# 1 | *Design Thinking in Organization Design*

JEANNE LIEDTKA

One might expect Design Thinking and Organization Design to be closely related fields, yet there is little published research showing how the two areas intertwine. Of nearly 100,000 organization design articles in a recent Google Scholar search, less than 1 percent mention "design thinking." There are notable exceptions. In one, Romme (2003: 558) distinguished between "science" and "design" modes of research and argued that organization studies should include design as a primary mode of scholarly engagement. He exhorted scholars in the organization sciences to "guide human beings in the process of designing and developing their organizations toward more humane, participative, and productive futures." In another, Yoo, Boland, and Lyytinen (2006) took the perspective of organization design in its verb form to argue that organizations should develop a "design gestalt" – a "holistic, organizing pattern" of elements. They asserted that developing such a gestalt would become increasingly important in the burgeoning knowledge and experience-based economy. Most recently, Gruber et al. (2015) renewed calls for attention to Design Thinking among management scholars, particularly around the topic of new workplace experiences.

For evidence that Design Thinking *should* be capable of informing studies of organizations, one need only consider the meaning of the term "organizing." Organizing is a problem-solving process that involves dividing and integrating resources in structures and processes that allow for the control and coordination of organizational activities (Fjeldstad et al., 2012; Lawrence & Lorsch, 1967; Puranam, Alexy, & Reitzig, 2014). The process of organizing, therefore, lends itself to the application of Design Thinking methods, which we argue represents a distinctive approach to problem-solving. The "users" of an organization design are members of the resulting organization.

Though Design Thinking is often viewed through the lens of new product development, emerging research suggests that it impacts

1

the design and conduct of organizations beyond producing innovative products and services. Elsbach and Stigliani (2018), in a comprehensive literature review, note that Design Thinking profoundly affects culture, promoting a culture of experimentation and collaboration while producing positive emotional experiences for organization members. Hölzle and Rhinow (2019) describe Design Thinking as a "meta-professional" way of working in teams. Beckman and Barry (2007) discuss its use as a generic form of experience-based learning. Stephens and Boland (2015) argue that Design Thinking promotes "aesthetic knowing" and creates deep emotional carrying capacity in organizations. Design Thinking appears especially promising as a potential offset to challenges related to hierarchical organizational structures in uncertain and complex environments that call for collaborative problem-solving (Adler, 2001; Fjeldstad et al., 2012).

In line with Romme's (2003) proposal, some organizations apply Design Thinking methods and principles to their own operations. For example, IDEO, a design consulting firm, has an organization design practice based on three guiding principles: (1) Mobilize: Get people inspired and on board with the notion of change. (2) Pioneer: Create manifestations of change that show what it could look like inside the company or organization. (3) Scale: Grow capabilities, tools, and systems to transform the organization and its culture (IDEO, Organization Design, www.ideo.com/jobs/organizational-design). IDEO has applied Design Thinking to organization design for companies such as HBO and Kaiser Permanente as well as to the design of its own organization. The design steps IDEO advocates are similar to those applied in product design, but rather than prototyping a minimal viable product (MVP), a minimal viable organization (MVO) is created instead (Brown, 2019). Other organizations that have used organizational prototyping in an iterative process relying heavily on input from organizational actors include the National Aeronautics and Space Administration (NASA) (Carroll et al., 2006) and SAP (Liedtka, King, & Bennett, 2013).

Our research over the past decade suggests that Design Thinking's transformational impact may lie less with improved products and more with psychological and social benefits to the innovators themselves and to organizing activities in the organizations in which they work. In addition to contributing to improved product quality, as well as the psychological safety and creative confidence of practitioners, we

observe significant improvements in organizational performance by providing the processes and infrastructure for greater collaboration, accelerating the successful implementation of new ideas, and encouraging resource sharing (Liedtka & Bahr, 2019). Seen through this lens, Design Thinking is a *social technology*, deserving of both managerial and scholarly attention (Liedtka, 2020).

Design Thinking's ability to achieve organizational benefits should not surprise us – the reasons why Design Thinking works are already evident in the broader social sciences literature, in areas such as positive psychology, cognition and decision-making, complex adaptive systems, and business strategy. In this chapter, we build the case for *why* connecting Design Thinking to organization design matters for organizational health and performance. We trace the roots and nature of Design Thinking's impact on the journeys of practitioners as they experience the design process, learn about design tools, and adopt a design mindset. In doing so, we focus on the possibilities inherent in Design Thinking done well. Certainly, this is not always – or perhaps even usually – the case in practice. There are many barriers to Design Thinking's implementation in organizations (Carlgren, Elmquist, & Rauth, 2016). Design Thinking implemented superficially – taught in one-day hackathons and sprints to people who spend 95 percent of their time in business-as-usual mode – will not achieve desired outcomes. A few ethnographic interviews do not empathy make. Design Thinking's impact rests on its ability to transform the experience of those who use it. How it accomplishes that and the implications for organization design are the focus of this chapter.

## What Is Design Thinking?

Historically within the organization sciences, there has been a general misperception about design as a mode of engagement. Michlewski (2008: 385) points out:

The meaning of the word "design" in the organization studies literature tends to concentrate on the notion of careful planning, upfront decision-making and alignment with pre-defined criteria…. Within the culture of professional product designers, "design attitude" signifies quite the opposite. It underlines the freedom to explore and to follow unexpected but promising leads, while keeping the overall vision as a subliminal yardstick for the project's success.

Michlewski's "design attitude" includes five attributes: (1) consolidating multidimensional meanings and reconciling diverse perspectives; (2) creatively manifesting ideas; (3) embracing discontinuity and open-endedness; (4) engaging polysensorial aesthetics; and (5) engaging personal and commercial empathy.

Design Thinking is not only an attitude or mindset but also a user-centric set of processes and tools (Liedtka & Ogilvie, 2011; Liedtka, Ogilvie, & Brozenske, 2014; Liedtka, Salzman, & Azer, 2017). There is broad consensus that the process is comprised of three discrete sets of activities: need finding, ideation, and testing (Seidel & Fixson, 2013). Each Design Thinking stage makes use of a recognized set of tools: ethnographic tools such as job-to-be-done and journey mapping in the need-finding phase, concept generation tools such as visualization and brainstorming in the ideation phase, and prototyping and in-market experimentation in the testing phase. In my own work with managers, I emphasize Design Thinking as a problem-solving approach that has distinguishing properties: (1) It begins as human-centered (rather than driven by new technology or organizational needs and capabilities) and seeks empathy for those we design for and with; (2) it is driven by possibilities rather than constraints; and (3) it relies on visualization and iteration, coupled with experimentation for testing, rather than traditional analytics. My research and experience reveal five core design practices: the development of a deep understanding of user needs, the use of diverse teams, the development of multiple solutions winnowed through experimentation, the use of dialogue-based processes, and the presence of a supporting infrastructure of mindsets, tools, and processes (Liedtka, 2017).

One question consistently raised by skeptics is whether Design Thinking constitutes "old wine in new bottles." Though key elements of Design Thinking, like ethnography and prototyping, have long been in use, preliminary research suggests a gestalt is created in their combination. For example, Seidel and O'Mahony (2014) found that desired outcomes around a shared and coherent concept did not occur in new product development teams when prototyping was used alone; it was only in combination with experimentation that the potential was realized. Micheli et al. (2019), in their recent literature review, conclude that Design Thinking has both common and unique elements that combine in a distinctive way and yield differentiated results from other approaches such as lean innovation management and agile organizing.

Echoing similar themes, Stephens and Boland (2015) concur, concluding that Design Thinking's differentiating attributes include its level of attention to emotions and meaning, direct sensory experience of immersion in a specific context, and iterative recombination of products or organizational features.

In practice, we find that Design Thinking's scalable process methodology that moves its practitioners from exploration through testing, its teachable tools, and its human-centered mindset combine to offer an approach to decision-making that the MBAs and managers we work with – hundreds of them in classrooms and over 60,000 in online experiences – say constructively challenges their current ways of thinking and behaving. In that uniqueness, there lies significant value for the innovators themselves and for the design of their organizations.

## Importance of Design Thinking

Design Thinking offers managers and their organizations (as well as individual professionals) a social technology for navigating some of today's most urgent problems, as leaders face the challenge of building resilient and motivated organizations amid accelerating uncertainty and change (Liedtka, 2020).

### Design Thinking and Uncertainty

Regardless of the specific aspects of Design Thinking one might examine – design mindsets, tools, or processes – a strong theme is Design Thinking's ability to engage uncertainty more intelligently than traditional predictive approaches. Encouraging managers, particularly those raised in large bureaucratic organizations with risk-averse cultures, to actively engage with uncertainty rather than avoid it is a challenging yet critical task in a world of accelerating change. Schultz (2010) chronicles a litany of reasons why humans love being right and fear being wrong. She points out the emotional costs of the choice to acknowledge and live in the uncertainty of doubt rather than succumb to the allure of certainty. However, the negatives associated with craving certainty, she asserts, go far beyond just missing opportunities. They also result in the loss of imagination and empathy. Without the humility of doubt, none of Design Thinking's key stages – need finding, ideation, testing – can thrive. Cultivating curiosity and positive or

*investigative* doubt, aimed at moving possibilities forward, lies at the core of Design Thinking.

Design Thinking's attention to deep exploration of the problem's setting before acting (Dorst, 2015), its use of data-driven methods to create a portfolio of different ideas, and then treating those ideas as testable hypotheses in an iterative process of "small bets" using tangible prototypes allow design practitioners to actively manage their doubt and the irreducible risks of innovation without forfeiting the ability to act. In doing so, it helps them iterate their way to better solutions. These processes also aid decision makers in avoiding well-documented cognitive biases, like egocentric empathy and hypothesis confirmation bias, that impede their ability to be effective at hypothesis generation and testing (Liedtka, 2015). To aid strategists and decision makers, design has been tied in the strategic management literature to the creation of organizational capabilities for innovation and change (Dong, Garbuio, & Lovallo, 2016; Liedtka, 2020).

Design Thinking's ability to foster learning helps to increase an organization's adaptive capacity (Beckman & Barry, 2007). Contemporary views on knowledge treat it as emergent, social in nature, and always changing, rather than as processed information that produces an accumulated stock of knowledge (Ewenstein & Whyte, 2007). Knowledge emerges through interaction with other people and with tangible objects. Scharmer (2001) argues that moving beyond existing knowledge to "self-transcending knowledge" is essential to identifying new possibilities. Self-transcending knowledge occurs in the space between the self and the other, and only a learning infrastructure that fosters generative dialogue with the "requisite conversational complexity" can achieve it. Design Thinking is optimized for producing such a space – its collaborative, dialogue-based conversations and hypothesis-driven approach make room for higher-order concepts to emerge in a collaborative setting while leveraging the diversity participants bring to the conversation.

## Design Thinking and Diversity

Research shows that diverse groups are more creative (Sawyer, 2012). This is because a focus on *efficiency* leads to convergent thinking that reduces variation through standardization, while *creativity* relies on divergent thinking that amplifies variation, allowing multiple

potential paths to be envisioned. In a complex world, diversity is not a problem to be resolved; it is the path to successful adaptation. Yet, while diverse perspectives contribute to higher decision quality in theory, they often lead to lower quality outcomes in practice (Brown & Eisenhardt, 1995; Lovelace, Shapiro, & Weingart, 2001).

Leveraging differences to produce higher-order solutions takes time and requires both perspective *taking* – making one's own perspective visible and reconcilable to others – and perspective *making* – the creation of a coherent shared belief system (Boland & Tenkasi, 1995). If meaning is not accomplished before solutions are generated, conversations across differences can deteriorate quickly into divisive debates. The boundaries that successful diverse groups must cross are complicated. They are both personal (we attach personal meaning to information and events) and political (different organizational interests clash and interfere with knowledge sharing). So diverse groups have a complex task: They must *transfer* information, *translate* across personal interpretations, and *transform* to rise above their political differences (Boland & Tenkasi, 1995). One effective path for navigating this process is through the creation of shared meaning, based on a common understanding of the needs of critical stakeholders, especially those that groups seek to serve (Majchrzak, More, & Faraj, 2012). When successful, a shifting from self to other moves organization members away from parochial individual blinders based on background and expertise toward a common and more meaningful shared focus on users. Design Thinking's need-finding phase, with its extensive set of accessible and teachable ethnographic tools, like journey mapping and job-to-be-done, offers innovators low- risk, reliable methods for focusing groups on stakeholders' actual needs rather than imposing their own preferences.

Conversations are the building blocks of collaborative creativity. Dialogue's focus on inquiry, on listening to understand others, and on surfacing one's own unexamined beliefs reconciles the paradox of difference. Since the differences that underlie diversity are often deeply rooted and value-related, making them threatening to surface and difficult to change, mindsets must shift before behaviors can change. Successfully cocreating across differences relies on fostering safe conditions that allow for the emergence of new problem definitions and solutions during the process. This is how self-transcending knowledge emerges. Design Thinking's emphasis on dialogue is critical

here – it provides conversational tools capable of managing the inter-actions needed for stakeholders to work together to find higher-order solutions.

Without Design Thinking's emphasis on inquiry, diverse groups typically resort to debate, with advocates for competing ideas marshaling selective evidence in support of individual points of view while doing negligible listening. Design conversations have clear "rules" to generate a portfolio of solutions: Focus on the needs of those you are designing for, listen actively to understand, and ask the question "what if anything were possible?" Those solutions are based on stakeholder-focused criteria rather than personal preferences and beliefs. The possibility-driven nature of Design Thinking's idea generation is essential here. Holding practitioners in the question "what if anything were possible?" to brainstorm ideas based on jointly held design criteria invites the emergence of novel, value-creating concepts. Setting aside existing constraints encourages the kinds of breakthrough ideas that generate real energy for change while stimulating creativity focused on how to surmount constraints to make exciting new visions a reality. The upfront investment in holding groups in the problem space and giving team members tools for discovery that foster shared sensemaking is critical to successful organizing in diverse groups (Weick, 1995).

## *Design Thinking, Motivation, and Mood*

Another important contribution of Design Thinking lies with its ability to improve the creativity of solutions by fostering positive affect that, in turn, encourages open-mindedness and the willingness to collaborate. The relationship between positive affect and creativity is well recognized (Amabile et al., 2005). Mood is one of the most widely studied and least disputed predictors of creativity (Baas, De Dreu, & Nijstad, 2008). Ewald et al. (2019) have completed preliminary research findings on the emotions generated during the Design Thinking process. They found that positive affect on teams using Design Thinking was significantly higher than on other teams, due to positive emotions like happiness that the process produced. The teams' negative emotions were not significantly different from other teams.

Design Thinking's ability to encourage positive affect and to instill confidence that uncertainty can be managed is especially important for people with particular types of mindsets (Dweck, 2008) or regulatory

focus (Higgins, 1998). Individuals with a rigid mindset and a preventive or reactive regulatory focus (as opposed to a growth mindset and a promotion/proactive regulatory focus) fear failure and experience heightened anxiety in the face of uncertainty and change. This creates a reluctance to act. Since learning requires action, rigid mindsets struggle and can become paralyzed in the face of change. Fostering creativity requires encouraging a promotion focus and discouraging a prevention one. The use of what Healey and Hodgkinson (2017) call "cold" cognitive tools like scenario planning can actually heighten anxiety and reduce willingness to act. Anxiety reduction, they argue, requires "hot" tools that acknowledge and use emotion. Design Thinking's tools and process reduce anxiety and increase engagement. This engenders both psychological safety (Edmondson, 1999) and increased confidence in one's own ability to innovate (Kelly & Kelly, 2013), encouraging would-be innovators to step into ambiguous situations where the threat of failure is real and adopt an action-oriented, investigative approach. Albeit in a small sample, Kröper et al. (2011) studied the regulatory focus of design team members and found that different phases significantly affected motivation and emotions during the Design Thinking process. Though individuals had a preference for promotion or prevention, circumstances also stimulated one approach or the other. A promotion focus, for instance, was triggered by novel tasks and was positively associated with creativity in the Design Thinking process. Design Thinking's front-end tasks increased both promotional focus and emotions like cheerfulness. At the same time, the more analytically oriented testing activities did not promote a prevention focus, suggesting an overall positive impact.

## Design Thinking as an Embodied Practice

Design Thinking's emphasis on sensory activities creates an embodied practice (Ewenstein & Whyte, 2007) that encourages "aesthetic knowing," a combination of feelings and thoughts (Stephens et al., 2013). Rather than attending only to the traditional instrumental concerns and rational intellectual discourse characteristic of organizations, it attends to organization members' "felt sense of something." This helps to overcome what Taylor (2002) calls the "aesthetic muteness" of organizations. Aesthetic knowing is needed to deepen the emotional carrying capacity of both individuals and teams, which in

turn develops heightened resilience in the face of adversity and change (Stephens & Boland, 2015). The kind of aesthetic knowing that Design Thinking encourages promotes a deeper form of meaning making that makes generative learning possible. Researchers have shown how an aesthetic approach that attends to emotions and bodily senses, and incorporates material artifacts, accelerates collaborative sensemaking (Boxenbaum et al., 2018; Stigliani & Ravasi, 2012). Thus, as organizations and their individual members struggle to build capabilities for resilience and ongoing adaptation in the face of heightened uncertainty and change, Design Thinking's attention to emotions, social cognition, dialogue, positivity, and aesthetic knowing are differentiating and valuable.

## How Design Thinking Impacts the Personal Journey of Its Users

The various aspects of Design Thinking work together to change the experiences of organization members in profound ways. Tangible outputs of the need-finding, ideation, and testing phases carry corresponding psychological and sociopsychological impacts that affect members individually and set the stage for more productive collaboration. The sequence of need finding–ideation–testing not only creates a flow that helps practitioners perform individual activities successfully, it explicitly links the pieces in a larger end-to-end process. Design Thinking's careful layering of the cognitive complexity of tasks increases practitioners' comfort with uncertainty and keeps them from becoming overwhelmed by the "messiness" and divergence of dealing with ill-structured problems and by the demands of good hypothesis testing in the later phase. Using physical props like the ubiquitous Post-It note, and structured tools like journey mapping, the design process moves practitioners through orchestrated steps with tangible deliverables in the form of user data and stories, insights, design criteria, ideas, assumptions, prototypes, and experiments.

   At the front-end of the process, Design Thinking helps its practitioners escape the blinders of egocentric empathy biases, productively holds them in the question, assists with translating qualitative data into insights and design criteria, and aligns diverse teams around a common definition of what matters. At the back-end of the process, the structure leads them carefully through the challenging elements of

designing and executing good experiments: articulating their assumptions, specifying their solutions clearly, and inviting and utilizing feedback. Behind each activity and its tangible deliverable lies a corresponding aspect of Design Thinking's social technology that shapes the experience of the innovator and allows him or her to complete important jobs. Let us look in depth at how these influences impact the journey of an individual and his or her team as they navigate the Design Thinking process and read some short stories from practitioners experiencing it.

## Need Finding

During need finding, Design Thinking practitioners immerse themselves in the lives of those they are designing for. The goal is to shift their mindsets from "expert" to "inquirer" and to develop empathy. As the leader of a team dedicated to rethinking the medical-centered treatment approach in a large children's hospital explained as she guided the movement of the medical staff from a "place of judgment to a place of possibilities":

Rather than "this is how the system works and how they should be using it," we want to help them shift their lens – get them out of their expert hat and into a beginner's mindset that is willing to look at the problem differently. When you create conditions where people can listen and dialogue, then you set things up for success. (Liedtka, Salzman, & Azer, 2017: 228)

Increased engagement is one of the most often reported outcomes of the use of Design Thinking (Liedtka & Bahr, 2019). It is the experience of immersion that sets this up. Using ethnographic tools to immerse practitioners in the day-to-day lives of those they are designing for provides a direct sensory experience. Walking with a patient to the X-ray room is a very different experience than examining a process map, as Stephens and Boland (2015) explain. This has important benefits, not only for how new data are gathered and deeper insights obtained but also for the emotional connection and the development of empathy that is part of the Design Thinking process.

One particularly memorable story from our research takes place in an institute serving adults with Asperger's Syndrome. A young designer visited one of Kingwood's residents, Pete, at home. She observed him doing destructive things – picking at a leather sofa, ripping a

magazine, and creating scuff marks on a wall by rubbing against it. She wondered how she could design solutions that would prevent such behavior in the future. On her second visit to Pete's house, she took a more empathetic approach and decided to mirror Pete's behavior. She discovered, to her surprise, the sensory enjoyment that came from ripping paper, flipping a magazine, picking at the leather on a couch, or holding an ear against a wall. Unable to ask Pete directly what he liked about doing these things, she experienced them for herself. On her first visit to his home, she had used her own frame of reference and labeled Pete's acts as negative. On her second visit, she began to empathize with Pete – the sofa, wall, and magazine sound revealed vital clues that helped her understand Pete. She explained: "I thought empathy was innate but now realize that it can grow and evolve. For this to happen … requires a perceptual shift in thinking that is open to different ways of being in the world."

One of the attractions of human-centered design is that most of us are naturally curious about the lives of others. According to Silva (2008: 58), curiosity plays a critical role to approach/avoidance behaviors by driving interest that provides a "counterweight to feelings of uncertainty and anxiety." Interest creates a virtuous cycle of learning – motivating learning that, in turn, motivates interest. His research suggests that what we find to be particularly interesting is something that is both complex and understandable. Enhancing complexity (which Silva equates with novelty, vividness, and surprise) while simultaneously increasing comprehension (defined as coherence, concreteness, and ease of processing) is the sweet spot. Design Thinking's novel tasks (like journey mapping that traces both the functional and the emotional journey of users as they experience the product or service) combine with its structured process to create simultaneously novel and reassuringly comprehensible experiences of knowing another.

Immersive experiences produce emotional engagement that motivates decision makers to loosen parochial perspectives that stand in the way of seeing new solutions as well as providing the raw material for collective sensemaking. Another case from a large medical center illustrates this. Staff at this emergency mental health service knew their system was ineffective (intervals between the visits of patients arriving in crisis were shortening rather than lengthening) but were unable to agree on what to do about it, despite attempts by multiple committees to redesign the system. Frustrated, they turned to Design

Thinking to attempt to break the gridlock and began creating patient journey maps. The story of one particular patient, Tom, became the catalyst that finally allowed the group to set aside their differences and imagine a better approach together. Following a suicide attempt, Tom was referred to the mental health service for outpatient treatment. Just two months later, after treatment, Tom was readmitted to the hospital after another overdose. During that period, the journey map revealed, Tom experienced significant activity as a patient, seeing thirteen different case managers with seventy touch-points and eighteen handoffs.

But despite this large number of interventions, Tom hadn't experienced treatment that made a difference in the longer term. "There was no *care* there," one doctor observed. Clinicians realized their present system was providing an experience for patients entirely unlike the one they wanted to deliver. "We can think all kinds of things about how we believe the system is working, but then seeing the reality of how it was really working, it was shocking to see how far from our intentions reality had come," one observed. "Patients needed someone to be present for them. Despite a flurry of activity, nothing was changing for them. We needed to *feel* their blockages and struggles." Inspired to change, the group created a new model that led to dramatic improvement in patient experiences and in lengthening the interval between patient visits.

Such inspiration comes from new insights. But getting insights is often the single most challenging aspect of the Design Thinking process for many teams – and it is often seen as a black box. Kolko (2010) notes that this stage is treated as "magical" with "no visible connection between the input and the output." It requires a leap of judgment that goes beyond what *is* to what *might be*. One of the great contributions design makes at this stage is to use visualization tools – walls, flip charts, sticky notes – to tame the mass of messy data and take what is in the heads of individuals and shape it into collective intent. Kolko (2010: 18, 19) asserts:

One of the most basic principles of making meaning out of data is to externalize the entire meaning-making process. By taking data out of the cognitive realm (the head), removing it from the digital realm (the computer), and making it tangible in the physical realm in one cohesive visual structure (the wall), the designer is freed of the natural memory limitations of the brain and the artificial organizational limitations of technology…. Implicit and hidden meanings are uncovered.

Making ideas tangible is critical in the move from individual to collective sensemaking. As teams struggle to find convergence around a common interpretation, physical manipulation helps them organize data into patterns. Such sensemaking encourages collective reflection that builds team resilience, Campbell (2019) argues. She rejects sensemaking as an individual cognitive activity, arguing that it should be seen as a "conversational accomplishment" rather than a "cognitive epiphany." Sensemaking is "not an invisible process inside the brain of an individual" but is, instead, the result of interactions in situated conversations. Heedfulness – paying respectful and open-minded attention to each other – is critical for accomplishing this. Lee and Sukoco (2011) focus on team reflexivity – the extent to which team members collectively reflect on, plan, act, and adapt – asserting that it is essential to the kind of "unlearning" necessary to give up old beliefs and take on new ones.

Alignment happens as shared design criteria emerge. The output of a group's collective sensemaking is the explicit identification of those criteria, a concise list of attributes that any ideal design should contain. This is the culmination of the need-finding process. In this stage, individuals' immersive experiences prepare them to think in less egocentric ways and produce shareable data to create a common platform. Such criteria form the basis for idea generation in the next phase, and for testing and selection in the one following that.

## *Ideation*

We think of idea generation as simply the process of brainstorming. But the key to success – in this case the generation of higher-order solutions that leverage the diversity of the group – happens well before idea generation starts. Design criteria provide the "priming" goals that Litchfield (2008) demonstrated are important facilitators of brainstorming success. Each team member's experience of immersion and shared insight generation lays the groundwork for new and better ideas to appear, offering a shared space in which those latent possibilities can emerge and be combined to reach higher-order solutions. Heidegger's (1962) concept of "the withheld" argues that the most powerful futures are discovered when conversations make room for the latent to make itself manifest. The withheld cannot be commanded to appear; it can only be invited. It emerges when the present conditions – psychological safety, empathy, shared meaning, and intention – allow individuals to bring their authentic selves into the conversation.

Design Thinking operates to shape system-level conversations as well. When a group of community organizations in Dallas who had not previously worked together gathered to use Design Thinking to develop a prototype for what a community-centered, rather than medical-centered, care model for children might look like, they decided to begin with asthma, one of the most prevalent and utilization-intensive childhood diseases. Their aim was to define a common agenda and goals. Until then, few of these leaders knew each other. One of them described their coming together:

We had no clue how we related to each other. So, we put together the asthma equation, a visual model for asthma, and the factors that were affecting these families and kids. When we put this together, people were stunned. We were all working on the same thing – but from different parts of the elephant. But none of us had ever looked at the whole elephant … I had never pursued an ongoing collaboration before with such a range of uncommon partners, one with such a sense of purpose that was pulled together in that very structured and focused way – a group of people who had all been working hard to improve health for kids, but not working together. Doing God's work but with negligible impact and sustainability. Now we have a common agenda, shared measurements, and new funding opportunities. That is very different than anything I have ever experienced previously in the world of health care.

It is collective sensemaking that sets the stage for collaborative cocreation of new solutions.

## Testing

Fundamental to the Design Thinking philosophy is the concept of moving multiple ideas into testing, with the winners selected by those being designed *for*. In this final stage, Design Thinking's visualization tools allow the translation of abstract ideas into things that feel real, often in the form of prototypes. Luigi Ferrara, Dean of Toronto's Institute without Boundaries, explains why pushing people out of the discussion of abstract ideas and into action in the form of prototypes is so essential to accomplishing actual innovation and change:

It is easy to stay safely in the debate space and never have your hypothesis interact with reality to get feedback about whether or not it is true. This is what makes everything slow down. It's what paralyzes bureaucracies. You can debate forever. This is where design gets interesting. You have to translate

your sentiment into an embodiment that others can see. A fundamental part of design is making things shareable in the world. That forces collaboration because you have to agree on an output. And that changes thinking. You can say, "We want to be the world's best city," but that is really empty until you confront the design challenge: operationalizing the value.

The role of prototypes is to act as provocations to elicit better feedback to test hypotheses as well as ensure team alignment on the specifics of what any given idea looks like in practice. As prototypes move into "learning launches" in the real world, another benefit occurs: Not only does the process allow for iterations that improve the solution, the testing process itself creates an experience for those who are involved in its implementation. As another interviewee in our research described it:

I am more and more convinced that the value of prototypes and learning launches is that they make concepts tangible and create a conversation space for engagement. Language is about the creation of shared meaning. This is achieved through conversations that establish trust and that lead to commitment…. Design tools work on the conversation, and embody the nature of the commitments that bind us.

As those charged with implementation participate in the testing process, it builds the kind of personal experience of "situated novelty" (Janssen, Stoopendaal, & Putters, 2015) that makes innovation feel real and personally significant to them.

## Implications of Design Thinking for Modern Organization Design

We have reviewed evidence for how Design Thinking's mindset, processes, and tools combine to help firms organize and problem solve in ways that enhance their ongoing adaptability, focusing on multiple interconnected levels. At the individual level, human-centered design draws on our natural curiosity to build empathy and emotional engagement that help overcome risk aversion in the face of uncertainty, build the creative confidence to act, and foster the kind of psychological safety that invites actors to bring their authentic selves into the organizational conversation. At the team level, design works to resolve the paradox of difference and allow collaborative cocreation of higher-order solutions as it sets the conditions for emergence by

making thinking tangible and shaping a shared assessment of needs and a possibility-driven intention. At the organizational level, design builds adaptability and improves the quality of problem-solving and the likelihood that the solutions identified will be successfully implemented. At the systems level, user-centered design builds trust among stakeholders and encourages resource sharing.

Application of Design Thinking accomplishes these outcomes by providing a set of core drivers, identified in the organization design literature, that are essential for an "actor-oriented" rather than hierarchical organizational architecture (Fjeldstad et al., 2012). In articulating a response to the challenges presented to organizations by increasing environmental complexity and uncertainty, Fjeldstad et al. (2012) identify three core elements of a scheme that reduces the negative effects of hierarchy and enables multiactor collaboration: (1) *actors* with the capabilities and values to self-organize; (2) *commons* where knowledge and resources accumulate and are shared by the actors; and (3) *protocols, processes, and infrastructures* that enable multiactor collaboration by allowing the actors to largely control and coordinate themselves.

Design Thinking has the ability to make important contributions to each of these actor-oriented elements. A final story from our research illustrates this. Headquartered in Washington, DC, the Community Transportation Association of America (CTAA) invites local communities throughout the United States to join in achieving its mission of "creating mobility for all Americans regardless of where they live or work." Rather than defining transportation problems centrally and recommending implementation of broad transportation initiatives, CTAA builds the capabilities of the local actors involved by using Design Thinking to empower carefully composed teams of local partners to frame problems and cocreate solutions for their communities' unique circumstances. Design Thinking provides the infrastructure of a common language and protocols across teams for how projects are executed. It creates a commons of shared knowledge and situation awareness within each local team and across the teams working together at a national level via webinars, Skype calls, and face-to-face summit meetings. Galvanizing networks that are both local and global, it builds long-term capabilities for ongoing problem-solving. CTAA's use of Design Thinking represents a model of organizing that addresses the classic tension between centralization and decentralization in ways

especially relevant to organizational success in rapidly changing and increasingly complex environments.

The resulting effect is an organization able to act more quickly and effectively in the face of environmental change. Cumulatively, Design Thinking's contribution to organizational speed becomes evident: Organizations whose staff are apathetic, working at cross-purposes from each other, and confused about priorities are likely to be slow to respond. Conversely, organization members who are engaged, both emotionally and cognitively, aligned as to purpose, and clear about what really matters are likely to be more adaptable and quicker to respond. Design Thinking's ability to build engagement, alignment, and clarity on user needs creates the path for organizations to develop the capacity to act.

## Conclusion

Our goal in this chapter has been to lay out the case for how Design Thinking can help managers build new kinds of organizations and why it deserves attention from scholars. Effective use of Design Thinking calls for managerial and organizational behaviors that recognize the value of problem setting as well as solving, build a culture of learning from failure rather than punishing it, and provide the resources and autonomy to experiment. We hope we have made the case that, for modern organizations, investments in building Design Thinking capabilities will provide large returns.

## References

Adler, P. S. 2001. Market, hierarchy, and trust: the knowledge economy and the future of capitalism. *Organization Science* 12(2): 215–234.

Amabile, T. M., Barsade, S. G., Mueller, J. S., & Staw, B. M. 2005. Affect and creativity at work. *Administrative Science Quarterly* 50(3): 367–403.

Baas, M., De Dreu, C. K., & Nijstad, B. A. 2008. A meta-analysis of 25 years of mood-creativity research: hedonic tone, activation, or regulatory focus? *Psychological Bulletin* 134(6): 779–806.

Beckman, S. L. & Barry, M. 2007. Innovation as a learning process: embedding design thinking. *California Management Review* 50(1): 25–56.

Boland, R. & Tenkasi, R. 1995. Perspective making and perspective taking in communities of knowing. *Organization Science* 6(4): 350–372.

Boxenbaum, E., Jones, C., Meyer, R. E., & Svejenova, S. 2018. Towards an articulation of the material and visual turn in organization studies. *Organization Studies* 39(5–6): 597–616.

Brown, T. 2019. *Change by Design*. HarperCollins, New York, NY.

Brown, S. & Eisenhardt, K. 1995. Product development: past research, present findings, and future directions. *Academy of Management Review* 20(2): 343–378.

Campbell, B. 2019. *Practice Theory in Action*. Routledge, New York, NY.

Carlgren, L., Elmquist, M., & Rauth, I. 2016. The challenges of using design thinking in industry – experiences from five large firms. *Creativity and Innovation Management* 25(3): 344–362.

Carroll, T. N., Gormley, T. J., Bilardo, V. J., Burton, R. M., & Woodman, K. L. 2006. Designing a new organization at NASA: an organization design process using simulation. *Organization Science* 17(2): 202–214.

Dong, A., Garbuio, M., & Lovallo, D. 2016. Generative sensing: a design perspective on the microfoundations of sensing capabilities. *California Management Review* 58(4): 97–117.

Dorst, K. 2015. Frame creation and design in the expanded field. *She Ji: The Journal of Design, Economics, and Innovation* 1(1): 22–33.

Dweck, C. S. 2008. *Mindset: The New Psychology of Success*. Random House Digital, New York, NY.

Edmondson, A. 1999. Psychological safety and learning behavior in work teams. *Administrative Science Quarterly* 44(2): 350–383.

Elsbach, K. D. & Stigliani, I. 2018. Design thinking and organizational culture: a review and framework for future research. *Journal of Management* 44(6): 2274–2306.

Ewald, B., Menning, A., Nicolai, C., & Weinberg, U. 2019. Emotions along the design thinking process. In C. Meinel and L. Leifer (eds.), *Design Thinking Research: Looking Further: Design Thinking Beyond Solution-Fixation*: 41–60. Springer International Publishing AG, New York, NY.

Ewenstein, B. & Whyte, J. 2007. Beyond words: aesthetic knowledge and knowing in organizations. *Organization Studies* 28(5): 689–708.

Fjeldstad, Ø. D., Snow, C. C., Miles, R. E., & Lettl, C. 2012. The architecture of collaboration. *Strategic Management Journal* 33(6): 734–750.

Gruber, M., De Leon, N., George, G., & Thompson, P. 2015. Managing by design. *Academy of Management Journal* 58(1): 1–7.

Healey, M. P. & Hodgkinson, G. P. 2017. Making strategy hot. *California Management Review* 59(3): 109–134.

Heidegger, M. 1962. *Being and Time*. Harper & Row, New York, NY.

Higgins, E. T. 1998. Promotion and prevention: regulatory focus as a motivational principle. *Advances in Experimental Social Psychology* 30: 1–46. Academic Press, Cambridge, MA.

Hölzle, K. & Rhinow, H. 2019. The dilemmas of design thinking in innovation projects. *Project Management Journal* 50(4): 1–13.

IDEO, Organization Design. www.ideo.com/jobs/organizational-design

Janssen, M., Stoopendaal, A. M. V., & Putters, K. 2015. Situated novelty: introducing a process perspective on the study of innovation. *Research Policy* 44(10): 1974–1984.

Jaskyte, K., and Liedtka, J. 2022. Design thinking for innovation: Practices and intermediate outcomes. *Nonprofit Management & Leadership* 32(4): 555–575.

Kelley, T. & Kelley, D. 2013. *Creative Confidence: Unleashing the Creative Potential within Us All*. Currency Publishing (Crown), New York, NY.

Kolko, J. 2010. Abductive thinking and sensemaking: the drivers of design synthesis. *Design Issues* 26(1): 15–28.

Kröper, M., Fay, D., Lindberg, T., & Meinel, C. 2011. Interrelations between motivation, creativity and emotions in design thinking processes – an empirical study based on regulatory focus theory. In T. Taura and Y. Nagai (eds.), *Design Creativity*: 97–104. Springer, London, UK.

Lawrence, P. R. & Lorsch, J. W. 1967. *Organization and Environment*. Harvard Business School, Division of Research, Boston, MA. (Reissued as a Harvard Business School Classic, Harvard Business School Press, 1986.)

Lee, L. & Sukoco, B. 2011. Reflexivity, stress, and unlearning in the new product development team: the moderating effect of procedural justice. *R&D Management* 41(4): 410–423.

Liedtka, J. 2015. Perspective: linking design thinking with innovation outcomes through cognitive bias reduction. *Journal of Product Innovation Management* 32(6): 925–938.

Liedtka, J. 2017. Evaluating the impact of design thinking in action. In S. Taneja (ed.), *Academy of Management Proceedings 2017*, No. 1: 10264–10270. Academy of Management, Briarcliff Manor, NY.

Liedtka, J. 2020. Putting technology in its place: the social technology of design thinking. *California Management Review* 62(2): 53–83.

Liedtka, J. & Bahr, K. 2019. *Measuring the ROI of Design Thinking, Darden School Working Paper 19–13*. University of Virginia Press, Charlottesville, VA.

Liedtka, J. & Ogilvie, T. 2011. *Designing for Growth: A Design Thinking Tool Kit for Managers*. Columbia University Press, New York, NY.

Liedtka, J., King, A., & Bennett, K. 2013. *Solving Problems with Design Thinking: Ten Stories of What Works*. Columbia University Press, New York, NY.

Liedtka, J., Ogilvie, T., & Brozenske, R. 2014. *The Designing for Growth Field Book: A Step-by-Step Project Guide*. Columbia University Press, New York, NY.

Liedtka, J., Salzman, R., & Azer, D. 2017. *Designing for the Greater Good: Innovation in the Social Sector*. Columbia University Press, New York, NY.

Liedtka, J., Sheikh, A., Gilmer, C., Kupetz, M., & Wilcox, L. 2020. The use of design thinking in the US federal government. *Public Performance & Management Review* 43(1): 157–179.

Litchfield, R. C. 2008. Brainstorming reconsidered: a goal-based view. *Academy of Management Review* 33(3): 649–668.

Lovelace, K., Shapiro, D., & Weingart, L. 2001. Maximizing cross-functional new product teams' innovativeness and constraint adherence: a conflict communications perspective. *Academy of Management Journal* 44(4): 779–793.

Majchrzak, A., More, P., & Faraj, S. 2012. Transcending knowledge differences in cross-functional teams. *Organization Science* 23(4): 951–970.

Micheli, P., Wilner, S. J., Bhatti, S. H., Mura, M., & Beverland, M. B. 2019. Doing design thinking: conceptual review, synthesis, and research agenda. *Journal of Product Innovation Management* 36(2): 124–148.

Michlewski, K. 2008. Uncovering design attitude: inside the culture of designers. *Organization Studies* 29(3): 373–392.

Puranam, P., Alexy, O., & Reitzig, M. 2014. What's "new" about new forms of organizing? *Academy of Management Review* 39(2): 162–180.

Romme, A. G. L. 2003. Making a difference: organization as design. *Organization Science* 14(5): 558–573.

Sawyer, R. 2012. *Explaining Creativity: The Science of Human Innovation*. Oxford University Press, Oxford, UK.

Scharmer, O. 2001. Self-transcending knowledge: sensing and organizing around emerging opportunities. *Journal of Knowledge Management* 5(2): 137–151.

Schultz, K. 2010. *Being Wrong: Adventures in the Margin of Error*. HarperCollins Books, New York, NY.

Seidel, V. P. & Fixson, S. K. 2013. Adopting design thinking in novice multidisciplinary teams: the application and limits of design methods and reflexive practices. *Journal of Product Innovation Management* 30(S1): 19–33.

Seidel, V. P. & O'Mahony, S. 2014. Managing the repertoire: stories, metaphors, prototypes, and concept coherence in product innovation. *Organization Science* 25(3): 691–712.

Silvia, P. J. 2008. Interest – the curious emotion. *Current Directions in Psychological Science* 17(1): 57–60.

Stephens, J. P. & Boland, B. J. 2015. The aesthetic knowledge problem of problem-solving with design thinking. *Journal of Management Inquiry* 24(3): 219–232.

Stephens, J. P., Heaphy, E. D., Carmeli, A., Spreitzer, G. M., & Dutton, J. E. 2013. Relationship quality and virtuousness: emotional carrying capacity as a source of individual and team resilience. *Journal of Applied Behavioral Science* 49(1): 13–41.

Stigliani, I. & Ravasi, D. 2012. Organizing thoughts and connecting brains: material practices and the transition from individual to group-level prospective sensemaking. *Academy of Management Journal* 55(5): 1232–1259.

Taylor, S. S. 2002. Overcoming aesthetic muteness: researching organizational members' aesthetic experience. *Human Relations* 55(7): 821–840.

Weick, K. E. 1995. *Sensemaking in Organizations,* vol. 3. SAGE Publishers, Thousand Oaks, CA.

Yoo, Y., Boland Jr., R. J., & Lyytinen, K. 2006. From organization design to organization designing. *Organization Science* 17(2): 215–229.