

‘Another one for the drawer’

**Addressing organizational science’s relevance gap by furthering
research-based design through iterative co-creation**

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“[W]hen an academic field deals in a domain that vitally affects societal well-being, then that academic field must enter the world of practical affairs. Without being co-opted, it must strive for influence and impact. That is our challenge. We should matter. We must matter.”

-Hambrick (1994, p. 16)

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Abstract

This article investigates how organizational science might utilize research-based design approaches that leverage iterative co-creation to more effectively address the field's relevance gap than traditional linear and one-directional research-based design (RBD) approaches. Conducting and observing a multi-case study of a co-creative research-based design (CRBD) process using IDEO's human-centered design approach, three key findings emerged: firstly, different types of participants take on profoundly different roles in the creation of boundary objects (client-facing, strategic level and research/policy practitioners, and academics). Secondly, boundary objects are successively shaped by the different roles and their different approaches to the four processes of boundary object creation (understanding/sharing, ideating, bridging, and framing), blending different knowledge types and processes. Thirdly, the design approach creates the time, space, and methodology needed to facilitate this communication and convergence across knowledge types.

This article argues it was through *iterative co-creation*, where ideas are successively suggested, challenged, developed, grounded, and shaped by the different ways in which the four roles engage in these processes, that the boundary object and eventual design solutions came to take on their synthesized shape, grounded in practice and theoretically informed beyond what would be possible if either practitioners or academics were conducting the process alone.

Returning to the relevance gap, research-based design (RBD) literature consistently conceptualizes addressing the relevance gap as a one-dimensional and linear process. This study argues that, instead of a linear gap that can be bridged by researchers conducting traditional RBD, successful bridging of the knowledge communities of practice and academia is actually about the creation of a shared space, time, and methodology for iterative co-creation. This study concludes with a call to action to further explore and leverage CRBD if organizational science is to uphold its promise to shape our organizational world for the better.

I – Introduction

Despite the field's exponential growth in recent years, organizational science has been lamenting its disconnect from practice for decades (Denyer et al., 2008; Koontz, 1980; Pfeffer, 1993; Romme, 2003; Tranfield & Starkey, 1998; Van Maanen, 1995; Whitley, 1984). The field, which is seen as increasingly and highly fragmented (Pfeffer, 1993; Romme, 2003; Weiss, 2000), is argued to have questionable relevance for practice, which is coined the 'relevance gap' (Denyer et al., 2008; Rynes et al., 2001; Van Aken, 2007). In other words, organizational science has a tendency to be neither obvious nor relevant to practitioners (Beyer & Trice, 1982; Hambrick, 1994; Huff, 2000; Miner, 1997; Priem & Rosenstein, 2000; Romme, 2003). Attributed to a variety of reasons, a core consideration is its focus on analytical and descriptive knowledge production – with precedence given to complexity – instead of generalizable knowledge that can address problems found in practice (Denyer et al., 2008; Romme, 2003, p. 558; Whitley, 1984).

In response to the relevance gap, organizational science has seen “a rising interest in the design science paradigm and its potential for increasing the relevance and application potential of the research base” (Bate & Robert, 2007; Denyer et al., 2008; Huff et al., 2006; Romme, 2003; Romme & Endenburg, 2006; Van Aken, 2004).¹ More specifically, organizational science has recently seen the emergence of several variants of research-based design (RBD), advocated for by different authors (Denyer et al., 2008; Mohrman, 2007; Romme & Endenburg, 2006; Van Aken, 2004). The common thread within these different approaches is the belief – or hope – that leveraging a design approach can address the fragmentation and lacking relevance to practice of organizational science (Denyer et al., 2008). While only a nascent movement, RBD is a design thinking exercise between academia and practice (Huff et al., 2006), where theory is translated to practically relevant design principles that offer guidance to practice (Denyer et al., 2008; Mohrman, 2007). Design thinking is a process of gathering and synthesizing knowledge in order to create and select among possible alternatives the desired and promising intervention addressing a practical goal or problem (Bate & Robert, 2007; Dimov et al., 2021; Romme, 2003; Romme & Damen, 2007). It strives to improve the human condition by developing knowledge that solves problematic situations in reality, thereby

¹ Nonetheless, design in organizational science remains a fringe field, mostly left to practitioners such as management consultants (Romme, 2003, p. 569).

seeking fundamentally different knowledge than traditional organizational science. In the last decade, RBD has seen a methodological solidification, with RBD publications following the existing RBD approach and generating academic articles expounding design principles and solutions for field problems (Bhatnagar et al., 2021; Dellermann et al., 2019; Gilsing et al., 2010; Zhang & Van Burg, 2020).

However, RBD remains a predominantly one-directional approach lacking participatory elements, meaning it is conducted *by academics for practice*. In light of RBD's aspiration to bridge the relevance gap, the lack of co-creation with practice presents at best a missed opportunity and at worst a fundamental flaw. Several theoretical contributions provide reasons to believe co-creation can make a promising addition to RBD, ranging from the potential of design thinking to involve stakeholders (Van Aken, 2007; Van Burg et al., 2008), the potential of bridging knowledge types (Bate & Robert, 2007; Berends et al., 2011; Dimov et al., 2021; Knorr Cetina, 2001; Louis & Bartunek, 1992b; Romme & Damen, 2007; Rynes et al., 2001), and the importance of including practitioners stakeholders in understanding the context and facilitating the implementation of interventions (Johansson-Sköldberg et al., 2013; Mohrman, 2007; Rynes et al., 2001; Sein et al., 2011). Together, these contributions suggest the potential of adding participatory elements to RBD, leading to this article's research question: *how can organizational science utilize research-based design approaches that leverage co-creation to effectively address the field's relevance gap?*

In order to investigate its potential impact and relevance, this article reflects on a co-creative research-based design (CRBD) process conducted a university partner and four civil society organizations (CSOs) providing care to vulnerable populations. The design process focused on three issue areas in crisis resilience faced by the four CSOs during the COVID-19. These issues arose during prior research conducted by the research team involved in this project, and the CRBD process builds upon the knowledge and relationships established during this research.

The article begins by reviewing the state-of-the-art on RBD within organizational science (chapter II), looking at the relevance gap, conceptualizing RBD and design thinking, discussing its linearity, and discussing theoretical considerations imploring co-creation. Afterwards, the research design

and context will be explained (chapter III), including the design methodology utilized: IDEO's Human Centered Design (IDEO.org, 2015). The next chapter (IV) presents the three key findings, namely (a) how different types of participants take on profoundly different roles in CRBD, (b) how the design solutions are successively and uniquely shaped by these different roles, and (c) how the CRBD approach creates the time, space, and methodology needed to facilitate this communication and convergence across knowledge types. Finally, (chapter V) the implications of these findings for RBD and organizational science's struggle in closing the relevance gap will be discussed.

Going beyond the limitations of linear and one-directional RBD by leveraging the potential of co-creative design, this study contributes to the field of organizational science – and RBD more specifically – by furthering our understanding of the potential of design-based approaches to address the persistent relevant gap. More specifically, this article argues for a reconceptualization of the relevance gap from requiring linear and one-directional solutions to actually requiring a co-creative and iterative approach. If taken to heart, co-creative research-based design may actually address the field's consistent disconnect from practice and its growing fragmentation and lay claim to its aspiration for improving the human condition – a promising and enticing prospect.

II – Theoretical background: Research-based design

The relevance gap

In order to understand the poignant call to action underlying this article's research question, it is important to discuss the root of RBD's recent momentum within organizational science. Organizational science has been lamenting its disconnect from practice and its lack of relevance for practitioners for decades (Van Aken, 2004). This so-called 'relevance gap' of organizational science has been extensively analyzed and discussed (e.g. Rynes et al., 2001) yet continues to persist (Romme, 2003).² Despite its growing research base and increasingly sophisticated research methodologies, organizational science is becoming increasingly fragmented, which results in "limited use of knowledge products" for practitioners (Denyer et al., 2008, p. 407; Rynes et al., 2001). Research carried out by organizational science is "perceived as neither relevant nor useful for practice," with practitioners either arbitrarily selecting interventions or simply ignoring business school research entirely (Romme & Damen, 2007; Van Aken, 2004). Certainly hampering the field's development (Bunker et al., 2004), several authors have gone as far as to raise questions about the viability of organizational science as a scholarly endeavor in the face of the relevance gap (Bradford & Burke, 2004; Van Aken, 2007, p. 68; Wirtenberg et al., 2004).³

Within this ongoing discussion, the profoundly different epistemological starting blocks of academia and practice are often seen as an important factor for the relevance gap, building on the notion that perhaps academia is best suited to analyze existing organizational phenomena instead of instigating new ones (Bate & Robert, 2007; Beyer & Trice, 1982; Dimov et al., 2021; Van Aken, 2004). Academic research is understood as seeking to describe and analyze instead of generating guiding knowledge that can "take" in practitioner settings (Mohrman, 2007; Van Aken, 2004). Several authors have even raised the questions whether closing the relevance gap is actually possible (Van Aken, 2004, p. 341), which strikes at the core of this article.

In response to the relevance gap, a group of organizational science theorists are turning to design sciences, advocating for a transformation from description-based research to prescription-based

² The relevance gap is also known as the 'utilization problem' (Van Aken, 2004).

³ Related fields within management theory are also struggling with a similar dynamic of growing and increasingly fragmented research bases with questionable practical relevance (and/or accessibility), for example management theory (Tranfield et al., 2003).

research (Mohrman, 2007; Romme, 2003; Van Aken, 2004; Van Burg et al., 2008).⁴ Leveraging design methodologies, they aspire to take on the relevance gap by generating knowledge that bridges theory and practice (Denyer et al., 2008; Romme, 2003; Romme & Endenburg, 2006; Tranfield et al., 2003). Advocating for a variety of RBD approaches, the core idea is that through design tools academic expertise can be leveraged to guide practitioners (Mohrman, 2007; Trullen & Bartunek, 2007).⁵

If successful in translating organizational science's traditionally descriptive knowledge, RBD holds the promise of (i) making organizations more effective, (ii) making organizations more valuable to their stakeholders, (iii) making organizations more satisfying to their employees, (iv) contributing to an organizational world that can respond (more effectively) to the crises threatening our existence and well-being, and (v) offering a path towards addressing the fragmentation of organizational science by synthesizing the diverse and transdisciplinary insights (Denyer et al., 2008; Mohrman, 2007; Starbuck, 2004).⁶ With the relevance gap offering a poignant call to action, and RBD offering a potentially impactful solution, this article investigates how we may further RBD's nascent development.

Research-based design

In order to do so, it is important to conceptualize RBD and the broader notion of design thinking. Despite its burgeoning enthusiasm, the task of conceptualizing design thinking remains insufficiently addressed. Within academic literature there exist radically different and separate meanings with seemingly little cross-reflection and no sustained development of the concept (Dorst, 2011; Johansson-Sköldberg et al., 2013). However, within the design professions, design thinking is understood to “stand for quite specific and deliberate ways of reasoning” (Dorst, 2011, p. 531). And while a detailed explication of design thinking goes beyond the article's scope, a brief

⁴ Similar calls to action – based on similar frustrations – have recently been seen in the related fields of public policy (Romme & Meijer, 2020) and innovation management (Auernhammer, 2020), with Romme and Meijer urging researchers to rethink their ‘bystander’ approach.

⁵ Nonetheless, organizational science as design science is at the moment only a “brave beginning” (Mohrman, 2007, pp. 20–21; Romme, 2003, p. 569).

⁶ As an additional silver lining, there are indications it may also generate stronger theoretical knowledge. Starbuck (2004, pp. 1249–1250) argues how moving from descriptive and retrospective explanation to design-based approaches to knowledge generation could actually strengthen the quality of our scientific accounts – because attempting to change a deeply complex system is a more appropriate approach to understanding it than current prevalent research methodologies. Similarly, Auernhammer (2020) argues other research approaches are not suitable to the complexity of innovation management.

overview of the core of design thinking is in order to understand the article's attempted contribution.⁷ At its core, design thinking is a process of gathering and synthesizing knowledge in order to create and select among possible alternatives the desired and promising intervention towards one's goal or solution for one's problem (Bate & Robert, 2007; Dimov et al., 2021; Romme, 2003; Romme & Damen, 2007). Often leveraging a more sensory and tactile methodology (Bate & Robert, 2007), design thinking asks 'how should things be' before crafting an intervention towards that goal, whether miniscule – figuring out a way to improve your commute – or grandiose – designing a new national healthcare system (Bevan et al., 2007; Denyer et al., 2008, pp. 393–394; IDEO.org, n.d.).

RBD should be seen as a design thinking exercise between academia and practice (Huff et al., 2006), where theory is translated to practically relevant design principles through one or more translation phases (Denyer et al., 2008; Mohrman, 2007; Romme & Damen, 2007; Romme & Endenburg, 2006; Van Burg et al., 2008). In other words, design science leverages a different epistemological entry point (Dimov et al., 2021). Whether coined design propositions (Denyer et al., 2008), construction principles and design rules (Romme & Endenburg, 2006), design solutions and design principles (Van Burg et al., 2008), or technological rules (Van Aken, 2004), the resulting translations all serve as boundary objects that bridge multiple knowledge communities (Mohrman, 2007; Romme & Damen, 2007). Boundary objects are artifacts that, as symbolic carriers of multiple meanings, act as an intermediary in communication between the knowledge communities (R. J. Boland & Collopy, 2004, p. 268), effectively codifying scientific knowledge for practitioners (Romme & Endenburg, 2006). These boundary objects are mostly generated in one of two ways (Tranfield et al., 2003): either (a) by directly extracting them from one's own research (e.g. Van Burg et al., 2008, 2012), or (b) through synthesis of relevant academic literature (e.g. Romme & Damen, 2007; Sagath et al., 2019),⁸ even though it is argued they can draw on a broader variety of inputs (Van Aken & Romme, 2009).

⁷ See *The core of design thinking and its application* (Dorst, 2011) for a detailed explanation of design practices, design activities, design expertise, and a complexification of the field of design practices.

⁸ See Boaz et al. (2006) for overview of the different approaches to literature synthesis with corresponding advantages and disadvantages.

Following Van Burg and colleagues (2008, p. 116),⁹ design principles are “coherent set[s] of normative ideas and propositions, grounded in research” and design solutions are contextualized “representations of the practices being redesigned with the help of design principles.” Importantly, boundary objects in the form of design principles and solutions provide guidance while leaving room for interpretation, allowing the objects to cross epistemic boundaries and provide a realistic bridge between the different types of knowledge at play in practice and theory (Romme & Damen, 2007). Providing an example, a design principle might state that to “increase innovative capabilities, the firm needs to develop absorptive capacity – the ability to recognize the value of new, external information, assimilate it, and apply it to commercial ends” whereas the more practical shape of a design solution may “provide guidelines regarding when and how to invest in R&D, engage in cooperative R&D ventures, and so forth” (Romme & Damen, 2007).¹⁰

Importantly, in creating these boundary objects different knowledge systems are coming together and perspectives are merged (Bate & Robert, 2007). Following Nonaka and Takeuchi’s (1995) common distinction between tacit and explicit knowledge, the boundary object provides an opportunity to translate explicit knowledge to a synthesized prescriptive knowledge existing somewhere between explicit and tacit. Explicit knowledge is “codified knowledge (...) transmissible in formal, systematic language,” a *knowing that*, whereas tacit knowledge is “personal, context-specific knowledge that is difficult to formalize and communicate,” a *knowing how* (Nonaka & Takeuchi, 1995; Rynes et al., 2001, p. 347; Van Aken, 2007).¹¹ In sum, RBD generates prescriptive knowledge for practice in the form of solutions and interventions by translating descriptive, explicit knowledge through boundary objects into prescriptive, practically relevant knowledge – purporting to offer a way to bring the knowledge systems of academia and practice together and bridge the relevance gap.

⁹ At this point, no justification is needed for following Van Burg and colleagues’ (2008) terminology, as the slightly different variations of the design boundary objects function similarly enough to be irrelevant to the article’s research question.

¹⁰ In Romme’s own terminology these would be construction principles and design rules respectively (cf. design principles and design solutions).

¹¹ Please note, in the findings the notion of ‘personal knowledge’ and ‘summarized tacit knowledge’ are colloquially used to denote subcategories of tacit knowledge. Personal knowledge is simply a subset of tacit knowledge, but is occasionally used to denote the difference between the tacit knowledge emerging from the professional context of the participants and the tacit knowledge emerging more in the personal context. Summarized tacit knowledge is an aggregate of tacit knowledge emerging from the professional context of the participants which has not been formalized beyond the context.

Linearity and co-creation

Having conceptualized RBD and discussed its impetus, this article now argues that the most pressing issue facing RBD is the linearity of its design process.¹² RBD has almost entirely been conducted as a linear and one-directional process, meaning the entire design process is the responsibility and burden of the researchers. The codification of theory, the distillation of principles from practice, and the designing of the principles and solutions is all done *by* researchers *for* and *about* practitioners – see for example Bevan and colleagues (2007), Mohrman (2007), Plsek and colleagues (2007), and Van Burg and colleagues (2008). Design principles and solutions are generated by researchers and communicated to practice, which is tasked with implementing these interventions – see for example Romme & Damen (2007). Organizational science leveraging linear RBD has moved from descriptively studying practice to prescribing practice without actually engaging in dialogue with practice. More recently, little methodological developments have occurred within organizational science’s RBD. Instead the RBD articles published simply follow the linear RBD approach and generate academic articles expounding design principles and solutions for field problems – see for example Bhatnagar and colleagues (2021), Dellermann and colleagues (2019), Gilsing and colleagues (2010), and Zhang and Van Burg (2020). This linearity and the consequent lack of co-creation are at best a missed opportunity and at worst a fundamental flaw in RBD in light of the following theoretical considerations:

(i) Nature and potential of design thinking

Firstly, design approaches are well-known to offer the potential (if not necessity) for involving stakeholders, with practitioner stakeholders becoming fellow designers (Van Aken, 2007). Van Burg and colleagues (2008, p. 125) have also proven how combining deliberate and emergent design processes are essential in finding, safeguarding, and improving design solutions and principles. Combining practice-generated insights with deliberate codification of theory, they show how emergence of solutions from practice is an essential element of successful RBD.

¹² A variety of other objections and obstacles are beginning to be expounded, but fall outside of the scope of this article: from potential negative consequences in shaping future research tendencies, a dilution of the function and purported neutrality of research, and a continuation of the audit society myth in overreliance on systematic literature reviews (Hammersley, 2001) to issues with effectively selecting cause and effect in evaluation research and metasynthesis, resulting either in de-contextualized lessons or over-contextualized recommendations (Pawson, 2002).

(ii) Potential strength of diversity

Secondly, there are important indicators that synthesizing and combining different types of actors in a research and design project is generative for strengthening and expanding insights and solutions alike due to the different sense-making approaches of these different actors (Berends et al., 2011; Louis & Bartunek, 1992a). It is during the face-to-face interaction of two knowledge systems, the conversation between academia and practice, “that the innovation process really begins to ignite and take off” (Bate & Robert, 2007, p. 59; Dimov et al., 2021; Rynes et al., 2001). Berends and colleagues (2011) show how design project teams with a diversity of skills as well as internal and external actors is beneficial to the design process. Moreover, the openness and malleability of boundary objects to trigger further exploration and evolution of interventions encourages an iterative process in which this can actually occur (Knorr Cetina, 2001; Romme & Damen, 2007). Significant research is often the result of chance and exposure, which academics can (and should) strive for by creating and facilitating interaction with practice (Rynes et al., 2001).¹³

(iii) Context and implementation of the design

Thirdly, strategy and organizational literature consistently suggests how difficult the actual implementation of solutions and interventions is (e.g. Mohrman, 2007), And Sein and colleagues (2011) drive this argument home by showing how neglecting context factors in design research can be detrimental to its success. This affirms the importance of including practitioner stakeholders, as they will have deeper contextual knowledge than the academics, and will also most likely be the people to implement design principles and solutions (Mohrman, 2007, p. 20). Moreover, insights from the management-as-design approach have highlighted the importance of having the capacity and power to actually realize the designs created (Johansson-Sköldberg et al., 2013), which increases the importance of co-creation as a mechanism of generating buy-in. Moreover, presenting academic information in a typical way without helping practitioners in interpreting, summarizing, and discussing the outcomes (i.e. design solutions) is known to be a

¹³ Moreover, there is abundant research which indicates that the eventual quality of research will be enhanced by direct practitioner participation through a variety of mechanisms (Amabile et al., 2001; Richard J. Boland et al., 2001; Mohrman, 2007; Rynes et al., 2001).

“relatively in-effective way of getting knowledge to ‘take’ in practitioner settings” (Rynes et al., 2001, p. 346).

Together, these theoretical insights position co-creation as a promising addition to RBD.¹⁴ Enlisting linear RBD as its theoretical counterfactual, this article investigates how RBD may further close organizational science’s relevance gap through a co-created design process with practitioners and academics taking the role of peers. What happens when boundary objects are shaped through co-creation? Does it become an experiment that contributes to a new paradigm in which methodologies that combine the perspectives of theory and practice are further developed (Mohrman, 2007, p. 18)? Or does it become, as one of the participants referred to the advice reports they frequently received from academia [D.6.a.2], *another one for the drawer?*

¹⁴ Please note, this article is not trying to argue for the superiority of co-creation on basis of theoretical arguments. It is leveraging theoretical insights to show the importance and potential of supplementing RBD with co-creation, which it then attempts as a practical case study in order to examine the emergent design process.

III – Methodology

The longitudinal study *Vulnerable in Amsterdam* examined care provision by four CSOs to vulnerable populations during the COVID-19 pandemic, running from March 2020 to June 2022 (Van Burg, 2021; Van Burg et al., 2021b, 2021a, 2022a, 2022b). With several COVID-19 lockdowns in the Netherlands, physical contact between people and especially vulnerable groups – “those exposed to a disproportional disadvantage or harm already before the pandemic” – was severely restricted, with an expectation was that vulnerable groups would experience disproportionate negative effects from the restrictions (Van Burg et al., 2022b). Building upon Van Burg and colleagues’ unique inductive longitudinal analysis, this article focuses on the last six months of *Vulnerable in Amsterdam* (January to June 2022). It leverages a CRBD process to (i) disseminate research findings, (ii) facilitate organizational learning from the COVID-19 crisis, and (iii) implement lessons learned towards improving the participating organizations’ crisis resilience – who are already facing their next challenge: the Ukrainian refugee crisis. This empirical context is particularly suited to exploring CRBD as a potential answer to the relevance gap because the issues faced by the four participating organizations are incredibly timely, relevant, and impactful.¹⁵ The issues have not been extensively studied before, are relevant for the next crisis that is already underway, and affect some of Amsterdam’s most vulnerable population - providing a unique opportunity for CRBD to prove its practical relevance.

Research design

The dominant objective of the design process was to develop organizational solutions towards improved crisis resilience; the parallel objective of the research project was to examine CRBD processes. Assuming the parallel academic objective is best served by an in-depth and realistic case study, the practical objective was foregrounded during the design process, which meant focusing on facilitating an effective design process. The design process was based on IDEO’s human-centered design approach (IDEO.org, 2015) and adapted to the context of the case study. The design process timeline is schematically outlined below (figure 1) and outlined in detail in the

¹⁵ Moreover, the ongoing collaboration with the four participating organizations created (i) a shared awareness of the importance of improved crisis resilience, as well as (ii) a commitment to improving and addressing these issues in collaboration with the research team.

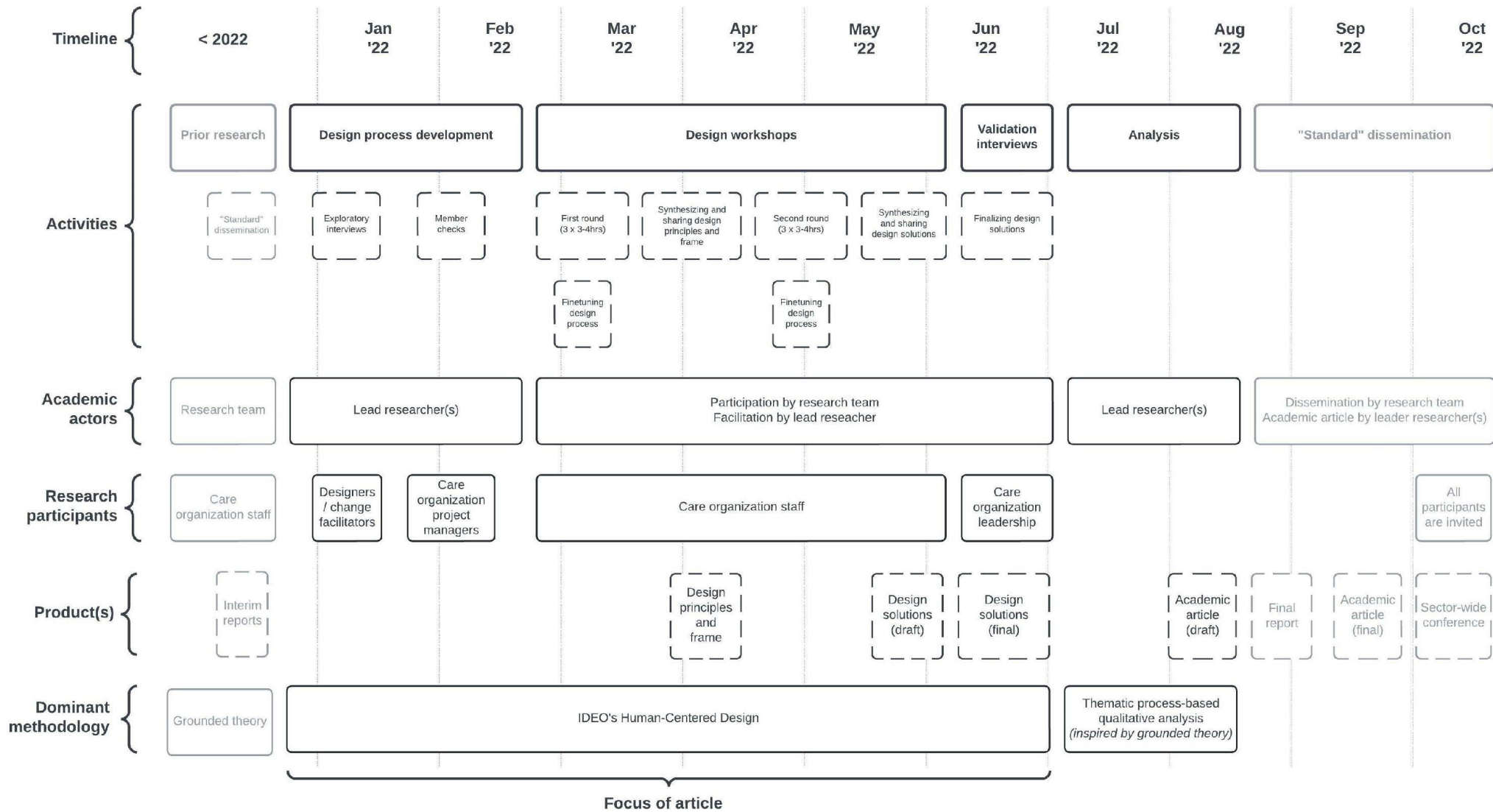


Figure 1: Design process timeline

appendices (V–VIII).¹⁶ The human-centered design approach offers a practice-tested, well-regarded design toolkit, yet its application in RBD is novel.¹⁷ The design process was facilitated by the lead researcher with prior experience using the design approach, and the remainder of the research team joined as participating designers. The design process was conducted on basis of the three dimensions of struggle that emerged during the prior research, namely:

- (i) Existing and new collaborations within shifting temporal frameworks
How might we collaborate and coordinate more effectively during future crises?
- (ii) Divergent responses to rapid digitalization needs and the provision of e-health
How might we learn from the digitalization and provision of e-health during the COVID-19 crisis to improve the utilization of digitalization and e-health now, in the future, and during future crises?
- (iii) Emergence of poignant moral dilemmas for service providers
How might we more effectively respond to and decide on moral dilemma's during future crises?

Following IDEO's human-centered design as the leading and standalone methodology meant no standard operationalization of theoretical concepts or extensive methodological framework was required prior to the design process and data collection.^{18 19} Nonetheless, this research design follows an earlier RBD case study by Andriessen (2007), who resolves this unique operationalization/methodological situation by describing the design process in detail (see above & appendices V-VIII) and adds a more traditional operationalization for the data analysis section. Qualitative thematic process-based analysis inspired by grounded theory principles served as the leading methodology for the data analysis – see below. Nonetheless, a few important methodological considerations are important to consider:

¹⁶ See IDEO's handbook (IDEO.org, 2015) and Johansson-Sköldberg et al. (2013) for a detailed overview of the design methodology.

¹⁷ However, the application of IDEO in the field of organizational science beyond RBD is not completely novel. See Andriessen (2007) for an example of IDEO's methodology in action within organizational development, and Coughlan et al. (2007) for an example of IDEO's methodology being implemented as an organizational development intervention.

¹⁸ Coincidentally but not surprisingly, the concepts of design principles and solutions developed in the previous chapter loosely link to IDEO's human-centered design phases, beginning with sharing extensively (design insights) before thematizing these insights into patterns (design principles) which guide an extensive ideation and improvement process (design solutions).

¹⁹ See 'Data Analysis' below for an operationalization and explanation of the theoretical concepts used during analysis.

Longitudinal and Multi-Method

A longitudinal approach was selected, providing sufficient time for the multi-phase design process and allowing for analysis of ‘sequences of events or activities that describe how things change over time’ (Van de Ven, 2007, p. 197), i.e. the studying of emergent knowledge creation and translation dynamics over time. A combination of multiple methods of data collection was selected as the case provides an exploratory study of a novel phenomenon: multiple analysis approaches and cross-validation, including vis-à-vis data from prior phases, was essential as no hypotheses had been established in the exploration (Berends et al., 2011; Jick, 1979; Van Burg et al., 2008).

Multi-Case

Moreover, conducting this study with four participating organizations on three themes improved the generalizability of the study’s findings by addressing the single-case-study limitation of existing RBD research (Van Burg et al., 2008), while the longitudinal and multi-method approach maintained the ability to develop an in-depth understanding.

Replicability and Verifiability

Whilst refraining from an in-depth discussion of positionality, a brief reflection on the influence of the lead researcher is worthwhile. In research which intervenes in practice – such as RBD – influencing the outcomes of the study is equally unavoidable and undesirable. Voiding the replicability, the study has tried to mitigate the impact of the influence of the lead researcher on the verifiability of the research (i) leveraging a well-regarded design methodology, (ii) by including a detailed explanation of the entire design process (see appendices V-VIII for the design process, and appendices IX-XIV for the design outcomes), and (iii) by having the remaining members of the research team participate as equal designers in the design process.

Data collection

Striving for maximum breadth, diversity, and triangulation in this exploratory study, a range of data was captured from January to June 2022, enabling in-depth and multi-method analysis of the design process from start to finish, which are discussed below (and summarized in table 1).

Type	# of sessions	# of total participants	# of unique participants	Duration (hrs)	Data type
Semi-structured interviews (exploratory)	6	6	4	0.75 – 1.5	Recordings (transcripts) and field notes
Preparatory meetings	2	8	6	0.75 – 1	Field notes
Design workshops	6	47	25	2.5 – 3.5	(i) Recordings (transcripts) (ii) Observations (field notes) (iii) Photographs (visual transcripts) (iv) Participant reflections (v) Written design solution summaries
Structured interviews (validation)	6	11	11	0.75 – 1.5	Recordings (transcripts) and field notes
Team meetings	16	-	-	0.5 – 1.5	Field notes
<u>Total</u>	<u>36</u>	<u>72</u>	<u>46</u>	<u>45 – 65</u>	
<i>Other</i>	-	-	-	-	Post-session reflections Written design solutions Prior research data summaries

Table 1: Data collected²⁰

Design process development

Six semi-structured exploratory interviews were held with academics and professionals who facilitate design processes in a variety of contexts, and two preparatory meetings to co-develop the design process were held with the project managers at the participating organizations.

Design workshops

For each of the three main design themes two rounds of design sessions were scheduled with representatives from each participating organization and the research team. These design sessions were captured in four distinct ways:

- (a) Audio recordings, which were transcribed in full;
- (b) Observation of non-verbal dynamics by a non-participating researcher;
- (c) Photographs of the outcomes of the design exercises, which were subsequently processed in visual transcriptions;

²⁰ Throughout the findings, an identifier system is used to indicate the type of data, the number of the session, the number of the participant, and – when applicable – the participant type or document number.

- (d) Post-session reflections by participants;²¹
- (e) Written design solutions syntheses made by the lead researcher.²²

Validation interviews

Structured validation interviews were held with management representatives from each of the participating organizations as well as the research team itself.²³ The interviews discussed the three sets of design solutions, inquiring into the applicability, feasibility, and potential obstacles and impact of the designed solutions.

Ongoing

Throughout the design process members of the research team held meetings reflecting on and fine-tuning the design process as well as developing and reflecting on the emergent design principles and solutions. These meetings were captured through field notes and leveraged in the final analysis.

Previous research

Data from previous phases of the research – including 75+ employee interviews and field visits with the same four organizations – was leveraged both as primary data when required, and through secondary means: articles, project reports, and summaries created from the data by the research team (Van Burg, 2021; Van Burg et al., 2021b, 2021a, 2022a, 2022b). Moreover, the data was leveraged in summarized form in the design workshops through presentations, dissemination summaries, and having the research team join as participants.

All design workshops were held in person, five out of six structured interviews were held in person, and the preparatory and team meetings as well as the semi-structured interviews were held in person were possible and otherwise digitally via Zoom. Nearly all interviews were conducted by multiple researchers.

²¹ All participants were invited to share any reflections in the day or two after the sessions in which they partook, but only research practitioners and academics shared reflections after the sessions.

²² See appendices IX-XIV.

²³ Efforts were made to conduct interviews with the highest layer of management available as well as those management actors that were responsible for the portfolios for which the solutions were designed.

Data analysis

Following Charmaz (2006) and Strauss and Corbin (1990), a grounded theory inspired qualitative thematic process-based analysis was conducted. The analysis began with open coding using Atlas.TI, focusing on exploring the emerging dynamics in co-creation with different types of actors and different knowledge types. More specifically, open coding was informed by (i) the different knowledge types, following Nonaka and Takeuchi (1995) and Rynes and colleagues (2001), (ii) the different aspects of boundary object creation, loosely following Van Burg and colleagues (2008), namely design principles and design solutions, (iii) the dynamic between the different participants, and (iv) especially how these three dimensions played out over the course of the design process. In this initial round of coding, the focus was placed on the verbal transcripts, visual transcripts, and observation field notes of the design sessions, as these most directly captured the process of academia and practice co-creating boundary objects. These transcripts and field notes were analyzed using a “recursive, process-oriented, analytic procedure” until the emerging picture became clear. (Locke, 1996, p. 240; Van Burg et al., 2008).

Following Gioia and colleagues (2012) in their systematic approach to achieve conceptual and analytical credibility and groundedness, after the initial round of coding, the emerging first-order (informant-centric) codes were clustered and organized into second-order researcher-centric themes, which were subsequently thematized into aggregate conceptual dimensions – see figure 2.

As shown, four aggregate processes and four participant roles emerged from the data during the initial round of coding, and these were further confirmed upon reviewing the data structure and conducting another round of coding. The participant roles are mostly self-evident, but they are briefly described in the introduction of the next chapter and outlined in table 2. The four boundary object creation processes that emerged are as follows:

1. ***Understanding/sharing***: the knowledge type in which participants are inclined to understand and share insights as well as challenge or affirm others’ insights.

For example, sharing an anecdote about a client-practitioner interaction.

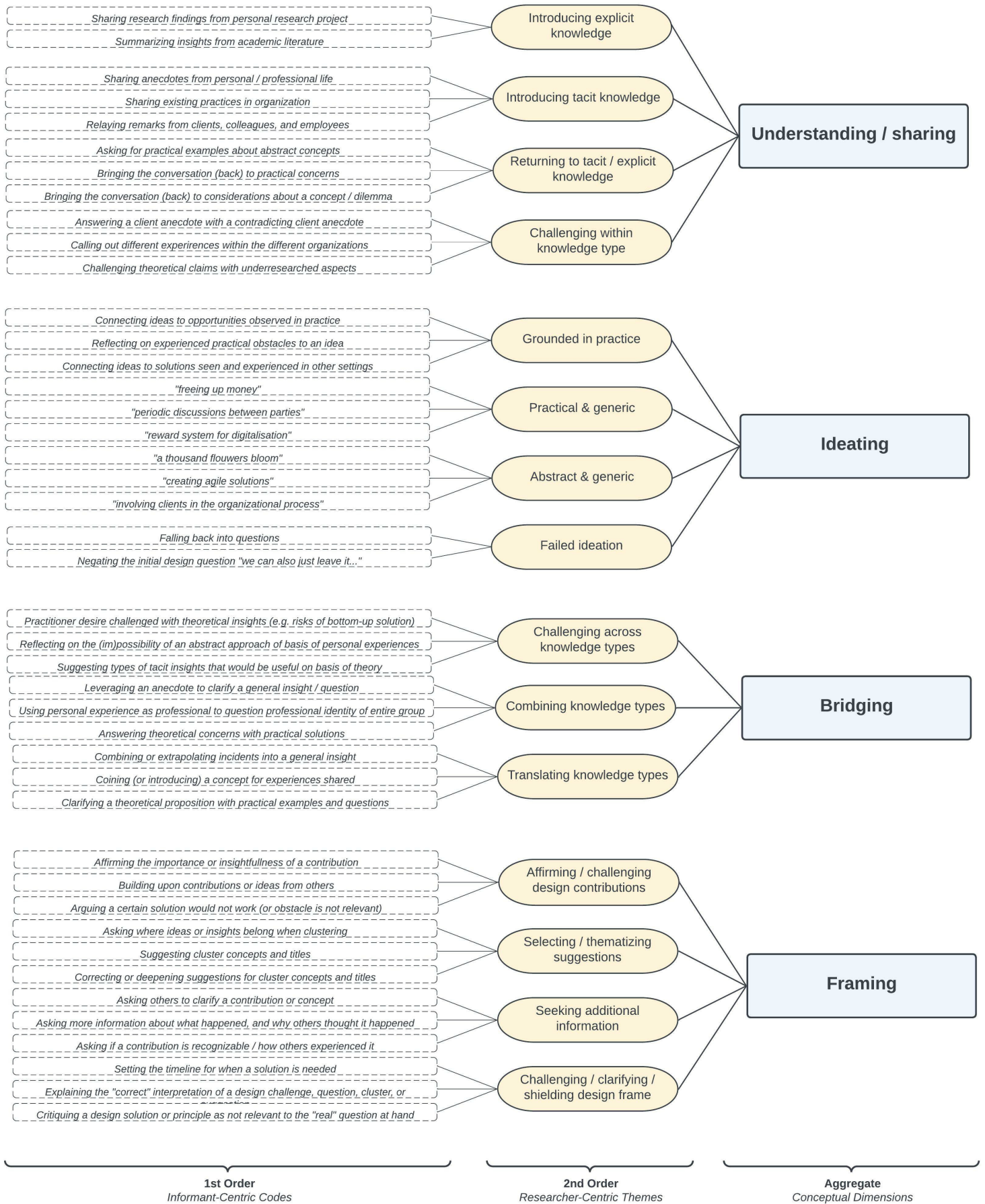


Figure 2: Emergent categories

2. **Ideating**: the knowledge type, level of groundedness (i.e. its level of connectedness to obstacles and opportunities located in practice), and level of specificity of suggestions for design principles and design solutions.

For example, generating a tangible solution that is connected to an existing, context-specific work process.

3. **Bridging**: the challenging, combining, and translating of knowledge types, effectively crossing over from one knowledge type to another.

For example, translating a theoretical insight by means of context-specific and practical examples.

4. **Framing**: the dynamic by which the design challenge, the design principles providing direction, and the emerging design solutions are introduced, selected, contested, and shielded by the participants.

For example, challenging what the core issue is within the design workshop.

During the second round of coding, the remaining data was included in the analysis, further strengthening the emerging processes and roles and providing a handful of additional second-order themes within them.²⁴ Special attention was paid in the semi-open coding (guided by the first round of coding) of the validation interviews to the perceived applicability, implementability, and potential impact of the solutions – i.e. assessing the designed solutions with leadership.

As a final step, when the processes and roles described above had emerged and solidified, an additional round of coding was conducted with special attention to the trajectories of ideas as they were iteratively shaped by these four process dimensions and roles. Abstracting the interactions and relationships between these processes and roles, a conceptual model was created that schematically depicts idea trajectories within a co-creative design process (see figure 3).

²⁴ The semi-structured exploratory interviews, preparatory meetings, and ongoing research team meetings were also already analyzed during the design process itself, using a simple content and thematic analysis process without formal coding, in order to strengthen the design process by leveraging (i) best practices from the professional field, (ii) improve the design process to fit the needs and restrictions of the participating organizations, and (iii) to ensure the design process was achieving its goals.

IV – Findings

Responding to the linearity of RBD, this study explored how organizational science’s relevance gap may be addressed by examining what happens when co-creation is leveraged in RBD. In short, CRBD emerged as an iterative process in which different types of actors collaboratively interact across different knowledge types to generate boundary objects in the form of synthesized sets of shared design solutions, which were perceived by the participants as scientifically legitimate and practically relevant. Different roles and their different types of boundary object creation patterns converge towards a mutually accepted design solution. In what follows, the (i) different roles and corresponding abilities, and the (ii) iterative process in which these come together to generate shared boundary objects will be summarized. Together, these two dimensions show the potential for bridging the relevance gap through the creation of a shared space, time, and methodology in which interaction across knowledge types can happen iteratively.

(A) Participant roles

The nature of IDEO’s human-centered design approach is such that all design-participants become intimately involved in creating boundary objects, which happens through design exercises that require every participant to collaboratively suggest design solutions, distill design principles, challenge and improve design principles, and more.²⁵ While arguably one of the approach’s enticing features, against this backdrop four distinct roles nonetheless emerged, with distinctive patterns, preferences, and abilities: the client-facing, strategic level, and research/policy practitioner, and the academic – see table 2 for an overview of participants.²⁶

²⁵ Including those participants who might normally be less inclined to engage in bridging practices.

²⁶ There is naturally some diversity and heterogeneity within these groups – for example, academics who are better able to introduce explicit knowledge in a palatable vocabulary [D.2.c.3] and academics who are less successful at this [D.5.d.4].

Role	# of unique participants	# of total participants	Comment
Practitioner: client-facing	12	13	Includes one research practitioner who was in a client-facing role during the crisis.
Practitioner: strategic level	4	7	Includes some participants with moderate policy responsibilities.
Practitioner: research and/or policy	4	7	
Academic	4	14	
Facilitator	1	6	When participating in exercises the facilitator functioned as academic (and is cited as such).
Total	25	47	
# of average participants per session	-	8	

Table 2: Design session participants

1. Client-facing practitioner

Understanding/sharing: Client-facing staff are more than any other role preoccupied with tacit knowledge. They understand and communicate their lived professional experiences as tacit knowledge. Their contributions are often about context-specific, personal experiences with clients, organizational processes, and problems – for example, grappling with how best to provide care to a conspiracy-thinking client: *how many more times do you engage in that discussion with someone before you actually kind of destroy the caregiver relationship* [D.2.a.1]?²⁷ Client-facing staff self-reflexively acknowledge their focus on tacit knowledge: *“what I bring: I think just my own experience, what you see in the field and at peoples’ homes”* [D.2.a.5].

When conversations abstract to a more explicit level, client-facing staff often bring the conversation back to tacit knowledge through practical examples: responding with *“do you have an example?”* to the abstract notion of paternalism coined by another participant [D.2.a.4], or short-circuiting an abstract suggestion by arguing *“I mean, actually I just always ask [my team members]: what do you think? And 9 out of 10 times that’s simply the solution”* [D.2.a.2]. Encouraged by the design process, client-facing practitioners (especially at a management level) at most summarize their personal experiences to generate summarized tacit knowledge, remaining

²⁷ All quotes from primary data, indicated by the usage of square brackets and an identifier, have been translated by the author.

context-specific yet slightly more generalized, for example: “*something I thought was good, and still do, is that many more clients are now more easily reachable by phone*” [D.5.a.11].

Ideating: Client-facing staff excel at grounding the boundary object in practice, meaning their design solution suggestions are often connected to direct obstacles and opportunities they locate in practice, from creating a financial buffer grounded in actual budget creation procedures [D.4.b.9] to suggesting formalizing an already existing collaboration [D.4.a.10]. A telling example is recognizing the opportunity to address existing communication issues around digital skills by leveraging the existing intake process:

“A problem that we run into in practice at least, is that the communication about these things never works out. That’s why I think the intake is important. If you take the intake (...) you already have someone in front of you who is interested to work with your organization” [D.5.a.12].

Bridging: Client-facing staff is less likely to bridge different knowledge types, scarcely engaging with explicit knowledge introduced by academics or research practitioners.²⁸ When required by the design process to bridge, their inability to do so effectively became evident, for example when a client-facing staff failed to explain a design principle they had just co-created:²⁹

“ehh what, what does this say again? (...) Ehm... did we, did you write that down? No? [laughs] (...) Well, that’s an insight, at least. Because eh, I’m thinking which, which examples fit with that. Ehm...” [D.3.a.8]

Framing: Client-facing staff also engaged meagerly with the design frame – i.e. the design challenges and emerging principles and solutions. Their engagement with the perspectives and contributions of other practitioners focused on (i) simply understanding them on a tacit level –

²⁸ The only observed exceptions came from client-facing staff with a significant policy portfolio; the client-facing staff member utilized the notion of ‘digital champions’ – introduced earlier by an academic – when trying to strengthen the design solution: “*the solution for that I think could be to offer champions a future in other functions*” [D.5.a.12].

²⁹ At this point, two of the academic participants jumped in to clarify the design principle, after which the client-facing practitioner was actually able to relate it to important and new tacit knowledge about their clients.

“what I hope to bring home are your points of view” [D.2.a.4] – and (ii) on the value their perspective might hold for their personal practice, for example:

“What I’m hoping to get is kind of: how did other caregivers experience this? (...) Ehm, and what I want to walk away with, yes, ehm, perhaps a little more knowledge and preparation for another crisis or perhaps a new wave of corona.” [D.2.a.3]

When engaged in framing, it was (i) done by client-facing managers or (ii) by challenging the frame using deeply tacit knowledge, for example when one client-facing practitioner explained how they sometimes deal with moral dilemmas in practice:

“It might sound crass for outsiders, but as a final question in case study (...) we ask, if someone dies now, how would we respond? Would we feel like shit because we didn’t do the right thing or would we say: we couldn’t have done anything other than this?” [D.2.a.4]

2. Strategic level practitioner

Understanding/sharing: With few exceptions, strategic level practitioners share summarized tacit on basis of their professional experience running their departments/organizations. Deeply experienced, their summarized tacit understandings approach explicit knowledge, for example:

“Because you know with more than 100% certainty that if there’s a crisis, there will be a lot of volunteers, but they are different volunteers than the ones who join in on the regular process.” [D.4.b.2]

They leverage their summarized tacit knowledge to foreground the issues and questions they see as pertinent – e.g. the problematic nature of short term funding stream during the crisis [D.3.b.4]. They also have a tendency to combine their personal attitudes and beliefs with summarized tacit knowledge in order to put force behind a design question or possible design solution, e.g. utilizing sport centers for shelter: *“during a crisis everyone is vulnerable, but I think in the end it’s about supporting care for the vulnerable – and sport is important, but hey, you can also run in a park”*

[D.4.b.1]. They very occasionally bring in explicit/theoretical input when necessary to give force to their priorities.

Ideating: The ideation practices are not what set this role apart, as the design principles and solutions ideated by strategic level practitioners are generally focused on practical solutions for issues they signal as important, yet more generic and less grounded than client-facing staff. For example, trying to generate solutions towards improved crisis collaboration, strategic level practitioners suggest *“biweekly, or just periodic, discussions between policy and executive representatives”* and informal networking events with shared brainstorming [D.1.b.1 & D.1.b.2].³⁰ However, they do build upon ideas from client-facing staff – *“I would be very much in favor of setting up a permanent crisis location in the city...”* [D.4.b.2] – even if they are not always successful at translating their priorities to tangible principles and questions.³¹

Bridging: While strategic level staff stick mostly to summarized tacit knowledge combined with their personal values and beliefs, they are able to switch between different levels of abstraction, summarizing the information they gathered. They mostly employ bridging to foreground their priorities, for example by leveraging a personal experience with employee contracts to argue for a possible design principle/solution:

“A lot of personnel has (...) gotten a temporary contract 4 or 5 times, and that turned out okay in 100 percent of the cases. (...) you can actually map a few consequences together, and agree to cover those risks together.” [D.4.b.2]

Framing: Similar to researcher practitioners and academics, strategic level staff has a distinct ability to grasp the boundary objects – i.e. design questions, principles, and solutions – as they are collaboratively being shaped. This enables them to course-correct others when needed by clarifying the question/principle/solution,³² for example *“no, yes, there are definitely a few things*

³⁰ There were only a few observed exceptions where ideation was grounded in practice by strategic level staff – for example by leveraging minimal digital solutions for waiting lists [D.5.b.5].

³¹ Instead, they sometimes get stuck in asking and flagging several questions that require a resolution, without brainstorming the direction – *“Yes, how do we deal with change? How do we make sure, that, that, the culture, the technique in an organization is at an acceptable level? And how do we bring that, such that the connection can be maintained?”* [D.3.b.5].

³² Although this is done more frequently by research practitioners and academics.

that I think could be useful, but I don't think we're preoccupied with those at the moment" [D.4.a.9 / D.4.b.1].

More than any other role, they take on challenging the design frame set, which appears to stem from their passionate commitment to their missions.³³ The challenging is done in a variety of ways, from leveraging personal attitudes and beliefs to leveraging summarized tacit and explicit knowledge, for example by reframing a volunteer capacity principle:

"What [a professor] always says is, you must, you never have to worry whether there are enough volunteers, that's not the question. (...) The question is, how do you ensure that, when you need them, that you manage to get the right people at the right place?" [D.1.b.2]

3. Research / policy practitioner

Understanding/sharing: Research practitioners are "boundary spanners", consistently engaging with the different types of knowledge and seemingly able to switch with ease. They bring in explicit knowledge, mostly towards the ideation in the later stages, e.g. by introducing a dialectic "conversational form" as a way to approach moral dilemmas [D.2.c.3]. Moreover, they take a leading role in summarizing tacit knowledge and distilling key elements, e.g. by reflecting on digitalization's tension between increased efficiency and employee dissatisfaction:

"And I think that you really hit diverging interests (...) Caregivers like it a lot to visit people at home, I hear that a lot. That, that is also the reason that they did this work." [D.3.c.4]

The key distinguishing feature is their ability to fluidly switch knowledge types while continuing to be intelligible to others. Especially the two researchers³⁴ also engage with the explicit

³³ This becomes apparent non-verbally [D.x.f] as well as through their engaged question asking when grappling with possible solutions and insights that could be practically relevant, for example: *"With that joint venture, is that comparable to a..."* [D.4.b.2], *"Do you mean with clients?"* [D.5.b.5], and *"Because could you tell me about the benefit of no rules?"* [D.4.b.1].

³⁴ Meaning the two researchers [D.x.c.1 & D.x.c.2] as opposed to the two policy staff [D.x.c.3 & D.x.c.4], together making up the four research and policy practitioners.

knowledge shared by academia, for example by taking on the theoretical concept of ‘urgency’ introduced earlier by an academic [D.3.c.2].

Ideating: Research practitioners ideate across knowledge types and levels of practical groundedness, providing suggestions from abstract and generic – e.g. *“a thousand flowers bloom, so let everyone do what they’re good at and then you share the emerging patterns, those you can centralize”* [D.1.c.1.] – to practical solutions – e.g. *“morality cafe, instead of a Friday afternoon happy hour”* [D.2.c.3]. In occupying this middle position, they achieve neither the groundedness of client-facing staff, nor the in-depth explicit contributions by academics.

However, they do excel at translating the explicit, the tacit, and the personal in their ideation, building upon their own experiences, theoretical insights, and observations within their own organization, for example:

“[A]bout how those social skills, that we all have as social professionals, how can you translate those to the digital world? So we started playing games (...) and that’s very silly, but we (...) felt a little bit more connected with each other. (...) And how can you subsequently translate this to the work with clients?” [D.3.c.2]

Bridging: Translating across knowledge types while remaining intelligible to others, research practitioners excel at bridging. They connect tacit and explicit knowledge, including personal values and beliefs, in a variety of ways, from connecting organizational change literature with tacit knowledge about digitalization attempts [D.2.c.3] to leveraging explicit reasoning to situate and relativize an example raised by a practitioner:

“[T]he example of the forced removal we just talked about (...) it perhaps is a dilemma when you are by yourself (...) but when you are able to bump it up the chain to someone who can prevent the dilemma, you in fact resolve it. So in that sense, you can make a distinction between dilemmas with and without a resolution”. [D.2.c.1]

They also fulfill a bridging function by combining and synthesizing knowledge shared by other participants, for example by leveraging an earlier example as well as summarized tacit knowledge to emphasize an explicit question:

“I think this has made it crystal clear, this crisis: the question of how we want to treat vulnerable people. (...) we were just talking about this (...) and I personally think that (...) it is very much paternalistic (...) how clients were treated in light of the crisis.” [D.2.c.3]

Framing: Finally, they take a generative role in the design process by actively seeking clarification and additional information from other participants, for example: *“and to what extent do you use a specific method, or ehh do you use the, I don’t know, professional code for social work?”* [D.2.c.2] Secondly, they correct and redirect deviations from or misunderstanding about the emerging boundary objects.³⁵ And lastly, they return the design group to the core design challenge, for example by seeking clarification of core concepts of the design frame: *“I was kind of holding the question, what do we actually mean by ‘centralized’?”* [D.1.c.1].

4. Academic

Understanding/sharing: Academics take up significantly less space in the design process, especially in the earlier stages of the design process, contributing significantly less knowledge than others. With a tendency to fall back into an observing role [D.2-5.f & T.11], their foremost contribution was deepening the knowledge shared by others. The knowledge they did contribute was predominantly explicit knowledge from their theoretical/research background, both disseminating prior research findings³⁶ and building upon their theoretical knowledge, for example:

“Collaboration becomes less efficient. And what causes that? We see that the temporal dimensions are rather different for different organizations...” [D.4.d.2]

³⁵ For example by reiterating the design question at stake: *“that’s not what I am focused on. What matters to me, just, in how far do you (...) stimulate [the client to get vaccinated]”* [D.2.c.3].

³⁶ Disseminating prior research findings was also included as a standard element of the design process, where an academic would hold a brief presentation in the second round design workshops on research findings (from their own research and related academic literature) guided by the design principles and questions collaboratively developed in the first round.

Moreover, when they did contribute knowledge beyond the formal dissemination moments, the knowledge they shared was either purely explicit – e.g. “*communicate in a vocabulary that matches both the identity of the employees and the vision of the organization*” [D.5.d.4] – or summaries of research findings.

Ideating: Similarly, their attempts at ideation are rarely grounded and generally the most abstract and generic out of all the roles, for example “*ehm, I thought of creating agile solutions*” [D.5.d.1] and “*involving clients in the organizational processes*” [D.5.d.4]. The only grounded ideation attempts by academics build upon practitioner solutions. However, with considerable frequency the academics’ ideation is actually an attempt at bridging, where they introduce explicit knowledge in response to obstacles or opportunities raised by practitioners, for example:

“One of the solutions is actually to ehm think about different temporal dimensions (...) for example, starting with centralized organizing and then switching to decentralized organizing at a later stage.” [D.1.d.2]

Another key pattern of academics is abstracting, synthesizing, combining, and using explicit knowledge to strengthen ideas coming from the practitioners, for example by formalizing an idea created by a practitioner or by suggesting the mapping of client abilities in response to issues raised by practitioners: “*I’m seeing a lot of post-its that say (...) digital illiteracy. It’s also important to, to, map: what do clients need? What are they able to do, and what are they not?*” [D.3.d.2].

Bridging: After research practitioners, academic are most focused on bridging, attempting to introduce explicit knowledge and make it relevant to the design frame. They build upon ideas and obstacles raised by practitioners and try to further these with explicit knowledge, for example:

“We also looked at how you ensure there aren’t too many people at the table. (...) There is a theory about the structure of a discussion, whereby it does or doesn’t work anymore, which states that groups of a maximum of 10 members...” [D.4.e / D.4.d.2]

However, the bridging attempts are not always successful, as the gap between the knowledge types and corresponding vocabulary can complicate or obstruct successful translation, for example: *“I still find it a confusing term, but okay (...) I wouldn’t know how to stimulate a professional identity in my organization”* [D.5.b.5].

Framing: However, the most defining academic characteristic was not leveraging academic skills to synthesize, abstract, and recognize patterns,³⁷ but to consistently seek out additional information from design peers for the entire design group to leverage. More than any other type of contribution, they asked questions and sought clarification – e.g. *“what was the underlying thought?”* [D.1.d.2] and *“what do you mean by a coffee cup action?”* [D.5.e].³⁸

Finally, rather than challenging the design they took on the role of clarifying the emergent boundary objects to other practitioners and shielding them against challenges that were too subversive. For example, when a practitioner challenged whether moral dilemmas were even resolvable [D.2.a.2] an academic saved the frame by clarifying:

“There might be no solution to a dilemma but still just the opportunity to talk to someone about it. (...) you still kind of find a solution or way that include as many aspects and would an even better justification, then just by being on your own and like just doing something.”
[D.2.c.3]

While all roles participated meaningfully and everyone appeared to listen and take each other seriously [e.g. D.4.f], practitioners received more attention from the design group and were treated as the primary source of ‘input’ for the design process [e.g. D.4.f & D.1.f]. Simultaneously, the conversation is often directed towards the academics (including the facilitator) – e.g. *“[name] talks about how he sees the future, talking very much to [the facilitator], paying little attention to the rest of the group”* [D.4.f]. The academics and facilitator appear to be seen as figures of authority in legitimizing and further developing the ‘input’ generated by practice.

³⁷ A skill the practitioners acknowledged and appreciated, for example: *“I think the concept of loneliness, which you picked out, I think that’s a great one. I didn’t say it, but it is, yeah it is truly what it’s about. Yes, beautiful. That one should be included.”* [D.6.a.2]

³⁸ There were even indications that there were indications that the question-asking of the academic actors actually encouraged other roles to also engage in questioning others – both during the group discussions [D.1-5] as well as during the paired exercises [D.4.f].

Role	Understanding / Sharing	Ideating	Bridging	Framing
Practitioner: client-facing	<ul style="list-style-type: none"> ▪ Predominantly tacit and personal knowledge ▪ Returning the process to tacit levels 	<ul style="list-style-type: none"> ▪ Connecting suggestions to practical obstacles and opportunities ▪ Grounding the boundary object in practice 	<ul style="list-style-type: none"> ▪ Struggling to bridge ▪ Little engagement with explicit knowledge 	<ul style="list-style-type: none"> ▪ Little engagement with the design challenge / frame ▪ Focused on understanding others and improving their own practice
Practitioner: strategic level	<ul style="list-style-type: none"> ▪ Predominantly summarized tacit (and personal) knowledge ▪ Leverage knowledge to foreground priorities ▪ Able to introduce explicit when deemed necessary 	<ul style="list-style-type: none"> ▪ Focus on practical suggestions ▪ Mostly generic suggestions not deeply grounded in practice 	<ul style="list-style-type: none"> ▪ Easily able to switch between levels of abstractions, yet sticking mostly to tacit ▪ Leverage bridging personal attitudes/beliefs to guide towards priorities 	<ul style="list-style-type: none"> ▪ Distinct ability to grasp the boundary object ▪ Most active challengers of the design frame ▪ Sense of ownership and urgency regarding the design challenge
Practitioner: research / policy	<ul style="list-style-type: none"> ▪ Predominantly summarized tacit knowledge, combined with explicit knowledge ▪ Strong tendency to abstract ▪ Fluidly switching between different types of knowledge 	<ul style="list-style-type: none"> ▪ Diverse types of suggestions, spanning knowledge types and levels of groundedness ▪ Yet not excelling at each of these types 	<ul style="list-style-type: none"> ▪ Strong ability to translate and communicate between knowledge types (beyond all other roles) ▪ Introducing and translating explicit knowledge ▪ Bridging by summarizing, synthesizing, and clarifying 	<ul style="list-style-type: none"> ▪ Actively seek clarification and additional information ▪ Correct and redirect misunderstandings and deviations from the boundary object ▪ Leverage explicit knowledge to challenge the frame
Academic	<ul style="list-style-type: none"> ▪ Take up minimal space in contributing knowledge ▪ Predominantly explicit knowledge (purely theoretical, or summarized research findings) 	<ul style="list-style-type: none"> ▪ Abstract and generic suggestions, rarely grounded in practice ▪ Consistent abstracting, synthesizing, and strengthening of suggestions coming from practitioners 	<ul style="list-style-type: none"> ▪ Strong focus on bridging explicit and tacit knowledge, starting from explicit ▪ Consistent attempts to translate explicit knowledge to practitioner, with varying success 	<ul style="list-style-type: none"> ▪ Most actively seek additional information and clarification, creating additional input for the process ▪ Instigate other participants to question each other ▪ Shielding and clarifying boundary object

Table 3: Participant roles summary

In sum, the first key finding of this study is (I) how different types of participants take on profoundly different roles in the creation of boundary objects within the CRBD process – see table 3 for an overview of the role behavior.

(B) Co-creation trajectories

This section examines how these boundary object creation processes convergence and interact, generating two additional key findings. The second finding shows (II) the functioning of iterative improvements, showing how boundary objects (and the eventual design solutions) are successively influenced by the different roles, emerging as a mixture of the different knowledge types and requiring a diversity of roles. The third finding shows (IV) how the design process creates the time, space, and methodology needed to facilitate communication and convergence across knowledge types. Lastly, perceived relevance and validity are discussed.

1. Iterative improvements

The design solutions as boundary objects are created over the course of the design process by means of the (i) understanding/sharing, (ii) ideating, (iii) bridging, and (iv) framing by the different roles.³⁹ As a result of the design process setup (see appendices V-VIII), the process of (i) understanding/sharing occurs throughout the sessions, (ii) ideating starts midway (when sufficient input has been generated), (iii) bridging occurs after some understanding/sharing has occurred and fades as the design group coalesces around shared boundary objects, and (iv) framing becomes present when patterns and a directions emerge from the understanding/sharing and fades slowly as the process converges. The goal is to illustrate the wide variety of interactions across the roles and their respective approaches to the boundary object creation processes, showing how boundary objects are iteratively strengthened precisely by the different types of contributions.⁴⁰ In other words, this section shows how the CRBD process creates boundary objects that are successively influenced by the different roles and become a co-created mixture built up out of many contributions across knowledge types – simultaneously more grounded in practice and more theoretically informed than possible if created by one of roles. With insights and solutions iteratively challenged and developed by a diversity of perspectives, a strengthened boundary object

³⁹ Moreover, they also become legitimized by means of this very process, see ‘3. Perceived Relevance & Validity’.

⁴⁰ Please note, the goal is not to provide an exhaustive or systematic overview of the interactions between the processes, as no further systematic interaction patterns emerged and the different idea co-creation trajectories observed took significantly different routes.

is able to emerge. Below are three of the many examples of co-creation trajectories, following ideas as they are iteratively strengthened by different knowledge types and roles.⁴¹

Grounding in practice

A digital only spin-off was suggested as theoretical possibility by an academic – “*a separate spin-off for our organization*” [D.5.d.1] – and then picked up by a strategic level practitioner who leveraged it to challenge the emerging boundary object – “*we’re very focused on problems and those kind of things, but to what extent could digital increase access to care*” [D.5.c.5]. They suggested the digital spin-off could address the problem of outsized waiting lists – which was raised twice before in the sessions by practitioners– as “*then it would really add something*” [D.5.c.5].

This co-creation trajectory starts with an academic ideating a theoretically informed abstract and generic solution (explicit knowledge), which is subsequently grounded in practice by a practitioner, connecting it to an opportunity they located in practice (tacit knowledge), thereby strengthening the suggestion and challenging the design frame.

Successive steps

In the first round [D.3 & A-XIII], the utilization of digital technologies for clients and the inventorizing of digital needs of clients were selected as the highest priority design challenges in response to the current lack of overview of both the availability of digital services as well as the current lack of insight into client desires and needs – both were collaboratively developed design insights and principles [D.3].

Taking on this design challenge, an academic returns to the lack of overview of available services by suggesting developing “*an overview of all the available digital trainings for your target audience and sector (...) which can easily be shared*” [D.5.e]. A client-facing practitioner furthers this by making it into a ‘menu card’ which, following the suggestion of another client-facing practitioner, is immediately shared during the intake process

⁴¹ All examples are intentionally taking from one session [D.5] – and a brief reference to the first round session on the same topic – to show the depth and breadth of communication, translation, and development across knowledge types and roles.

[D.5.a.12]. An academic subsequently flags how important it is to get employee buy-in to ensure *“employees don’t forget to invite people and are excited to show digital solutions from the menu”* and how it should be available in print and online [D.5.d.3]. The practitioner then further grounds the suggestion in practice by suggesting the involvement of clients in compiling the available trainings and splitting the menu up into levels of skill – *“as there are enough clients who are digitally able, and who don’t want to do things they can already do”* [D.5.a.12]. After several additional contributions, challenges, additions, and developments and following the warning from another client-facing practitioner about making the steps small enough to be palatable to clients and staff [D.5.a.11], an academic suggests an incremental implementation process, allowing for immediate implementation [D.5.d.3].

After much more design work making it a tangible and comprehensive recommendation and connecting it to other emerging design solutions, the solution became a core design solution offered in the final advice report – having been co-created in some way by several academics, several client-facing staff, and a strategic level staff member and spanning tacit and explicit knowledge. It was then evaluated and improved further in the validation interviews by executive level staff [V.x].

Bringing in theory

The notion and importance of ‘champions’ in digitalization and e-health development was introduced by an academic on basis of the previous phase of research [D.5.d.4]. It was subsequently recognized by a practitioners who connected it to their tacit knowledge about employee turnover: *“I have another [risk]: the champions quit. Passionate employees who carry are lost due to sickness, pregnancy, other jobs. We notice this in our organization that [the change process] stagnates. And if it stagnates, it fails”* [D.5.a.12]. The risk raised by the practitioner was taken up by two practitioners in ideation, a client-facing practitioner created intra-organizational solutions *“offering the champions a future in different functions”* [D.5.a.12] and a strategic level practitioner leveraged it to challenge the digitalization frame towards more collaboration: *“so if your champions are gone, but we still have champions, why don’t we just see that as a collective thing?”* [D.5.b.5].

This final co-creation trajectory example shows communication across knowledge types starting with an academic sharing an important theoretical variable in successful digitalization. Having successfully translated the explicit knowledge, practitioners connect it to their tacit experiences to enrich the insight with an additional dynamic (the loss of champions), which subsequently becomes part of the design challenge and is addressed by ideating solutions, including one by a strategic level practitioner who uses it to challenge the frame.

Together, these three examples show the breadth of boundary object creation interactions that cross knowledge types and involve a diversity of roles and processes (understanding/sharing, ideating, bridging, framing) – see figure 3 for a schematic overview of this process as the co-creation trajectory moves from insights to principles to solutions to the final recommendations. These final solutions generated in the CRBD process have been co-created through many such knowledge interactions, becoming enriched and strengthened at each step.

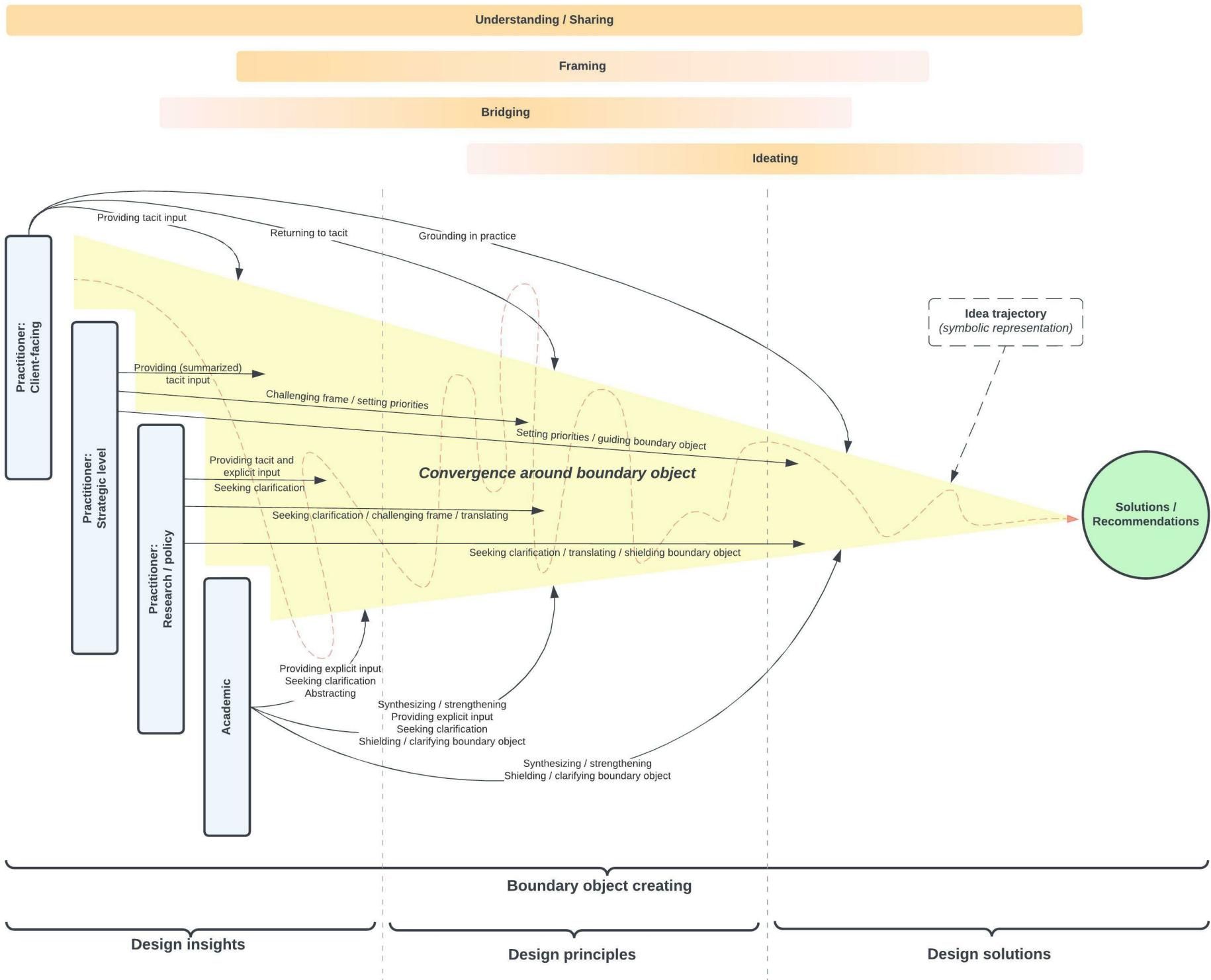


Figure 3: Knowledge bridging through co-creative design

Convergence around the boundary object was generally a natural outcome of the process, with voting for boundary objects almost always resulting in consensus. When a spread of priorities did occur, the boundary object was simply developed further to incorporate these different priorities, for example in combining the two priorities of the reward system for digital growth and the embedding of digital inventorizing into the intake process [D.5.g] – see figure 4 below for the visual design workshop transcript.

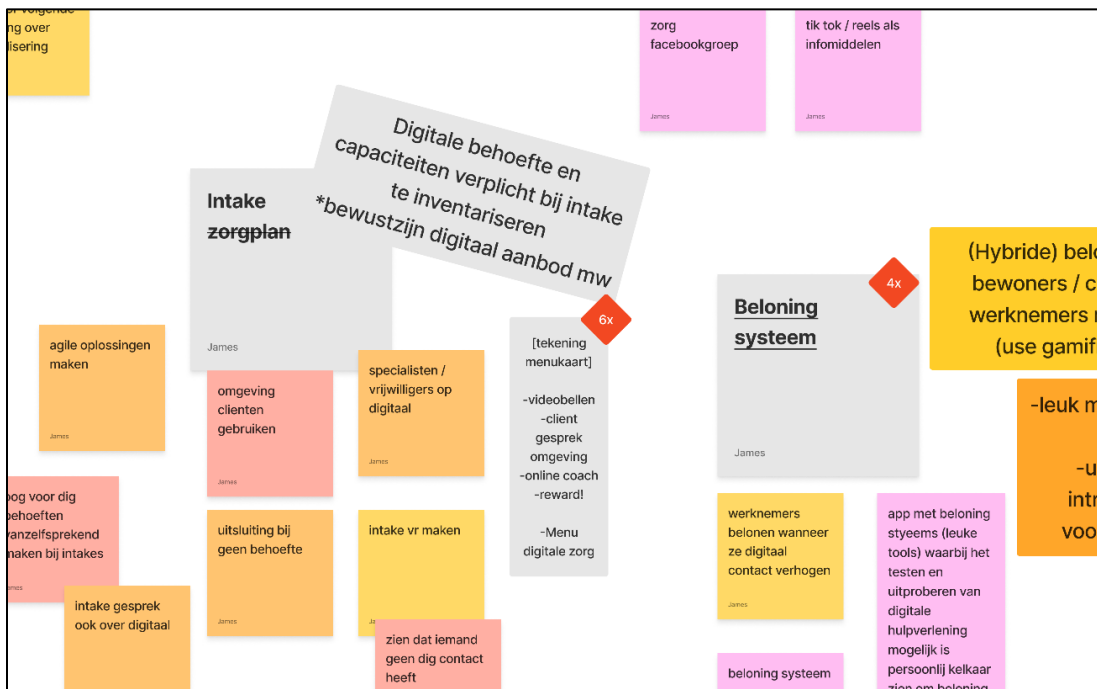


Figure 4: Example of spread priorities

Moreover, the boundary objects were progressively embraced by the different perspectives, with individual suggestions becoming less distinct – and challenges less frequent – as the shared boundary objects crystallize and solidify. This suggests mutual learning and a recognition of the participants’ priorities and perspectives in the solution, which was also shown by the counter-example of a participant rebelling against the emergent boundary object due to it not aligning with their priorities [D.4.b.5]. Convergence around a set of shared boundary objects indicates a

successful synthesis, which is further affirmed by the matching recollections of the core boundary objects spanning the time between design rounds [e.g. D.4.b.1 & D.4.d.4].⁴²

2. Time, space, and methodology

An experienced design director argued that *“it’s not about making something really, the vast majority of [design work] is really this kind of gathering, visualizing, translating, putting people together, organizing thoughts (...) and the design [object] is just the one artifact that you have to clarify things for everyone around you”* [E.2.1]. In other words, while the boundary objects do eventually take the shape of design solutions for actual problems faced by the participating organizations, this suggests it is *through* the shared boundary objects that the different roles communicate and translate across their different knowledge types.

And while the boundary object may provide the medium, it is the design process which provides a space of reflection and innovation for practitioners: *“a luxury to spend three hours looking and thinking”* [D.1.c.3] and *“I love these type of sessions because (...) you can also organize your thoughts a little”* [D.3.a.7].⁴³ Space which they experience as structurally lacking within their organizations, especially during crisis times: *“we didn’t have a lot of space to take a step back, because everyone who had the smallest amount of time left was [put to work]”* [D.1.c.3]. Nonetheless, whenever the design process forced practitioners to move beyond sharing their knowledge and asked them to ideate, there was initial resistance from all practitioners (cf. academics) in the form of sighs, protesting, laughing, not following the assignment [D.1-6.f & D.1-6].

Together, these indications suggests that conducting an iterative CRBD process following IDEO’s human-centered design approach creates the space, time, and methodology to engage practitioners and academics to communicate across knowledge types beyond their own capacity and inclination – the third key finding of this study.

⁴² And the difficulty of grasping the emerging boundary objects for those who entered the process midway and had to have the boundary objects explained to them [e.g. D.4.a.9].

⁴³ Practitioners’ appreciation for the design process (space and time) appeared to be correlated to their satisfaction with the design frame and eventual design solutions. Dissatisfaction with the outcome and framing appeared to generate frustration with the process [e.g. D.5.c.5]. Moreover, client-facing staff was generally less appreciative of the time to reflect, especially during the sessions concerned with more abstract design challenges [e.g. D.6.a.2].

3. Perceived relevance

The designed solutions were received extremely well by both participants and the organizations' executive leadership, being perceived as valuable advice and solutions [V.a.1-5]. Being received positively across the board, there were only a few additions and changes, and just one observed pushing back by an executive [V.a.3]. Their approval ranged from the micro-level of the recommendations – *“having the menu card be tailor-made is I think a very good piece of advice”* [V.a.5] – to the overarching – *“the advice to keep the [coordination group] in place, that sounds like a very good proposal, a good piece of advice”* [V.a.5]. The leaders expressed commitment and excitement to attempting to implement the design solutions,⁴⁴ and in one organizations some of the recommendations were already being implemented [V.a.1].

Furthermore, the resulting design solutions carried additional weight having been co-created by academics and carrying the ‘stamp of academia’. This provides a legitimization of the solutions co-created by practitioners, which executive leadership experienced as deeply valuable [e.g. V.a.2 & V.a.5]. When asked how academia could support implementation, one CEO answered:

“I don’t actually need anything for that. What I, what I, well yes, what I need is that it is written here [laughs & lifts the printed solution summaries]. That helps, that simply helps.”
[V.a.1]

⁴⁴ Or leveraging them to improve similar projects the organizations were already working on [V.a.4 & V.a.2].

V – Discussion & Conclusion

Setting out to investigate *how organizational science might utilize research-based design approaches that leverage co-creation to effectively address the field's relevance gap*, this study's findings suggest co-creation holds the potential to generate boundary objects that can improve the ability of RBD to effectively bridge the relevance gap. Examining this question by conducting a multi-case CRBD study using IDEO's human-centered design approach, four distinct roles and four boundary object creation processes emerged through which the different knowledge communities co-created design solutions towards improved crisis resilience. Three key findings were discussed, namely (i) how different types of participants take on profoundly different roles in the creation of boundary objects within this approach, (ii) how boundary objects are successively shaped by the different roles, blending different knowledge types and processes, and (iii) how the design approach creates the time, space, and methodology needed to facilitate this communication and convergence across knowledge types. This article provides a substantive contribution to RBD and organizational science more broadly by urging for a reconceptualization of the relevance “gap” and a fundamentally different approach to conducting RBD – eschewing the currently dominant linear design principle creation (see Bhatnagar et al., 2021; Dellermann et al., 2019; Gilsing et al., 2010; Zhang & Van Burg, 2020).

Linear and one-directional research-based design

RBD literature consistently conceptualizes bridging the relevance gap as a one-dimensional and linear process: academic knowledge is translated by means of boundary objects into prescriptive, practically relevant knowledge.⁴⁵ At this point, the two separate knowledge systems will have been brought together. The codification of theory, the distillation of principles from practice, and the designing of the principles and solutions is all done *by* researchers *for* practitioners (e.g. Mohrman, 2007 and Van Burg et al., 2008). They are communicated to practice for implementation (e.g. Romme & Damen, 2007) without really engaging in dialogue with practice, whether these principles are distilled through synthesis of literature (e.g. Tranfield et al., 2003) or distilled from

⁴⁵ The linearity of RBD is also surprising considering the breadth of active and processual language used to describe possible solutions to the relevance gap. Mohrman (2007) mentions ‘bridging’, Romme and Damen (2007) ‘transcending’ boundaries and ‘developing’ interventions, Denyer and colleagues (2008) ‘synthesizing’, and several other such notions. Instead, following Van De Ven and Johnson (2006, pp. 815–816) in their powerful plea for engaged scholarship, research projects that aim to transcend the relevance gap should be organized “as a collaborative learning community of scholars and practitioners with diverse perspectives.”

primary data (e.g. Plsek et al., 2007). More recently, little progress has been made within organizational science RBD, with publications simply following the linear approach and producing design principles for practice in academic journals - see for example Bhatnagar and colleagues (2021), Dellermann and colleagues (2019), Gilsing and colleagues (2010), and Zhang and Van Burg (2020). When their research and/or synthesis is complete, the design principles are published in an academic journal, and become – if it is actually read by any practitioners – another report for a manager’s desk drawer.

Iterative co-creation

This brings us to the main contribution of this article, namely the need to significantly reconceptualize the relevance gap and the attributes required for bridging it. *Instead of a linear gap that can be bridged through the valiant one-directional effort of researchers conducting RBD, successful bridging of the knowledge communities of practice and academia is actually about the creation of a shared space, time, and methodology for iterative, cross-role co-creation.* This need to move to iterative (cf. linear) and co-creative (cf. one-directional) RBD was shown to be imperative by means of the study’s three findings, and together they provide two key contributions to the debate:

1. Co-creation: contributions of unique and essential roles

The findings showed how different types of participants take on profoundly different roles in the creation of boundary objects, contributing to the generation of the boundary object in unique ways. Within RBD thus far, boundary objects were conceptualized and approached as intermediaries generated by academics (e.g. Denyer et al., 2008; Romme & Damen, 2007; Van Aken, 2004; Van Burg et al., 2008). From grounding solutions in practice by client-facing practitioners (e.g. leveraging the existing intake process) to focusing the process on the most pertinent issues by strategic level practitioners (e.g. reframing the actual challenge in managing volunteers), it was shown how these contributions occurred over the course of the design process, returning in the different stages and building upon the contributions of others. Affirming and strengthening the position of Bate and Robert (2007), Dimov and colleagues (2021), Rynes and colleagues (2001), and Berends and colleagues (2011) – who all argued that it is within the

conversation between academia and practice that innovation actually occurs – these role-specific contributions, which strengthen the potential of design solutions, are fundamentally incompatible with a linear and one-directional RBD approach.

Moreover, while arguments of necessity could be made for the unique and ongoing contributions of each role, it was grounding the ideation in practical obstacles and opportunities by client-facing practitioner that is completely missed in RBD relying solely on the academic. This finding affirms and strengthens the suggestion of Reay and colleagues (2006) who show how, instead of constraining, embeddedness in the institutional context actually enables staff to recognize and create opportunities for change. Not including client-facing practitioners, and thus foregoing this ability, produces design principles that lack the context-specificity to be effective.

2. Iteration: synthesizing tacit and explicit knowledge

Returning to Nonaka and Takeuchi's (1995) distinction between tacit and explicit knowledge, linear bridging processes fail to recognize how successfully bridging tacit and explicit knowledge requires an ongoing conversation. The findings show how tacit and explicit contributions successively challenge, enrich, and strengthen each other, moving towards a boundary object that spans both knowledge types to the satisfaction of both knowledge communities. Affirming Bate and Robert (2007) and Boland and Collopy's (2004) notion of boundary objects as artifacts that can serve as intermediaries, this study furthers that insight by arguing that these are not artifacts existing out of time and space, but intermediaries that can facilitate the ongoing, iterative conversation needed to truly communicate between knowledge communities.

In light of this, the efficacy of linear RBD principles in overcoming the relevance gap is at best questionable. This article contributes to the RBD debate by arguing that the design principles as they are currently being produced within organizational science (see Bhatnagar et al., 2021; Dellermann et al., 2019; Gilsing et al., 2010; Zhang & Van Burg, 2020) actually lack the cross-knowledge synthesis to truly bridge the relevance gap. The implementation of these principles would require a translation to tacit knowledge and

context-specific conditions that would effectively amount to conducting a partial design process but then conducted without the valuable strengthening and grounding process of iterative co-creation. Linear RBD principles do not do justice to the importance of knowledge beyond the explicit, and thus fail to effectively transcend the knowledge gap.

In sum, this study argues that effectively bridging the relevance gap that has plagued organizational science for decennia cannot be achieved through linear and one-directional RBD. Instead, a reconceptualization of the relevance gap is needed: rather than a linear gap to be one-directionally crossed, we should understand it as an issue requiring the space, time, and methodology for a collaboration where tacit and explicit knowledge can be iteratively bridged towards co-created solutions that synthesize different knowledge types. If successful, CRBD will have upheld its promised relevance to practice and can begin contributing to an organizational science that can (more effectively) respond to the crises threatening our existence and well-being (Mohrman, 2007; Starbuck, 2004).

Implications for practitioners

Including this section may appear superfluous, as the purpose of the article is exploring an approach to effectively connecting practice and theory. However, if co-creation is going to gather momentum within organizational science – ultimately hopefully to the benefit of practice – it is going to need significant commitment from practitioners. Hence this call to action for practitioners to seek out and answer calls from academics to participate in CRBD.

Limitations and future research

The design process presents two limitations, namely its (1a) costliness and (1b) lack of success guarantee. Participants were asked to invest significant time and energy into the project – and when they did not the efficacy of the process immediately suffered.⁴⁶ Moreover, the prior research study significantly contributed to the efficacy of the process, which may not be possible for future research. Combine this with the lack of success guarantee for any “set of design principles

⁴⁶ The whole design process also required significant time from the research team, especially the logistical and administrative coordination.

grounded in practice and research evidence” (Van Burg et al., 2008, p. 126), and the appeal of CRBD suffers negative consequences.

Secondly, the (2a) the number of participants and (2b) the characteristics of the participating organizations present methodological limitations. Despite 47 total participants, only 4 unique strategic level practitioner and 4 unique research practitioners participated, limiting the generalizability. Moreover, since all participating organizations were CSOs this study cannot confidently generalize about the potential of CRBD for other sectors as dynamics of the design process could be significantly different.

However, ultimately the core limitation concerns the extent to which this study’ CRBD approach and emergent findings are verifiable. Despite the multiple-case-study approach, this case study is ultimately context-specific and impossible to replicate, meaning the potential of CRBD to address the relevance gap can only be established by further research.

Future research should attempt to identify patterns in the idea trajectories, mapping the ways in which iterative co-creation functions, such that further methodological improvements can be made. Echoing Dorst’s (2011, p. 531) call to action to articulate design practices “with subtlety, clarity, and in much more detail” to make them more accessible, if organizational science truly aspires to usher in a new paradigm that successfully connects theory and practice, more CRBD research is needed.

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