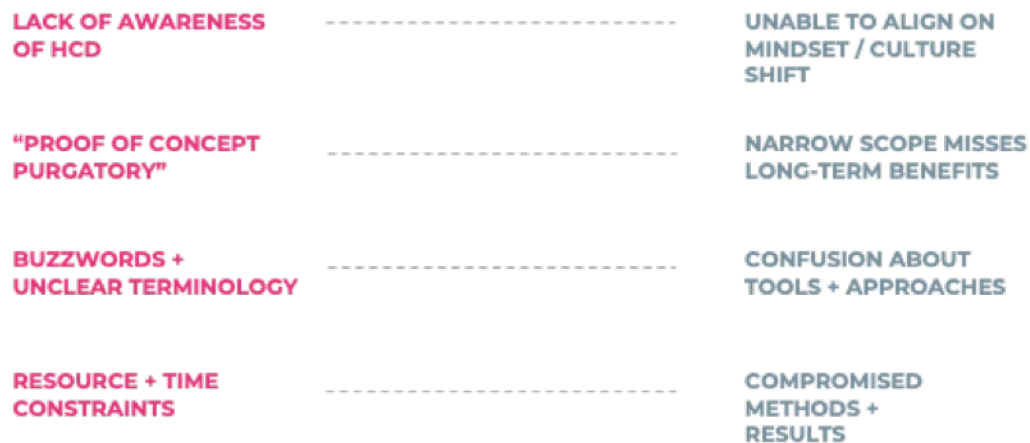
Direct link between organizational barriers to complexity and business impacts for attempts to integrate human-centred design methods.

Figure 5 highlights the business impacts of the organizational barriers to complexity outlined in **Table 4**.

Each individual interviewed had some exposure to HCD and some level of interest in seeing organizations move toward successfully embedding and operationalizing what they referred to as either a 'design thinking approach' or 'human-centred design'. Thus, further tensions were identified between individuals on the ground or middle management levels with varying degrees of understanding and experience with HCD methods/tools seeking to use HCD more, versus larger organizational attitudes, cultures, and structures seeking to minimize risk and cost. Ultimately, the common barriers mentioned by interviewees are indicative of greater systemic patterns contributing to a

reinforcing loop where an organizational lack of deep understanding of HCD

methodologies and of users' actual experiences feeds back into small-scale

attempts to use select tools that may not yield adequate results, and reinforce

a skepticism of HCD's strategic role (see **Figure 6**).

Figure 6 | Reinforcing loop of innovation effectiveness in semi-static orgs
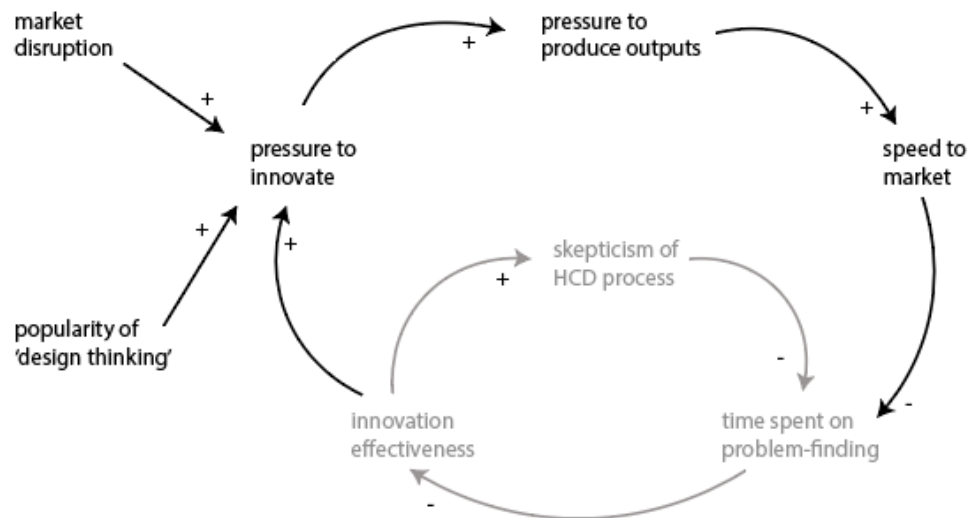
Reinforcing loop of innovation effectiveness in semi-static orgs.

Figure 6 depicts a systems diagram (or systems map view) with a reinforcing loop, wherein a focus on creating outputs (marketable products or services) and decreased focus on problem finding/framing ultimately yields decreased effectiveness of the innovation being produced. This negative loop results in more skepticism of the HCD process and therefore, even less time spent engaging or seeking to master the HCD process of problem finding, thereby prolonging pressure to innovate and produce, without measures taken to increase the effectiveness of the innovation.

This *Reinforcing loop of innovation effectiveness in semi-static orgs* demonstrates cycles of decreasing time spent on problem finding/framing in pursuit of more time spent producing outputs to send to market, and is representative of a systems-level problem in organizational attempts to operationalize HCD. Similarly, Repenning & Sterman's (2002) systems diagram of *The Improvement Paradox* (see **Figure 7**) displays the organizational constraints at play during attempts to 'improve' operations through investments in capability building. Due to competing priorities in shorter term pressures to complete work and maintain desired performance, the time delays associated with investing in capability for long-term improvement of performance creates the paradox depicted in **Figure 7**.

Figure 7 | The improvement paradox

Capability

Investment in Capability

Capability Erosion

DELAY

+

R1

Reinvestment

Time Spent Working

+

Time Spent on Improvement

−

+

Pressure to Do Work

+

B1

Work Harder

+

Actual Performance

−

Performance Gap

+

Desired Performance

B2

Work Smarter

Pressure to Improve Capability

+

The Improvement Paradox (Repenning & Sterman, 2002).

Figure 7 shows *The Improvement Paradox (Repenning & Sterman, 2002)*. This systems diagram highlights the negative impacts of increased pressure to do work on the time spent on improvement, thereby delaying investment in capability and performance gaps.

The Improvement Paradox (Repenning & Sterman, 2002) shown in **Figure 7**

highlights a common phenomenon which was also observed during the

course of this research. Repenning & Sterman's (2002) model provides

insight into how managers make decisions regarding investment in

capabilities, for the purpose of innovation or process improvement. As shown

in the 'paradox' model, when fixed resources are allocated towards investment

in capability for the purpose of improvement, it draws resources away from

current work performance, thereby increasing pressure to get the work done.

This increased pressure to do work then decreases time spent on

improvement and delays investment in capability building (Repenning &

Sterman, 2002). Similarly, the *Reinforcing loop of innovation effectiveness in semi-*

static orgs in **Figure 6** demonstrates a common pressure within the

organization to do work that yields tangible outputs. This pressure appears to

pull resources and time away from other activities, whether that be capacity

building or rigorous problem finding and HCD processes. The tension revealed

in both systems diagrams highlights significant barriers to complexity within

organizations: "proof of concept purgatory" and resource + time constraints.

Here, it appears that large, mature, semi-static organizations tend to prioritize

the quick production of tangible outputs due to limited time and resources -

this phenomenon reinforces negative feedback loops, as outlined in **Figure 6**,

which increase skepticism about HCD and negatively impact investments in

capability building.

As previously discussed, the organizational barriers to complexity identified in

Table 4 are representative of the systems-level issues at play (including those

outlined in **Figure 6** and **Figure 7**). **Figure 8** introduces how the key focus

areas or cognitive components of understanding and successfully enacting

HCD in large organizations (also highlighted in **Table 4**) essentially function

as areas of strategic intervention in order to circumvent negative reinforcing loops at a systems level within an organization seeking to successfully embed, operationalize, and scale the use of human-centred design. These cognitive components and their role in interrupting reinforcing loops are further detailed in the remainder of Section 5.

Figure 8 | Focus areas of strategic systems-level intervention for orgs
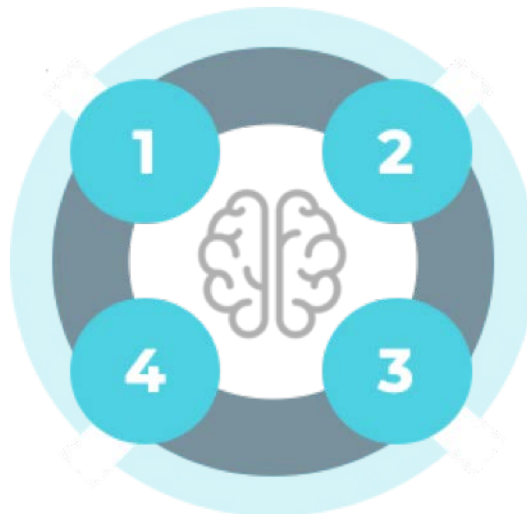
Four key focus areas or cognitive components for strategic intervention within organizations.

Figure 8 highlights the four key focus areas for strategic intervention within organizations to directly address the previously-mentioned four core organizational barriers to complexity and circumvent systems-level issues.

5.1.2 Cognitive components of enacting HCD in organizations

A comparative thematic analysis of coded interview and observation data revealed common themes with respect to people's understanding of design thinking or user (human) centred design and obstacles toward practicing it in context within large, mature organizations with established 'core' innovation (Tuff & Nagji, 2012) processes.

Codes commonly repeated across client and staff interviews with the executive design education company included:

- limited perception or awareness of design
- skepticism
- misaligned expectations
- purity of process
- tools
- tangibility
- resource constraints

These prevalent codes revealed a tension between people's individual understanding and expectations of human-centred design versus how it is practiced within their organizations. Further analysis determined that four cognitive components were at play within this tension (outlined in **Table 5** and **Figure 8**). Directly related to the prevalent codes listed above and the tension

between understanding/perception/awareness and expectations of HCD versus practical applications of HCD in organizational contexts, the four identified cognitive components are: (1) perspectives, (2) purpose, (3) approaches, and (4) value. These cognitive components effectively serve as focus areas for large, mature, semi-static organizations to understand, embed, and operationalize human-centred design in their own business context.

Table 5 | Cognitive components of enacting human-centred design

Cognitive component	What it means	Why it matters
Perspectives + perceptions	What HCD is; who does design; what they think about it	Understanding key stakeholders' perceptions of HCD, what it means, and what it is creates a foundational definition of the process/mindset from which an organization can begin to develop cohesively
Purpose	Why HCD is important; why they want to do it; why they are doing it	Defining objectives for enacting HCD at different levels within the organization: at an individual employee level, a project level, a departmental level, an organizational level, and an industry or market level ensures HCD methods are directly linked to the purpose behind them
Approaches	How HCD is done; what tools and frameworks are used	With the first two components defined, the ways in which HCD can be used or enacted within an organization can then be explored and linked to who should be using which tools to accomplish what objective (for what greater purpose)
Value	How they measure the usefulness and worth of HCD; what they are willing to invest in HCD; what they get in return for that investment	With a clearer understanding of exactly what HCD is as well as why and how it would be used, an organization will be better equipped to evaluate what can and should be strategically invested against likely returns in order to build out intentional capacity building plans for HCD education, development, and support

Cognitive components of enacting human-centred design.

Table 5 lists the four key focus areas, or cognitive components, of enacting human-centred design within large, mature, semi-static organizations. This table identifies the cognitive component, its definition, and its significance as it relates to organizational barriers to complexity and capacity for innovation.

Within each of the cognitive components of enacting human-centred design listed in **Table 5**, research findings are further broken down into key thematic tensions and patterns from observation. These specific tensions and patterns will be discussed in the following subsections. Additionally, **Figure 9** below highlights a proposed intervention, using the cognitive components to interrupt the reinforcing loop which negatively impacts innovation effectiveness.

Figure 9 | Systems intervention for organizational innovation effectiveness
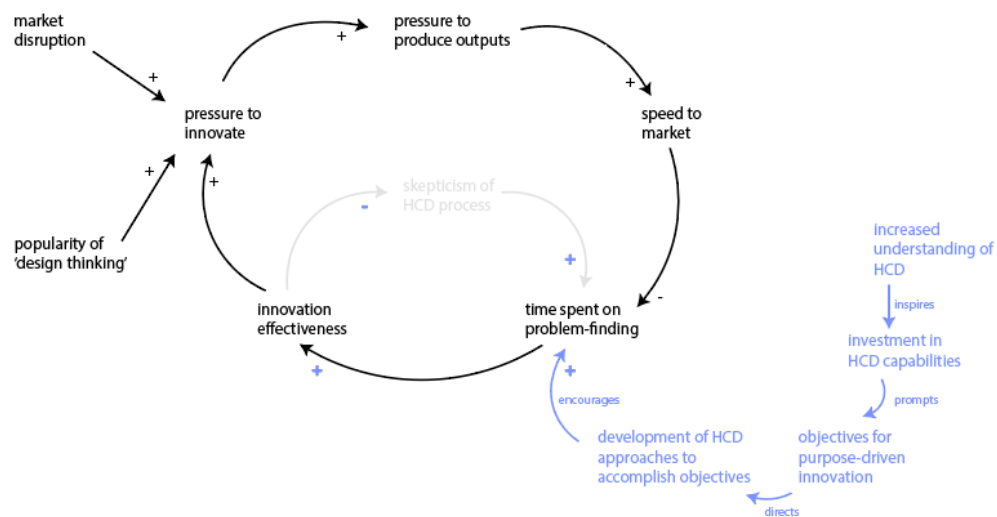
Systems intervention for organizational innovation effectiveness.

Figure 9 shows this study's proposed intervention to interrupt the *Reinforcing loop of innovation effectiveness in semi-static orgs*. This diagram proposes intervention using the cognitive components model to facilitate deeper understanding of the HCD process, negating skepticism and prompting more time spent on problem-finding, which in turn, positively impacts innovation effectiveness.

5.2 Perspectives + perceptions

Interviews and observations revealed significant gaps in understanding and lack of consensus for (prospective, current, and past) executive design education clients on what human-centred design and design thinking mean to them as individuals and to their organizations. All client organizations included in this research either directly represented or spoke to past experiences with large, mature, semi-static organizations seeking to build innovation and design functions, while mostly functioning to render 'core' -- and occasionally 'adjacent' -- innovations (Tuff & Nagji, 2012). As demonstrated in the Innovation Ambition Matrix (Tuff & Nagji, 2012) shown in **Figure 10** below, core innovation initiatives typically involve incremental changes to optimize existing products and assets for existing markets and customers. Adjacent innovations move forward by leveraging something the organization already does well into a new area, such as serving new markets or customers, or providing new products or services (Tuff & Nagji, 2012). These limited perceptions of scope and organizational capacity for innovation appeared to, in turn, negatively impact mature organizations' understanding of the role of human-centred design and design thinking in achieving innovation goals.

A comparative thematic analysis highlighted key tensions with respect to a mature organization's perspective on capacity for innovation, navigating tensions between nonlinear HCD processes and entrenched, linear business

practices, and defining the strategic role of design in a mature organization. Each of these tensions also stems from the common clash between an inherent liminal nature of human-centred design and a more immediate, tangible, and explicitly defined business environment, characteristic of most large, established, and mature organizations seeking innovation while maintaining risk-averse processes.

5.2.1 Core vs. transformational innovation

The mature organizations researched in this study represent primarily large, established organizations seeking to develop internal innovation capacity. However, while these organizations may speak about 'market disruption' and 'transforming their spaces', their innovation initiatives typically fall within the category of 'core innovation' (Tuff & Nagji, 2012). As one participant from an established consultancy phrased it, these types of organizations typically "want something different, but not that different". In other words, mature organizations appear to desire enough innovation to remain competitive as they aspire to lead their respective markets in performance and revenue generation, but seem resistant to the type of innovation that might disrupt established internal structures and processes.

For a risk-averse, mature organization, this kind of incremental change, optimizing existing products for existing customers, is known as 'core innovation' (Tuff & Nagji, 2012).

Figure 10 | Innovation ambition matrix
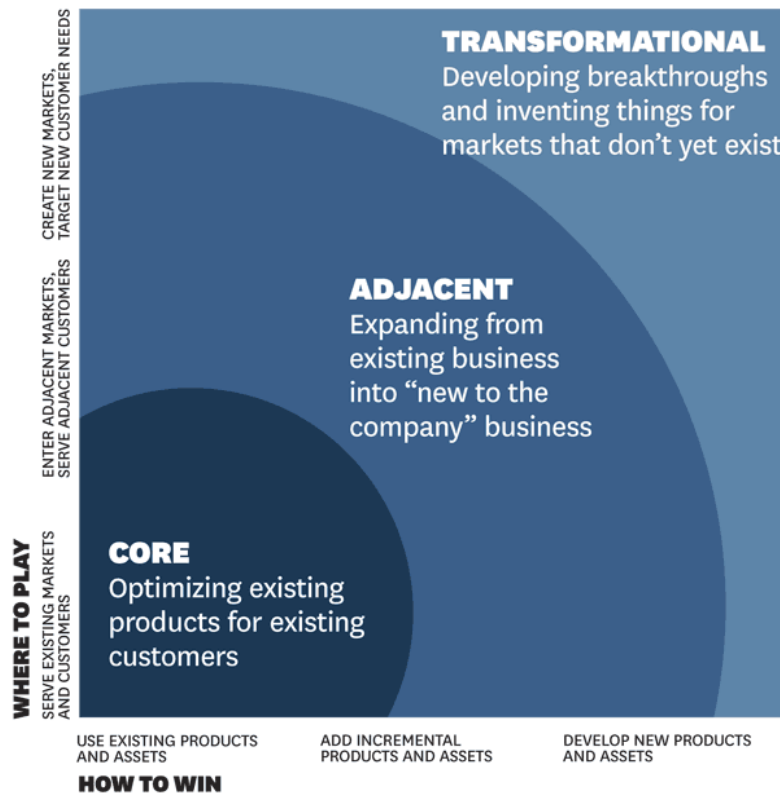
Innovation Ambition Matrix (Tuff & Nagji, 2012).

Figure 10 shows the *Innovation Ambition Matrix (Tugg & Nagji, 2012)*, breaking down innovation initiatives into three categories: core, adjacent, and transformational. Each category of innovation involves a different degree of change along the product/assets axis and the markets/customers axis.

Interestingly, interviews with employees of large, mature, semi-static

organizations revealed that the most (anecdotally) appealing innovation was

'transformational' innovation, which involves the creation of breakthrough

inventions for net new markets (Tuff & Nagji, 2012). Participants expressed a

level of interest in creating something new and "extremely useful" for people in ways that may not have been thought of yet, while also noting the feasibility constraints of operating within a large, established organization with entrenched operating procedures.

This tension between organizational attitudes of risk-aversion in innovation efforts (yielding perpetual core innovations) and individual appetites for the benefits of transformational innovation highlights a key issue in understanding and adopting a human-centred design approach for innovation: conflicting attitudes, perspectives, and aspirations. Individual and organizational perspectives on innovation, strategic growth, and the role of design must be aligned in order for design methodologies to adequately serve their purpose toward innovation (Kolko, 2015). However, managerial audiences' views of 'the magic of design' and the allure of 'disruptive innovation' from companies like Apple and Uber (Dunne, 2019; Kolko, 2015) tend to bias perceptions of internal innovation initiatives and what the role of design 'should' be within the organization as a result.

5.2.2 Liminality of HCD vs. tangibility of business

The tension between the worlds of design and business existed as a common thread throughout all interviews and participant-observation. Highlighting its significance, one staff interviewee explicitly identified that:

"…business people's goals are more bottom line, immediate than designers, who love to be in a space of possibilities."
-- Executive design education facilitator

The ambiguous nature of design work within the "space of possibilities", as outlined in the quote above, at times, works in direct opposition to that of a business setting with a focus on tangible outputs and cost reduction to maintain operations. The previous section highlighted the tension between a large, mature, semi-static organization's capacity for core versus transformational innovation (Tuff & Nagji, 2012). This organizational capacity for integrating innovation as '*both* a process and an outcome' (Crossan & Apaydin, 2010) appears to be directly related to the tension between limitations of a tangible, outcomes-focused business context versus a nonlinear, purpose-driven human-centred design process. As described by four participants (two clients and two executive design education consultants), the way in which human-centred design is leveraged within an organization is heavily dependent on 'business realities' -- a term which typically refers to budgetary and resource constraints, strategic priorities, and expectations for tangible outputs and revenue generation. Perceptions about 'business realities', appetites for innovation, and familiarity with human-centred design methodologies are often at odds with each other as a result of the underlying tension between purpose-driven design processes and outcomes-focused business processes. According to research findings from participant-observation and ethnographic interviews, this tension often negatively impacts a large, mature, semi-static organization's willingness to

invest significant amounts of time and resources into developing human-centred design capabilities, due to conflicting short-term views and targets for outputs and revenue generation.

This tension between the liminality of HCD and the tangibility of business became evident within the participant-observation conducted on one of the case study organization's consulting projects, as two project leads whose areas of expertise were diametrically opposed were hired to round out a multi-disciplinary design research team. While one lead represented a traditional business mindset, focused on delivering specific outputs along the Gantt chart, the other represented an exploratory, academic mindset centered around open-ended inquiry. Navigating a balance between these two perspectives would be integral to doing the design work and maintaining a strong relationship with the business-minded client. While this example highlights the opportunity area for business and design practices to complement one another, it also showcases the potential for miscommunication as a result of a lack of understanding and appreciation for motivations and processes across disciplines. This inherent challenge built into the staffing of this project acts as a case study example, representing the pervasive extent of the tensions between traditional business and design approaches, and the role those tensions play in organizations' attempts to embed, operationalize, and scale human-centred design practices.

Figure 11 | Nonlinear vs. linear business and design process
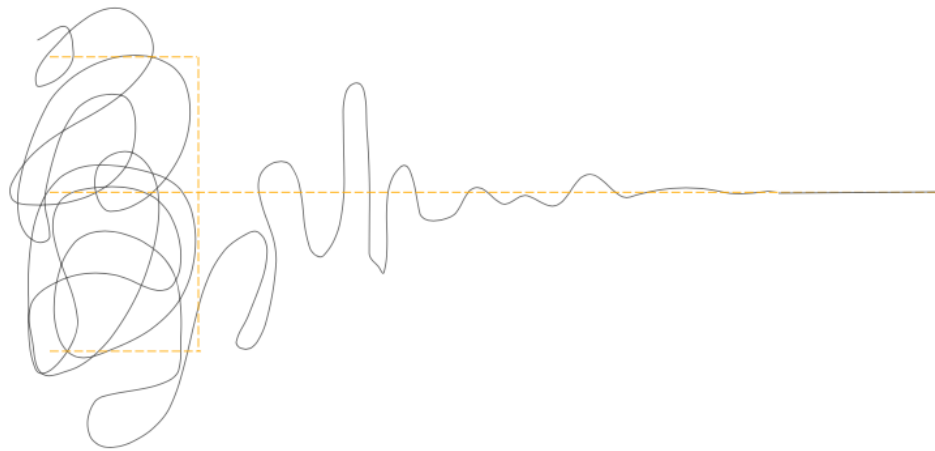
Nonlinear vs. linear business and design process. Features a remastered version of Daniel Newman's (IDEO) "Design Squiggle" (n.d.).

Figure 11 features a remastered version of Daniel Newman's (IDEO) "Design Squiggle" depicting the complexity of the design process with a linear business process superimposed on the image (the orange dotted lines), showing the expectation of a linear process, drawing on specific inputs to quickly yield a resolute answer and tangible output.

As described in the consulting project example from the participant-observation phase of research, **Figure 11** shows the divergent perspectives on the creative problem-solving process between a traditional linear business perspective (depicted with the orange dotted lines) and a traditional nonlinear design perspective (depicted with the squiggly lines of Newman's "Design Squiggle, from IDEO). Here, the expectation of a project's trajectory from a traditional business perspective appears to involve a linear process, drawing on specific outputs (as demonstrated by the three orange dotted lines, which

converge into a singular, orange dotted line) to yield a clear answer, acting as

the basis for the design of a solution in the form of a product or service.

Meanwhile, Newman's "Design Squiggle" (IDEO) overlaid on the orange dotted

lines in **Figure 11** shows the comparatively nonlinear design process, where

initial stages of problem finding and framing can take a number of different

directions to explore a complex problem area, which eventually, through

further exploration, straightens out into a flat, horizontal line at the end of the

process, where a solution is developed based on the insights gathered during

the 'messy' earlier phases of the design process. The image in **Figure 11** also

indicates areas of overlap or intersection, demonstrating the potential for

convergence in the complex process. The gap which emerges from this view of

the business and design perspectives is that of individual perceptions of the

actual problem-solving journey through Newman's "Design Squiggle" (IDEO).

This figure highlights differing expectations for a problem-solving process

within the scope of a project, which may contribute to tensions and

frustrations within a multi-disciplinary project team or between a design

team and organizational leadership with a traditional business perspective.

This difference in perspectives reveals the need to understand different

mindsets and approaches, and manage expectations accordingly. In order for

mindsets to shift toward accepting a new way of working, there appears to be

a need for experiential learning, as one must journey through the nonlinear

process to understand its components, purpose, and value.

5.2.3 Aesthetic vs. strategic roles of design

Research findings revealed a disconnect between organizations who stocked all the 'trappings of innovation', including the tools and all the "things" necessary to innovate (e.g. post-its, whiteboards, brightly colored rooms, etc.) and their ability to do human-centred design (HCD) work. Most executive design education staff interviewees identified this as a prevalent pattern across industries in both previous and current roles, with one participant noting that the disconnect ultimately amounts to the equivalent of "setting a beautiful table for a fancy meal…without having prepared any food to eat". At the root of the issue in instances such as these lies a fundamental confusion within organizations about the role of design and its actual purpose. Many clients understand the aesthetic, visible results of design. However, there is less clarity amongst some clients around the strategic role that design can play within an organization - as that is mostly perceived as intangible and aspirational.

> *"I think a lot of people just really want…they want design, and they don't know what that means…They don't really fully understand kind of the breadth of how it can be applied."*
>
> > *-- Executive design education practitioner participant*

Four staff participants described clients' perceptions of design as a kind of inexplicable 'magic' performed beyond their understanding. This perception of human-centred design facilitates a limited perspective on what 'design

thinking' may offer as outside observers can only demonstrably link the work that is done to tangible, visible outputs - thereby categorizing design as a primarily aesthetic function. Yet, the rising popularity of design thinking approaches in business settings and increasing demand for executive design education stems from some recognition of the potential for design to play a strategic role within an organization, as demonstrated by anecdotal evidence from popular brands such as Apple and Google. Through these linkages between design thinking or user centred design and hugely successful innovations, some clients end up accumulating the visible and performative components of innovation without sufficient focus or understanding of the processes and underlying theoretical constructs required to do the actual work.

5.3 Purpose

A distinct pattern emerged in the research findings indicating a significant practical tension within organizations between being outcome driven and being process driven. This tension appears to be linked to the efficacy of design processes enacted within organizations as well as attitudes towards 'design' and 'design thinking' in those organizations.

5.3.1 Outcomes-focused vs. purpose-driven process

According to staff interviews and observation notes, many client organizations become focused on identifying 'what's next' and trying to "future-proof the organization" without adopting the kind of fundamental shift(s) in approach that may be required. In this way, findings highlight clients' fixation on the outcome or tangible outputs of 'design thinking' and 'design research', rather than seeking to master the process(es). Several employees from two major Canadian banks were interviewed, and each of those participants stressed the importance of bringing products to market through rapid prototyping and iteration. In their examples, while there may be an individual desire to spend more time upfront in research to design 'the right thing', their organizations were not structured to encourage that. In fact, one participant from a major bank noted that the organization views your operation as only a "cost center" until a tangible output is produced and performance is able to be measured in the marketplace. Participants included bank employees working on in-house design teams, who also indicated that, with time and resource constraints, the goal was to do whatever minimum viable version of the work was necessary to deliver a product or solution that was acceptable to bank leadership. Within the context of these organizations and their goals (e.g., acquisitions, conversions, appeasing shareholders, etc.), the focus on outcomes is clearly linked to a system-level reinforcing loop for survival, operation, and growth. However, as asserted by executive design education staff participants, an understanding and mastery of process, while

potentially more time and resource intensive, would likely enrich the outputs, leading the organizations to the kinds of transformational innovation outcomes they desire.

In interviewing both full-time and contract staff of the executive design education organization, it became clear that clients' objectives for completing training in design thinking exist along a spectrum, with goals ranging from primarily business outcomes to learning outcomes. Staff participants vocalized their intent to prioritize learning outcomes from the actual workshops/client engagements in order to assist in capacity building within the organization that would ultimately lead to innovative business outcomes. However, the balance along this spectrum continues to be a challenge to navigate that benefits from "a longer horizon view", as one staff participant phrased it. This longer term view facilitates a deeper understanding of the benefits of building organizational capabilities and mastering a human-centred design process in order to drive the kind of outputs they want. Essentially, as one staff facilitator said, the goal is for HCD to 'move the needle towards actual impact', not to be the "eternal icing on the cake".

5.4 Approaches

Research findings revealed an emphasis on breadth, as opposed to depth, of knowledge about innovation approaches in the form of diverse sets of prescribed tools and human-centred design methods under the umbrella of

'design thinking'. This focus of self-taught neophyte practitioners on accumulating tools without developing a depth of understanding about the overall HCD process manifests in two main patterns: the tension between identifying as subject matter experts vs. process experts, and the rise of ethnograph-*ish* work based on varying perceptions of the role of ethnography in human-centred design.

5.4.1 Subject matter experts vs. process experts

Some organizations seeking to develop their own in-house design teams encounter a tension in defining their approach: Are the members of the design team intended to be subject matter experts or process experts? During a workshop with a client, one participant identified their new service design team as being a group of "subject matter experts" with valuable institutional knowledge and a driving force of empathy for customers, rather than "process experts" on design research methods and tools. This team displayed signs of what one executive design education participant referred to as a "mechanistic approach" to HCD. They had learned a prescribed set of tools through services available online from IDEO, frog, the d. School, and others, and they followed the steps as outlined without any further guidance. The key implication of this tension between subject matter and process experts is that the quality of the output may be impacted as a result of a lack of process expertise.

Figure 12 | Paradox of beginner's autonomy
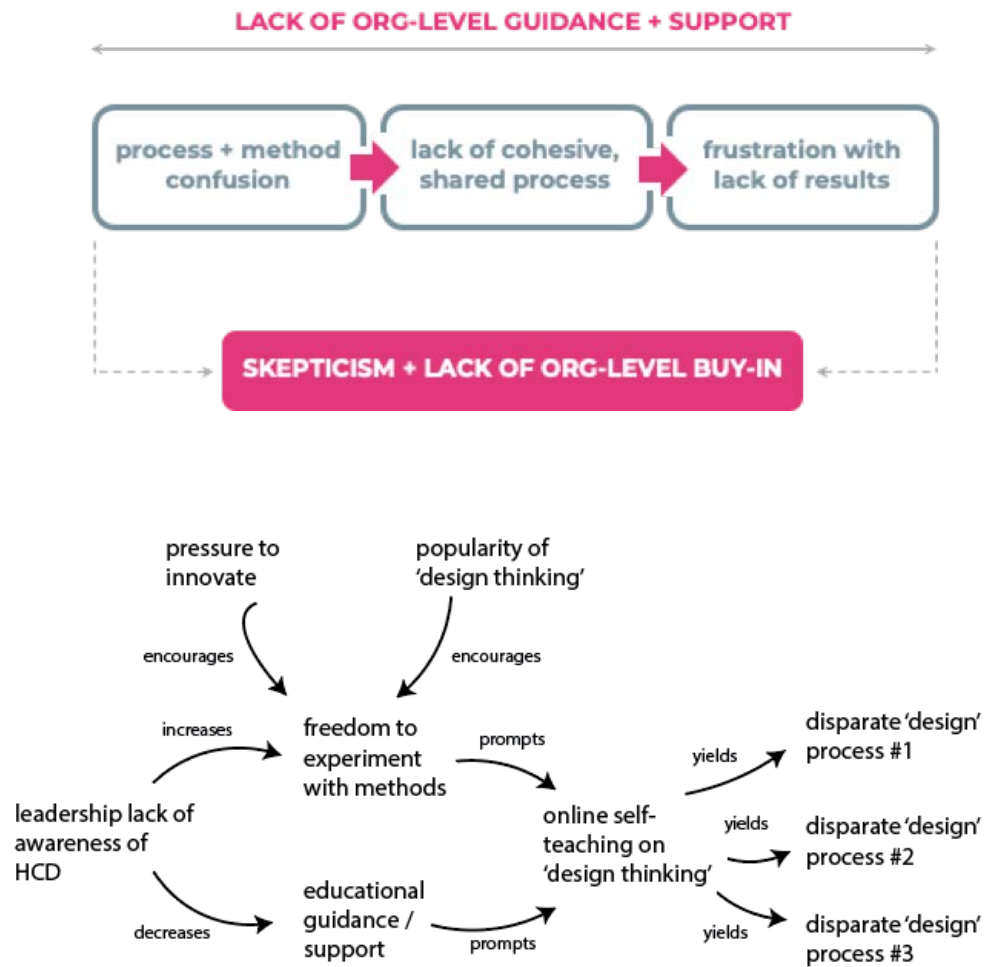
Paradox of beginner's autonomy.

Figure 12 depicts the effects on autonomous beginner 'design' efforts, resulting from a lack of organizational awareness, understanding, and educational guidance in HCD processes. In this figure, lack of awareness and educational guidance/support on the use of HCD methods prompts an increase in individuals teaching themselves the methods online, resulting in divergent processes due to a lack of oversight or guidance. This lack of cohesive and consistent process in using HCD methods/tools then yields confusion and frustration with a lack of results, which feeds back into the

reinforcing loop of skepticism of HCD processes and decreased time spent on problem-finding, negatively impacting innovation effectiveness.

This tension may create a significant barrier to successfully operationalizing

HCD within organizations when teams consisting of 'non-process experts' are

given the freedom to practice without educational guidance or support on the

methods/approaches/tools used (as depicted above in **Figure 12**).

5.4.2 Ethnograph-*ish*

> *"They knew enough to be dangerous, in a way, to ask for certain things without understanding, necessarily, the workload or the efforts behind them, or the implications to the research, or the appropriateness of one tool versus another."*
> *-- Executive design education staff participant*

In some instances, clients have heard and read enough about a particular tool,

method, or output to ask for it or start using it in their own work without an

adequate contextual understanding of its purpose or intended uses. A popular

example of this phenomenon is the use of "ethnographic" work in private and

public sector business settings, with varying parameters and definitions of

what it means to conduct that type of work and what purpose it serves. In one

example noted during field observation, a private sector client specifically

requested ethnographic research, interviewing multiple stakeholder groups

on an accelerated timeline. However, the design research parameters

continued to shift away from traditional ethnography due to time and

resource constraints, as well as the client's own comfort level with the research methodology, resulting in a loss of rich contextual detail to inform the design process and confusion about the fit of potential solutions. This example demonstrates the existence of what one client interviewee referred to as the many "versions of ethnography" available on projects. This work could also be described as 'ethnograph-*ish*', relating to the work of ethnography in theory and basic practice, but with continuous compromises in intentionality, scope, and scale due to external factors.

During the course of this research, a combination of interviews and observation revealed a level of frustration amongst design practitioners due to the base-level understanding of methods and approaches that had been reduced to buzzwords. One participant, a consultant from a client organization, voiced frustration with the way some people request to "sprinkle ethnography" into a project, thereby displaying a lack of understanding for the purpose of ethnographic work. Similarly, in an interview, a participating in-house ethnographer from a client organization noted his own internal struggles with academic process purity within a business environment. Eventually, he came to accept that although something may be called "ethnographic research" that 'isn't really ethnography', the purpose behind that work may be the same: talking to people out in the world to better understand and design products for them. This realization underscores the importance of understanding the purpose/ objective behind the work prior to

selecting the best methods or approaches to take in order to accomplish

those objectives.

5.5 Value

> *"Value is at the center of everything we're trying to do and a lot of companies in growth are trying to identify...it's such a big word, you don't know what it means or where it comes from."*
>> *-- Participant from major banking client organization*

As demonstrated in the quote above for an interview participant who works

from a major banking client, conversations about 'value' are pervasive within

the organization, and they typically shape strategic decisions, despite

definitions and measurements of value being potentially vague and confusing

at times. According to one expert interviewee, the difficulty in predicting and

measuring the "effectiveness of strategic projects" makes the job of

managing an organization's uncertainty about investing in HCD more difficult.

While "a lot of orgs actually value certainty and being able to have a clear end

goal in mind" (according to an expert strategic consultant interviewee), the

HCD process is not linear or necessarily predictable, and therefore creates a

more complicated business case for investing in capacity building.

Demonstrable results and revenue generation resulting from HCD projects can

also results in 'longer term returns', making it difficult to quantitatively

measure the benefits of a human-centred approach quickly. Findings revealed

that organizations' focus on tangible outputs and rapid return on investment

typically manifested as a significant barrier to understanding the full value of human-centred design and subsequently successfully embedding, operationalizing, and scaling HCD within the organization. This section explores two key tensions at play in understanding the value of HCD: (1) how the organization perceives or defines value, and (2) how the organization measures that value.

5.5.1 "Cost center" vs. strategic investment

> *"More time spent in research upfront actually benefits you in the long run, but there are business realities…lot of executives getting anxious…You're just a cost center until you have output from your research."*
>
> *-- Participant from major banking client*

In alignment with expert interviewees' consensus on the difficulty of quickly and adequately measuring the benefits or returns on investing in HCD, one interview participant from a client organization identified their organization's perception of the design research or user research function as an operational "cost center" until/unless it produced tangible outputs. While all participating client interviewees described the 'value' of 'human-centred design' or 'design thinking' (from their perspective) in terms of the value provided to customers or users through 'extremely useful' products and services, they also acknowledged the simultaneous pressure to 'deliver' something tangible and measurable to appease managers, shareholders, and other key stakeholders. This prioritization of the value of HCD appears to coincide with tensions (under the cognitive component of Purpose) between outcomes-focused and

purpose-driven design processes. When an organization focuses on the tangible and immediate revenue generation outputs of a HCD project, that focus effectively draws resources away from investing in the process itself and building necessary core competencies to ultimately yield stronger sustainable innovations in the long term. Thus, as exemplified by the participating interviewees' responses, large, mature, semi-static organizations' perceptions of the value of HCD often exist along a spectrum, with the view of a HCD function as somewhere between the negative 'cost center' and positive 'strategic investment', and the business priorities driving the execution of the HCD process, ranging between 'outcomes-focused' and 'purpose-driven' (see **Figure 13**).

Figure 13 | 2x2: Org perspectives on HCD's value + priorities (purpose)
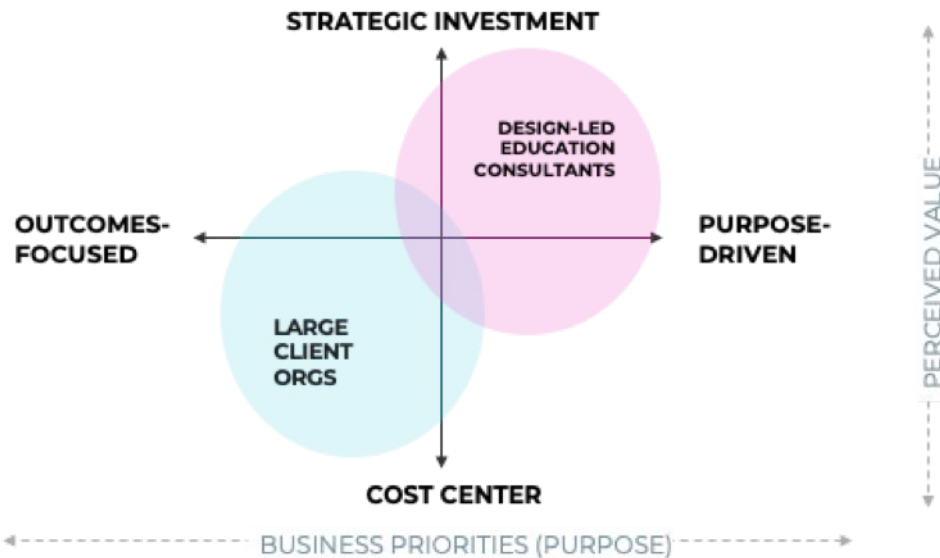
2x2: Org perspectives on HCD's value + priorities (purpose).

Figure 13 depicts a 2x2 matrix comparing an organization's business priorities directly impacting the approach of a HCD process (whether it is outcomes-focused or purpose-driven) and the organization's perceived value of HCD (ranging from the negative, 'cost center', to the positive, 'strategic investment', eventually yielding profitable returns and driving innovation.

As **Figure 13** shows, organizations typically make choices based on 'business realities' and cognitive components (as identified in previous sections of this report), which determine how HCD is understood, embedded, and operationalized. These choices exist on a 2x2 matrix showing an institutional or leadership level perspective (depicted above) on the business priorities

driving the tactical execution of HCD processes within the organization, ranging from short term to long term views on priority/ purpose and the perceived value of HCD, ranging from negative to positive. While different organizations may exist at any point along either axis, most participant responses in this study indicated that their organization or their client organizations typically leaned towards the bottom left quadrant, viewing HCD as a 'cost center' (with a quantitatively negative measure of value provided in the absence of revenue generation and presence of resources spent) and prioritizing a focus on short-term, tangible outcomes over purpose-driven HCD processes with potential for longer-term returns. Interestingly, from their position near the bottom left quadrant of the 2x2 in **Figure 13**, these client organizations (as described by interview participants) still seek the services of the participating executive design education consultancy, looking to learn about 'design thinking' approaches. Essentially, this bottom left quadrant view of HCD's value and purpose appears to be at odds with the executive design education consultancy's view of human-centred design work as a strategic investment toward improving 'innovation effectiveness'. Yet, these client organizations express value by investing in HCD (in the form of paid executive design education engagements). While this phenomenon (combined with the popularity of design thinking in managerial discourses) appears to be a signal of change, as large, mature, semi-static organizations begin to dip their toes into developing in-house HCD capabilities to drive innovation, it also exemplifies a key tension between quantitative and qualitative measures of value.

The tension that emerges here is underscored by the overwhelming consensus from participating executive design education providers/facilitators that a mindset shift is required within organizations seeking to enact real, transformational change. This mindset shift necessitates adopting a "long horizon view", wherein capacity building in areas of HCD and qualitative user research is a key investment toward the kind of future outputs organizations want. This tension highlights the opposition between core values within an organization: "attitudinal willingness" to change (as described by a participating client interviewee), leadership guidance/support, and tangible resource allocation. Underlying these tensions, however, are the organization's perceptions of value, both in relation to HCD (and what it can provide for an organization) and in general (what constitutes value in quantitative and/or qualitative terms). Thus, a large, mature, semi-static organization seeking to operationalize HCD would likely need to examine how it both perceives and measures value, and how those choices will affect the scope, outcomes, and impact of implementing HCD practices within the organization.

5.5.2 Measuring quantitative vs. qualitative value

"If you're doing that foresight work, say 5-10 years out, you're not going to see immediate benefits. It's more of a longer haul thing, where, a couple years down the road, you might place a variety of bets in different kinds of paths toward the future... and you'll be better for it because you're preparing, but that kind of stuff is a bit hard to measure."

-- Expert strategic consultant interviewee

In addition to tensions between perceptions of value within an organization, participants cited challenges in measuring value as an organizational barrier to the complexity of adopting human-centred design approaches. This tension around metrics and measurements of value appears to stem from dichotomous views of measuring value: quantitative vs. qualitative, with an emphasis on quantitative value due to its objective measurement. Most participants from client organizations spoke about the value of gathering qualitative data from customers to directly inform their offerings and design 'quality solutions', thereby getting to the "meat of true meaningful value" (as described by one of two participants from a major banking client). However, in the same breath, participants often then verbally acknowledged the 'business realities' of 'consumer growth', 'value for shareholders', and doing the 'right thing for the quarterly report, but not for people'. Here, participants demonstrate a clear tension between 'objective', quantitative, numbers-driven measures of value versus the qualitative measures of value in the form of customer and employee satisfaction, organizational innovation capacity, and organizational core competencies and professional development. This emphasis on quantitative measurements of value for HCD appears to negatively impact organizations' "attitudinal willingness" (according to an expert interviewee from a major bank) to invest resources in building HCD capabilities. With a line-item view on Design and Research & Development, budgets and funding appear to correspond directly to calculations on ROI, or return on investment. However, if an organization were to shift its mindset on how value is measured, with respect to human-centred design, resources may

be allocated more appropriately based on the projected qualitative *and* quantitative value-add of building HCD as a core competence. For example, no one ever asks *'What's the ROI on having a finance department?'* Perhaps with a deeper understanding of the long-term benefits of investing in developing a human-centred approach to innovation, these large, mature, semi-static organizations can shift their mindset and resource allocation towards a strategic investment in design as a core competence.

5.6 Summary of findings

This section outlines the key themes, tensions, and focus areas identified through analysis and synthesis of field observation and interview data. These findings and main points of analytical insight are summarized in the bullet points below:

- Four major factors emerged as organizational barriers to complexity, negatively impacting the willingness of large, mature, semi-static organizations to invest time and resources in developing human-centred design capabilities. These barriers are: (1) lack of awareness of HCD, (2) "proof of concept purgatory" or the use of design methods to validate pre-existing hypotheses, (3) buzzwords and unclear terminology, and (4) resource and time constraints.

- The business impacts of these organizational barriers to complexity yielded the development of four focus areas or 'cognitive components' of enacting HCD, to assist organizations in understanding, embedding, and operationalizing HCD. These cognitive components are: (1) perspectives and perceptions, (2) purpose, (3) approaches, and (4) value.

- Perspectives and definitions of what innovation and human-centred design are, and what role they play within an organization have significant impact on employees' understanding of HCD, its strategic uses, and an organization's willingness to invest resources in it.

- **Figure 13 | 2x2: Org perspectives on HCD's value and priorities (purpose)** demonstrates the tension between an organization's view of the purpose of HCD, ranging from outcomes-focused to purpose-driven, and perceptions of its value, ranging from negative 'cost center' to positive 'strategic investment. This 2x2 matrix combines tensions from the cognitive components of Purpose and Value, showing how large, mature, semi-static organizations make decisions which impact the execution of HCD practices based on 'business realities' or priorities driven by budget or resource constraints and expectations for tangible outputs and revenue generation, thereby impacting the effectiveness of their design and innovation efforts.

- Priorities driven by 'business realities' directly impact the approaches enacted within the organization, as employees tailor their approach to the goal of tangible outputs and constraints of time and resources. This focus on outcomes rather than process often negatively impacts the outputs and therefore reinforces skepticism about the effectiveness of HCD.

These findings demonstrate the importance of large, mature, semi-static organizations taking the reflexive step of examining their own processes, constructed meanings, motivations, and behaviors by exploring the four cognitive components of enacting HCD -- and/or executive design education consultants incorporating deeper assessment of these cognitive components for their client organizations into the design of their curricula. Through participant-observation and interviews with experts, a participating executive design education consultancy, and four of its clients (prospective, current, and past), this research revealed a tendency for large, mature, semi-static organizations to selectively employ 'human-centred design' or 'design thinking' methods and tools in service to specific tangible and quantitatively measurable outputs. However, this limited understanding and fragmented approach to human-centred design appears to negatively impact these organizations' "innovation effectiveness" (term attributed to a senior executive design education participant), as innovation is not only defined as its outcomes, but as process as well (Crossan & Apaydin, 2010). Thus, a deeper and more holistic understanding of HCD processes is necessary in

order to build design as a core competency and drive sustainable innovation within an organization over time.

6.0 Insights + implications for action

This section applies the Integral Futures framework (Hines, 2004) to further analyze and synthesize research findings across multiple stakeholder perspectives. This framework was selected for its multi-perspectival nature, in order to organize and expand on the multiple stakeholder perspectives observed during the course of this research, including those of design education practitioners, individual employees, reflections on organizational cultural and leadership mindsets and behaviors, and consumer or user behaviors. It was important to explore these perspectives in order to illuminate the strategic implications of investing in HCD beyond the common considerations reflected in the identified organizational barriers to complexity. The insights yielded from the Integral Futures mapping provide implications for action and recommendations for both large, mature, semi-static organizations and executive design education or training consultants. These insights focus primarily on identifying and addressing existing disconnects between stakeholder groups, as the divergent perspectives and perceptions of the value, purpose, and specific tactical approaches of HCD appear to significantly impact organizations' ability to embed, operationalize, and scale HCD in a meaningful way.

6.1 Mapping multi-stakeholder perspectives

6.1.1 Integral Futures framework for investing in HCD

Using the Integral Futures framework (Hines, 2004), **Figure 14** maps out significant findings and observations from the research to capture multiple stakeholder perspectives on the value of investing in human-centred design. This map includes the individual, interior perspective of the individual employees of large organizations; the individual, exterior perspective of the individual customers of those organizations; the collective, interior perspective of the large organization itself; and the collective, exterior perspective of society at large. The insights and implications captured in this map will be further detailed in bullet points located below **Figure 14**. The insights displayed in **Figure 14** were derived from a combination of expert interviews, client interviews, as well as interviews and observation conducted with the case study organization, and information collected on industry patterns and consumer behaviors during an environmental scan.

Figure 14 | Integral Futures framework for investing in HCD

INDIVIDUAL

INTENTIONAL: Individual employees within large organizations, internal consciousness

- Alleviates tensions between individual employees' motivation to provide service that helps people and company's motivations to generate profit, reduce costs, and maintain operations
- Reinforces values of empathy, integrity, service to others, customer advocacy
- Engages employees to be passionate about work with meaning/purpose
- Likely perceived by employees as positive change to align personal values with professional values/practices
- Fits with individual goals to talk to people and solve customer pains
- Significant impact on employees' identities tied to their careers and sense of accomplishment and fulfillment

BEHAVIORAL: Individual customers'/consumers' behaviors + interactions with large organizations

- May encourage consumers to use this organization's co-designed products/services
- Customers may shift away from established businesses perceived as being inflexible, unadaptable, or set in their ways (dated)
- Emphasizes experiential learning and development
- Expansion of experience economy - consumers favoring tailored experiences to meet emotional/social needs
- Results measured through sales, user engagement and satisfaction, brand awareness and public perception

Org investment in human centred design

INTERIOR

EXTERIOR

- Shifts mindset from focus on tangible outputs to purpose-driven process
- Reduces silo effects through incorporating more horizontal, collaborative structures within the organization
- Encourages leadership support for mindset/procedural shift, infusing resources into learning + development/research
- Confronts hidden cultural views of humans as rational actors and aversion to complexity; shift to understand nuance and human factors
- Encourages creation of larger community for knowledge sharing and guidance/support
- May require reprioritization of org values
- Reframes view of user research from 'cost center' to intentional process driving value production

- Increasing advocacy for users and decreasing bureaucratic barriers to service
- Prioritizes environmental concerns and sustainability
- Increasing crowd-sourcing of information and democratizing (co-)design process
- Potential for radiating effect, impacting adjacent social systems, interrupting established norms resistant to complexity
- Impacts measured through economic growth in areas where businesses invest in HCD, and measurement of enrolment rates in HCD-related post-secondary and executive education programs

CULTURAL: Collective internal organizational culture(s) + worldviews

SOCIAL: Collective civil society + external drivers of change within society

COLLECTIVE

Integral Futures framework (Hines, 2004) for investing in HCD.

Figure 14 features a map using the *Integral Futures framework (Hines, 2004)* to identify multiple stakeholders' perspectives on the topic of organizational investment in human-centred design. This figure appears in expanded form over the next two pages.

INDIVIDUAL

INTENTIONAL: Individual employees within large organizations, internal
consciousness

- Alleviates tensions between individual employees' motivation to provide
  service that helps people and company's motivations to generate profit,
  reduce costs, and maintain operations
- Reinforces values of empathy, integrity, service to others, customer
  advocacy
- Engages employees to be passionate about work with meaning/purpose
- Likely perceived by employees as positive change to align personal
  values with professional values/practices
- Fits with individual goals to talk to people and solve customer pains
- Significant impact on employees' identities tied to their careers and
  sense of accomplishment and fulfillment

INTERIOR

- Shifts mindset from focus on tangible
  outputs to purpose-driven process
- Reduces silo effects through incorporating more horizontal,
  collaborative structures within the organization
- Encourages leadership support for mindset/ procedural shift, infusing
  resources into learning + development/research
- Confronts hidden cultural views of humans as rational actors and
  aversion to complexity; shift to understand nuance and human factors
- Encourages creation of larger community for knowledge sharing and
  guidance/support
- May require reprioritization of org values
- Reframes view of user research from 'cost center' to intentional process
  driving value production

CULTURAL: Collective internal organizational culture(s) + worldviews

COLLECTIVE

INDIVIDUAL

BEHAVIORAL: Individual customers'/consumers' behaviors + interactions with large organizations

- May encourage consumers to use this organization's co-designed products/ services
- Customers may shift away from established businesses perceived as being inflexible, unadaptable, or set in their ways (dated)
- Emphasizes experiential learning and development
- Expansion of experience economy - consumers favoring tailored experiences to meet emotional/social needs
- Results measured through sales, user engagement and satisfaction, brand awareness and public perception

EXTERIOR

- Increasing advocacy for users and decreasing bureaucratic barriers to service
- Prioritizes environmental concerns and sustainability
- Increasing crowd-sourcing of information and democratizing (co-)design process
- Potential for radiating effect, impacting adjacent social systems, interrupting established norms resistant to complexity
- Impacts measured through economic growth in areas where businesses invest in HCD, and measurement of enrolment rates in HCD-related post-secondary and executive education programs

SOCIAL: Collective civil society + external drivers of change within society

COLLECTIVE

6.1.2 Implications for action

The multiple stakeholders' perspectives outlined in **Figure 14** depict a more complete picture of the systems-level nuances of seeking to embed, operationalize, and scale human-centred design within large organizations. For further detailed insights in these perspectives, a complete bulleted list can be found in **Appendix B**. As further explained below in **Figure 15**, the Integral Futures framework illuminated a key disconnect between perspectives on the value of investing in human-centred design of individual employees within large organizations and the collective organizational cultures and operations of leadership.

Figure 15 | Multi-perspectival view of employee-leadership disconnect

Multi-perspective view demonstrating results of Integral Futures framework analysis.

Figure 15 emphasizes the disconnect between employees and leadership with respect to perspectives on the value of HCD. This disconnect was uncovered through the use of the Integral Futures framework to analyze and synthesize research findings captured from multiple perspectives.

Key insights and implications that have emerged from the map in **Figure 14** and further depicted in **Figure 15** include:

- Individual employees who are somewhat familiar with HCD display a level of optimism with respect to its potential for improving products/services

- Individual employees appear to have a high-level understanding of how the idea of HCD aligns with their own values and goals, but lack clarity on how to operationalize those ideas using methods/tools

- Organizations may benefit from investing in HCD in the form of customer feedback, improved products/services, and increased employee engagement as capacity building meets individuals' needs

- Employees exhibit understanding of an organization's business needs in terms of driving profit and pleasing stakeholders, but do not fully understand the disconnect between HCD's potential and leadership's unwillingness to invest in building core competencies

- Investment in HCD would likely require significant cultural shifts within the organization itself, changing from quantitative-based decision making to more qualitative, experimental, and emergent ways to find usefulness

- Aversion to risk, fear of change, and lack of commitment to investing in embedding HCD appears to stem from lack of understanding of stakeholders' perspectives on the issue and the purpose of HCD

- Significant need identified: need for organizational leadership to understand actual return on investment of HCD, taking a long horizon view (which includes long-term, mid-term, and short-term goals)

- Apparent lack of clarity from different stakeholders on the level of accountability in enacting the mindset and cultural shifts needed to successfully operationalize HCD to scale

- The 'nervousness of the system' (Taussig, 1992) resists change that challenges the foundational structure of the system itself; thus, since organizational culture appears to require multiple changes and shifts to successfully operationalize HCD, this will likely require significant effort and investment to create sustainable organization change

6.2 Insights + recommendations

In conclusion, the findings of this research reveal an overall pattern in organizations' attempts to enact what they refer to as 'design thinking' or 'human/user-centred design': a preference for breadth over depth. Data collected through interviews and observation support the assertion that large organizations' characteristic aversion to risk and resistance to complexity, coupled with the rising popularity of 'design thinking' (and related buzzwords) in business discourses, results in a kind of 'shotgun' approach to innovation

that yields inadequate results. Where some organizations may tend to apply a breadth of new 'designerly' tools or methods to a problem for the purpose of validation or "proof of concept", the depth of exploration into users' experiences and problems is often insufficient. This fixation on outputs at the expense of integrity of process and purpose-driven innovation directly impacts the 'innovation effectiveness' or sustainability of solutions. The main recommendation resulting from this research is to facilitate a strategic mindset shift toward mastery of the HCD process through capacity building, which will, over time, produce sustainable, transformational innovation.

The core cognitive components of enacting HCD in organizations, as represented below in **Figure 16** work together as functional building blocks of the necessary mindset shift previously discussed. In order to shift the organization's focus toward mastering the HCD process to drive innovation, leadership support will be required in understanding and building alignment on these core cognitive components. While this framework of core cognitive components primarily targets large, mature, semi-static organizations seeking to embed and operationalize HCD, it can also be used for self-assessment by other organizations beyond the selection criteria used in this research. Furthermore, this cognitive framework can also be used by executive design education or training consultants to assess their client organizations based on the four focus areas and their impact on the success of embedding and operationalizing HCD within organizations.

6.2.1 For organizations

For large, mature, semi-static organizations, the cognitive components framework is intended to be used as a self-assessment tool, encouraging introspection and reflexive learning for organizations seeking to enact human-centred design. Each cognitive component represents a focus area or aspect of organizational culture and behavioral patterns that can be explored. Additionally, each component or focus area is meant to address a particular organizational barrier to complexity, and includes acknowledgements of inherent thematic and practical tensions to be examined and addressed. In order to build design as a core competence within an organization, steps must be taken to understand the current state of organizational cultures and behaviors, as well as to build shared understanding and alignment on definitions, goals, and the purpose of certain processes. Below, **Table 6** outlines the strategic implications and recommendations for organizations based on the cognitive component, the organizational barrier it addresses, and the recommended courses of action associated with the cognitive component or focus area.

Table 6 | Strategic implications + recommendations for orgs

Cognitive component	Barrier addressed	Recommendations
Perspectives + perceptions	Lack of awareness of HCD	Invest in immersive, experiential education

		opportunities to clarify what HCD is and how it can be used in context
		Re-evaluate organizational cultural practices and mindsets, identifying those that require shifting/changing
		Build a strong community (within the organization and in partnership with external practitioners) for guidance and support and encourage regular interactions with practitioners at varying degrees of design experience/expertise
Purpose	"Proof of concept purgatory"	Enact a long-term view of processes and projects to identify what purpose they are intended to serve for the organization, the department, individuals, consumers, stakeholders, etc.
		Spend time building alignment with stakeholders and practitioners to outline clear objectives and sub-objectives prior to selecting methods and tools
		Actively engage employees in establishing and

		iterating on these objectives over time
Approaches	Buzzwords + unclear terminology	Use established objectives and understanding of HCD process to select the appropriate methods and tools

Validate whether sub-objectives can be achieved through the use of those methods/tools

Invest in building capabilities in areas related to approaches that align with objectives |
| Value | Resource + time constraints | Adjust internal processes for defining value, assessing return on investment, and determining resource allocation - this may require new definitions of value and prioritization in weighing cost vs. benefit

Develop new budgeting practices to account for the effort, resources, and time required to complete the human-centred design work and learning/development often taken for granted |

Strategic implications + recommendations for orgs.

Table 6 outlines the recommendations for organizations which stem from the findings of this research. This table shows the corresponding cognitive component and organizational barrier to complexity being addressed through the recommendations.

6.2.2 For executive design education or training consultants

For executive design education or training consultants, the cognitive components framework is intended to be used as a client assessment tool, to better understand client organizations and tailor the design of educational engagements and curricula accordingly. Each cognitive component represents a focus area of a client organization's culture and behavior that can be explored in service to designing educational materials for maximum effectiveness and long-term success post-educational engagement. Below, **Table 7** outlines the strategic implications and recommendations for training consultants, identifying the cognitive component or focus area, the organizational barrier it seeks to address, and the associated recommendations for actions to be taken by executive design education and/or training consultants.

Table 7 | Strategic implications + recommendations for training consultants

Cognitive component	Barrier addressed	Recommendations
Perspectives + perceptions	Lack of awareness of HCD	Incorporate continuous reflection practices

		during the education process to solidify learnings and investigate questions that arise in practice Conduct assessments of client organizations to understand key cultural practices and mindsets (using the cognitive components framework) and identify those that require shifting/changing
Purpose	"Proof of concept purgatory"	Build profiles of client organizations using the 2x2 matrix of business priorities and perceptions of value **(Figure 13)** Emphasize in education materials: the long-term view of HCD processes to identify how objective-setting and purpose-driven approaches impact "innovation effectiveness" Continue to spend time building alignment with stakeholders and practitioners to outline clear objectives and sub-objectives prior to selecting methods and tools Conduct regular audits of internal processes for designing and implementing

		executive education offerings to ensure effectiveness and consistency (where appropriate)
Approaches	Buzzwords + unclear terminology	Tailor experiential education engagements to client profiles (to be built by assessing client organizations using the cognitive components framework as focus areas for diagnostic assessment) Build a strong community for guidance and support and encourage regular interactions with practitioners at varying degrees of design experience/expertise Develop and implement consistent follow-up procedures to provide support for employees attempting to understand, embed, and operationalize HCD within their organization
Value	Resource + time constraints	Build profiles of client organizations using the 2x2 matrix of business priorities and perceptions of value **(Figure 13)** Determine your own organization's position on the 2x2 matrix, and

		assess which executive design education or training/consulting engagements are categorized as outcomes-focused revenue generation versus which engagements necessitate greater strategic investment upfront to yield qualitative value in the form of strategic partnerships, learning outcomes, etc.

Strategic implications + recommendations for training consultants.

Table 7 outlines the recommendations for training consultants which stem from the findings of this research. This table shows the corresponding cognitive component and organizational barrier to complexity being addressed through the recommendations.

Through building alignment on the semiotics of design -- understanding what

HCD is, who uses it, and what people think about it, organizational leaders can

address the stumbling block of divergent perceptions of HCD within the

organization that often causes confusion. (And executive design

education/training consultants can design and deliver more effective

educational programs on HCD).

Figure 16 | Cognitive components mental model

PERSPECTIVES
+ PERCEPTIONS

PURPOSE

VALUE

APPROACHES

Cognitive components mental model.

Figure 16 shows the cognitive components mental model, in which each cognitive component functions as a building block for organizations to more deeply investigate and assess current practices, cultures, and behaviors in order to foster deeper understanding of the HCD process to enable sustainable, effective innovation.

Developing a shared understanding of the definitions and uses of HCD will serve as a foundation, upon which organizational leaders can layer a deeper appreciation for the purpose and objectives of design projects. This holistic understanding of human-centred design, its overall purpose, and the objectives to be accomplished will then facilitate the selection of the appropriate approach(es), including the best methods/tools to serve the established purpose. Finally, the understanding of each of these layered cognitive components, or building blocks to shift toward an innovation

mindset, will provide a more complete picture of the benefits of HCD in order to adequately assess potential returns on investment. Thus, by facilitating a more holistic understanding of the HCD process and its value through experiential education and reflexive learning, this building block model of cognitive components seeks to address organizations' common barriers to complexity (with particular attention to the limitations on time and resources allocated toward HCD resulting from a lack of clarity around return on investment).

7.0 Conclusion

In conclusion, this research project sought to understand how we might identify opportunities for large, mature, semi-static organizations to invest in deep understanding (characterized as human-centred design processes with an emphasis on problem finding and framing) toward sustainable innovation. In order to do so, this research investigated different perceptions of human-centred design (HCD) within large organizations through conducting interviews with experts as well as employees of both an executive design education company and employees of some of that company's large client organizations. This investigation began with looking to understand people's relationships with the concept of 'design thinking', as that buzzword has gained significant popularity in business discourses over the last several years (Johansson-Skoldberg, Woodilla & Cetinkaya, 2013). Through dissecting the perceived value of what participants referred to (at times, interchangeably) as 'design thinking', 'user-centred design', or 'human-centred design', I was able to probe deeper into organizational barriers to complexity.

7.1 Strategic approach + insights summary

The strategic decision to partner with an executive design education organization to conduct field observation and ethnographic interviews offered a highly relevant case study for analysis in this research. Facilitating

executive education programs in design (with curriculum related directly to 'design thinking'), this participant case study organization offered a unique multi-perspectival view, representing (1) a HCD 'practitioner/ facilitator/ educator' mindset, designing and leading executive design education offerings, (2) the business perspective as those practitioners actively sell those offerings, (3) the client organizations' perspective as employees or leaders seeking out those offerings in order to learn tools and approaches to be applied within their own organizational context, and (4) a design educator view through immersion and autoethnography. Through understanding multiple perspectives on the value of embedding, operationalizing, and scaling human-centred design in large organizations, I was able to approach my research question in a more holistic way.

After selecting the participating organization for observation, this research began with the assumption that client organizations had expressed value in 'design thinking' through paid engagements with the executive design education company (specifically, executive education offerings, workshops, and ad hoc consulting projects). My research sought to tease apart why large organizations appeared to be willing and able to invest in short-term engagements, introducing design thinking tools and approaches, but were simultaneously resistant to enacting larger scale mindset and procedural shifts to operationalize purpose-driven human-centred design work.

By conducting expert interviews with individuals employed across a variety of industries, including finance, healthcare, research, and consulting, I was able to supplement the environment scan conducted through reviewing literature on the topics of design thinking, human-centred design, and applied social science. The expert interviews revealed common patterns of organizational barriers to complexity that continued to bear out across all participant interviews and participant-observation with the participating executive design education company. These organizational barriers to complexity are: (1) lack of awareness of HCD, (2) "proof of concept purgatory", or the reinforcing cycle of seeking to validate pre-existing hypotheses rather than spend time problem finding and framing, (3) buzzwords and unclear terminology, and (4) resource and time constraints.

Following a thematic coding analysis of the data gathered over the course of interviewing participants and observing the executive design education company, further patterns and common themes began to emerge. These themes could be categorized as knowledge gaps or opportunity areas relating to human-centred design within organizations. These knowledge gaps/opportunity areas were distilled down to four cognitive components that appeared to address the four core organizational barriers to complexity.

7.2 Futures uses + next steps

The 'cognitive components of enacting HCD in organizations' framework is the main output of this research. This cognitive framework is intended to be used by both large, mature, semi-static organizations (or any organization seeking to employ reflexive assessment practices to drive development) and executive design education or training consultants. In its current form, this framework can be used by organizations to conduct reflexive audits on current practices, behavioral patterns, and cultures which may impact the understanding, embedding, and operationalizing of HCD. Using the cognitive components as focus areas for targeted exploration and self-assessment, organizations could potentially gather deeper understanding about how and why current efforts to use HCD to drive innovation may not be working effectively or meeting expectations. This deeper understanding would then assist organizational leaders (or whoever conducts this self-assessment using the cognitive components framework) in determining the proper course of action.

For executive design education or training consultants, the cognitive components framework can be used to conduct assessments of client organizations for the purposes of designing tailored educational engagements and/or materials to encourage 'innovation effectiveness'. The long-term effectiveness of the training provided on 'design thinking' or 'human-centred design' is a common concern amongst the participating executive design education consultants. By gathering more information about

client organizations upfront, training consultants can tailor educational materials to maximize learning outcomes and further support the successful implementation of HCD practices within the organization.

Future uses of this research may include the following:

- The cognitive component framework may be used as the basis of a diagnostic assessment tool (used for both self-assessments by organizations and client assessments for training consultants).

- Other stakeholders beyond the scope of this study may have interest in the cognitive components framework and other insights outlined in this research, as it becomes important for them to help build true growth and resilience.

- Assessments of organizations' cognitive components of enacting HCD may play a role in future government and public funding sources, as well as investors - as future factors in determining fitness for funding may include the benchmarking of leadership behaviors and organizational 'innovation effectiveness' as assessed through the cognitive components framework (or future diagnostic assessment/framework based on those cognitive components).

7.3 Future research

As previously mentioned, the scope and scale of this research study is limited by a number of factors, including time, available resources, the selection criteria for research participants, target audiences, and the nature of the participating organization used as a case study. Therefore, further research will likely be needed in the future to expand on the findings outlined in the research. Recommendations for future research include:

- The development of a diagnostic framework based on the cognitive components framework, complete with specific questions for (self-) assessment of an organization's capacity for HCD competence building

- Further research on large, mature, semi-static organizations, with a researcher embedded within the organization to observe cultures and behaviors related to the use of HCD - this research should be conducted over a longer period of time, including approximate 3-6 months or more of field observation

- Comparative research on multiple executive design education or training consultancies to establish patterns of behavior, definitions of 'human-centred design' and 'design thinking', and common practices for experiential education in the area of design geared toward

managerial audiences

- An exploration into the use of HCD in large organizations seeking to invest in transformational innovation capabilities, and any associated barriers or cognitive components

- Investigation of the desirability, feasibility, and viability of establishing an in-house, autoethnographic department function within organizations to conduct self-assessments or audits of organizational culture and behaviors based on the cognitive components

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Appendix A: Glossary of Key Terms

Applied social science	the use of methods or principles relating to the social sciences (e.g. anthropology, sociology, etc.) in an applied context outside academia, such as a business setting
Core competency	a 'combination of harmonized resources and skills' that work to distinguish a firm from its competitors in the market (Prahalad & Hamel, 2006)
Design	a process by which one 'turns existing situations into preferred ones' (Simon, 1969)
Design education	education relating to the principles of design and or creation of artefacts
Design research	field of research focused on the 'development, articulation, and communication of design' (Cross, 1999)
Design thinking	an approach or way of thinking wherein a practitioner, or designer, typically uses abductive reasoning to analyze and synthesize information, and invent new patterns or concepts to address problems (Dunne & Martin, 2006; Kolko, 2010; Owen, 2007)
Empathy	a principle of design, specifically referring to understanding users'/ peoples' experiences, needs, and aspirations within the context of their own lives
Ethnography (derived from anthropology)	the study and description of practices, customs, and behaviors of individuals and cultures
Experiential learning	educational model based on the use

	of real-life experience(s) to develop practical knowledge on a topic
Exploratory inquiry	open-ended research or investigation into a topic without prescriptive guidance from seeking to prove/disprove a hypothesis
human-centred design	a series of principles and methods with the aim of supporting the design of products and services meant to be useful and meaningful for the people using them (van der Bijl-Brouwer & Dorst, 2017)
Human factors	the layered relationships between people and technology, objects, strategies services, or other designed products; these factors include: political, organizational, team, psychological, and physical (Vicente, 2013)
Integrative thinking	thinking in the way that a designer would, but within the context of a business, integrating different methods and approaches to solving a problem (not either-or, but and) (Dunne & Martin, 2006)
Iterative	a principle of design, wherein the process is repeated in cycles over time as revisions are made and new information or context is learned
Learning organization	an organization with an emphasis on 'creating, acquiring, and transferring knowledge', resulting in greater flexibility to adapt to change (Garvin, Edmondson, & Gino, 2008)
Problem finding	the generative phase of a design thinking approach to solving a problem where a designer investigates the context of a topic area with the goal of identifying a problem for the people/ users/

	stakeholders involved
Problem framing	the evaluative phase of a design thinking approach to solving a problem where a designer seeks to more deeply understand the problem within the context of the lives of the people/ users/ stakeholders involved
Solutioning	the convergent phase of a design thinking approach to solving a problem where a designer synthesizes divergent datasets, creates new patterns, and identifies and frames a solution to the problem for the people/ users/ stakeholders involved
User centred design	an iterative design process focused on the needs of users of a particular product/ service during each phase of the design process (Interaction Design Foundation)

Appendix B: Integral Futures - Bulleted Lists by Quadrant

TOPIC: Organizational Investment in human-centred Design (+ mindset of deep understanding)

Four Quadrants

1. INTENTIONAL [individual employees within large orgs, interior: individual consciousness]

"How do I feel about this?"

How does this influence people's intentions or motivations?

- Investment in deep understanding/HCD mindset alleviates tensions between an employee's intention to build an 'extremely useful' product *for* a person and an organizational structure built around metrics for fast, tangible outputs

- This resolves frustration which stems from the antithetical relationship between an employee's motivation to provide service that helps people and a company's profit-driven motivations which center on quick solutions for max shareholder value

How does this influence people's values?

- Investment of deeper understanding and human-centred design reinforces people's values of empathy and integrity

- Individual employees driven by a core value of service to others are interested in organizational processes that reduce barriers and facilitate stronger service

- Individual employees value meaning, purpose, and significance in their work, exemplified in their passion for their work and customer service mandates

- human-centred design represents opportunity space for individuals to make a significant difference through their work and help people in meaningful ways

- Investment in deep understanding of people's needs reinforces individuals' guiding principles of customer advocacy and resolving pains

How is the individual likely to perceive this?

- The employee is likely to perceive this as a chance to do meaningful work and take pride in their work

- The employee is likely to perceive this as a positive change in the right direction for their organization, and potentially as a reason to stay at this organization

- The employee is likely to perceive this as a signal of organizational values aligning more closely with their personal values (in practice, rather than discourse-only)

- The employee is likely to perceive this as a welcome assist in their team transition toward human-centred design work

- The employee is likely to perceive this as much-needed organizational and leadership support for work they have been advocating for/trying to implement at ground level for months/years

How does it fit with individual goals?

- Fits with individual goals to drive other employees to leave the office and talk to customers

- Fits with individual goals to meet metrics by solving users' pain points

- Fits with individual team leaders' goals to get their team onboard with prioritizing a human-centred design mindset

- Fits with individual goals to make a product that 'actually makes users' lives better'

- Fits with individual goals to have a job that means something; where they can make a difference in the world

How will this influence people's identity or sense of self?

- People working long hours have devoted themselves to their careers; thus, their jobs have significant bearing on their identity/sense of self

- People want to feel accomplished in their work, and see the positive impacts of that work on the people they serve - investment in HCD reduces tensions between how people view themselves and how profit-driven or output-focused org processes may work in opposition to employee's own values/goals/motivations/identities

- Investment in HCD reinforces individuals' values of service, empathy, integrity, and purpose and therefore solidifies an employee's sense of self and fulfilment through their work

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2. BEHAVIORAL [individual customers/consumers, exterior: organizational behavior/interactions]

"How will I behave differently?"

How might this influence or change individual behavior?

- Organizational prioritization of HCD and co-design with users may influence users' consumer behaviors - they may be encouraged to use this org's products/services

- Individual customers may begin to seek out more orgs/brands that include them in the design process or design products/services specifically for them

- Customers may shift away from established orgs/brands that they perceive as being inflexible, unadaptable, or set in their entrenched/dated ways

How does this influence individual development or learning?

- Emphasizes experiential learning and development for individuals

How does this affect individuals' interactions with the external world?

- Expansion of experience economy - individuals will increasingly interact with external world as consumers of experiences tailored to meet their wants/needs

- Individual customers may favor orgs that help them accomplish social/emotional jobs

How might we measure the impacts on behavior?

- Measure HCD product sales

- Measure user engagement and satisfaction with HCD products/services

- Measure organization/brand awareness amongst current and prospective users; measure perceptions of the brand - When do people buy from you? How often? Why?

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3. CULTURAL [collective organizational culture(s), interior: worldviews/culture]

"How will this affect us?"

How does this influence the operating culture?

- This shifts the mindset from tangible output focus to purpose-driven process focus

- This shifts organizational operating culture from primarily vertical structures (top-down) to incorporate more horizontal (collaborative) structures, thereby reducing silo effects

- This encourages leadership support for a mindset/procedural shift that infuses resources into learning/development + research

How does this impact the hidden cultural aspects of the group?

- Confronts hidden cultural views of humans as rational actors and aversions to nuance by providing processes/methods to understand various nuances and human factors

- Confronts hidden cultural tendency toward short-sighted visioning and strategic planning - nudging the org instead toward longer horizon views of the future

- Encourages the creation of larger community for knowledge sharing and education within the org (and beyond), thereby bringing together hidden pockets of independent research/development processes from different teams

How does this influence the relevant institutions and their histories?

- Economic institutions - industry, marketing, banking, etc. would become further segmented into agile orgs that are able to withstand and adapt to market disruption due to mindset/process shift(s) and orgs that are not

- Economic institutions may begin to favor a growth mindset over a fixed mindset

- Influences regulatory bodies at local and federal levels as policy becomes less prescriptive and more human-centred

How does this affect group norms?

- Affects group norms by necessitating a shift in the opposite direction for many of the norms embedded in the organizational culture, for instance:

    - Shift from aiming for a minimum viable output toward

    - Shift from internal teams acting in consultation to working in collaboration with other teams/departments

How does this impact the values, myths, stories or worldviews of the group?

- This investment may require a reprioritization of the org's values, shifting the emphasis on tangible results into a longer term perspective and redefining what productivity means for the org

- This reframes the view/value of user research and design research: rather than being considered a 'cost center' before outputs, it would be seen as an intentional process driving production of value and eventual innovation for the org

- Challenges the group's dominant post-postivistic and pragmatic worldviews by emphasizing constructivist and change/advocacy ideals

4. SOCIAL [collective civil society, exterior: drivers of change]

"How will this affect 'it'?"

How does this impact systems and infrastructure in the physical world?

- Deep understanding of complexity has potential for radiating effect, impacting adjacent social systems by interrupting their reinforced/established norms

- Increased ethnographic methods and contextualization of people's problems may impact public service systems by increasing advocacy for users and decreasing bureaucratic barriers to service

How does this impact the environment?

- HCD and purpose-driven design prioritizes environmental concerns, potentially more than any profit-driven models

- Increase in sustainably designed products may positively impact the environment through reduction in waste and increase in sustainably sourced materials

How does this impact the larger supporting context, be it the business, company, country, or world?

- Along with increasing globalization and (technological) convergence, organizational investment in HCD will have greater implications across the world by increasing crowd-sourcing of information and democratizing design processes

- Collection of nuanced and complex data through deeper understanding of users can then be consolidated across diverse populations to compare service models and ideate on improvements

How can we measure the effects on the world ''out there''?

- Measure indicators of economic growth in regions where businesses invest in HCD capabilities

- Measure enrolment rates in HCD-related post-secondary and executive education programs

Appendix C: Summary of insights

These four cognitive components to enacting HCD in organizations represented existing knowledge gaps and opportunities areas for intervention that have the potential to assist organizations in successfully operationalizing HCD. The four cognitive components are: (1) perspectives and perceptions, seeking to examine stakeholders' different ideas and definitions of what HCD is, what it can be used for, and by whom; (2) purpose, encouraging deeper understanding of why HCD is being used and what objectives need to be met; (3) approaches, aimed at gaining clarity on design-related methods/tools and the related terminology or buzzwords to help solidify cohesive creative problem-solving or HCD approaches; and (4) return on investment, which along with the other components, seeks to reinforce a more holistic understanding of the value of HCD to encourage appropriate investment of resources and time to fuel purpose-driven design approaches toward sustainable innovation.

Table 6 and **Table 7** display the direct correlation between the HCD cognitive components (knowledge gaps/opportunity areas) and the organizational barrier to complexity they each seek to address. Additionally, each table lists related recommendations for each associated component or opportunity area. **Table 6** provides recommendations targeted toward organizations, whereas **Table 7** outlines recommendations for executive design education training consultants. The cognitive components effectively function as interlocking

building blocks for a learning organization to work toward a mindset shift (Elsbach & Stigliani, 2018) necessary to invest in capacity building. The recommendations are also connected to the insights and implications gleaned through the Integral Futures framework (Hines, 2004). Taking a multi-perspectival view on understanding, embedding, and operationalizing human-centred design within large, mature, semi-static organizations, this study provides recommendations for two major players: the organizations themselves (to conduct reflexive self-assessments to drive learning/development and investment in core competence building) and the training consultants (to assess client organizations and design tailored content geared toward the long-term effectiveness of learning outcomes).

The Integral Futures framework (Hines, 2004) was used to holistically map multiple stakeholders' perspectives, both interior and exterior, individual and collective, to assist in identifying strategic implications (Hines, 2004; Wilber, 1996) for a potential organizational shift toward investment in building HCD competencies. This map shown in **Figure 14** displays the perspectives of individual employees working within large organizations, the exterior behaviors of those organizations' consumers/ customers, the internal culture of those large organizations, and the impacts on civil society at large. **Figure 14** and **Figure 15** illuminated further knowledge gaps and blind spots between various stakeholders' perspectives on HCD. For instance, individual employees and consumers may be excited about the perceived alignment of HCD with their own values and goals, and an organization may appreciate improved

consumer feedback and employee engagement as a result of operationalizing HCD. However, there are still factors at play within the organization which act as barriers to investing in HCD which other stakeholders may not understand or appreciate.

These barriers likely relate to the 'nervousness of the system' (Taussig, 1992), wherein the established structure of a large organization is inherently resistant to any change which may threaten that very structure - such as the type of mindset shift or procedural changes necessary to make HCD work effectively across such an organization. One key barrier referenced above is that of the organization's understanding of the value of HCD. Thus, **Table 6** and **Table 7** map the related cognitive component to the barrier it seeks to confront, and offers a series of recommendations for addressing each, geared toward a particular audience (organizations and training consultants, respectively). For example, the perspectives + perceptions cognitive component seeks to address the issue of lack of awareness of HCD within an organization, and recommendations for organizations to gain deeper understanding of the perceptions of HCD (what it is, what its uses are, who uses it, etc.) include investing in immersive, experiential design education, with a reflexive component to supplement learning in context, as well as the creation of a community of design practitioners at different experience levels for support and guidance. Similarly, the recommendations outlined for training consultants in the perspectives + perceptions component category include the increased incorporation of strong and continuous reflection in

educational engagements, as well as the assessment of client organizations'

perceptions of HCD and related practices in order to identify which mindsets,

attitudes, and behaviors may need to be mitigated or addressed to encourage

the effective operationalization of HCD within the organization.

Thus, through understanding the ways in which large organizations expressed

value in design thinking through paid engagements with an executive design

education company, this research was able to identify opportunity areas for

those organizations to invest in HCD. Specifically, the opportunities identified

relate to the deeper understanding of HCD as a process that must be learned

and mastered in order to drive long-term, sustainable innovation (Madsbjerg

& Rasmussen, 2014; Martin, 2009; Morris, 2018).