Frame Failures and Reframing Dialogues in the Public Sector Design Projects

Jung-Joo Lee

National University of Singapore, Singapore

This paper studies the dynamic process of design students' reframing dialogues with the government to obtain their acceptance on new frames. Data of this paper are gathered from two university-government collaboration projects where design students create new frames to complex societal problems, steered by the service design process. Our findings from the project journey mapping unveiled types of challenges design students encountered when introducing new frames to the government, which we call 'frame failures', and how they grappled with the challenges. In-depth interviews were also conducted with the government partners to understand organizational rationales of the possible frame failure modes. Consolidating the findings, we discuss design students' situated work around frame failures, namely *frame mitigation*, *frame simulation* and *frame familiarization*, which can serve as sensitizing concepts for helping in interpreting designer's framing practices and educating design students.

Keywords – Frame, Frame Failures, Public Sector, Service Design.

Relevance to Design Practice – This paper introduces types of challenges when introducing new frames to the government in the increasing number of public sector design projects and generates insights on designers' reframing dialogues as situated practices for managing frame acceptance. The types of design students' situated work to obtain the government's buy-in will provide sensitizing concepts and vocabularies for helping in interpreting designer's framing practices and educating design students.

Introduction

Government organizations in many parts of the world are increasingly engaging the help of design to deal with complex societal problems and innovate public services. In contrast with the conventional analytic approaches used in the governments, design offers an abductive approach (Kolko, 2010; Dorst, 2011). This allows for identification of issues surrounding the problem space, creating a perspective that defines the situation, leading to the development of new objectives and actions to meet the desired outcomes. Dorst explains this reasoning process of design using the notion of frame creation (Dorst, 2011; Dorst, 2015a). According to him, framing is "the act of proposing a hypothetical way of looking at the problem" (Dorst, 2015b, p. 25), perceiving the situation in a certain way and adopting certain concepts to describe the situation, patterns of reasoning and problem solving that are associated with that way of seeing leading to the possibility to act within the situation.

Despite the growing interest, the process of framing and reframing offered by design is often deemed uncomfortable for the government (Bason, 2010; van der Bijl-Brouwer, Kaldor, Watson, & Hillen, 2015; Christiansen, 2013; Junginger, 2015; Malmberg, 2017; Deserti & Rizzo, 2014; Hyvärinen, Lee, & Mattelmäki, 2015). The reframing of the solution space, which entails new perspectives and types of design tasks, can be deemed disruptive to their existing resources, systems and action plans (Bason, 2010). When introduced to new ideas, their concerns are often focused on political barriers and the amount of efforts needed for implementation, instead of seeking ways to apply the solutions (Christiansen, 2013; Bailey & Lloyd, 2016; Yee & White, 2015).

Similar observations have been made in the recent growing number of university-government collaboration projects where design students work on problems introduced by government organizations (e.g., see Annala et al., 2015; Yeo, Chew, & Lee, 2016; Junginger & Sangiorgi, 2009; Vaajakallio, Keinonen, & Honkonen, 2013). By participating in the projects, design students delve into complex societal issues, learn how to discover root causes, and frame new opportunities with their unbiased perspectives (Dorst, 2015a). In the meantime, they also experience difficulties resulted from reluctance or a fixated mindset of the government (e.g., see Junginger & Sangiorgi, 2009; Vaajakallio, Lee, Kronqvist, & Mattelmäki, 2013). For design students, learning how to engage the government in the new frame poses a challenge.

Despite this reality, challenges surrounding the government's acceptance of new frames and design students' situated work around the challenges have received scant research attention. As Vermaas, Dorst and Thurgood (2015) cautiously pointed out, the possibility that framing may not be accepted in a design project is rarely considered, let alone studied. Extant studies focus on

either in-situ negotiation among team members, especially within a multi-disciplinary team (e.g., Hey, Joyce & Beckman, 2007; Stompff, Smulders, & Henze, 2016; Ylirisku, 2014), or briefing processes between designers and a client (e.g., Paton & Dorst, 2011; Park-Lee & Person, 2018).

In this study, we examined what actually happens when the government is introduced to new frames, and how design students go about gaining buy-in from the government by building a reframing dialogue. In this study, we see the reframing dialogue as a *situated practice* (Paton & Dorst, 2011), organized through interactions between the design students and the government. Our data came from two university-government collaboration projects, and the retrospective in-depth analysis was conducted to elucidate how the reframing dialogues were organized in the projects, as well as students' ad-hoc tactics and practical actions within that process. While the cases in this study are by university design students, their work exhibited frame creation activities, enabled by the service design process and principles (Polaine, Løvlie, & Reason, 2013): they framed and reframed when they inquired into stakeholders' needs and problems, discerned complex networks of the problems, and posed hypothetical how-might-we questions. Dorst (2011) emphasized that frame creation could be observed more explicitly from the students' projects as their approaches and reasonings to solve problems have to be articulated, whereas such activity is informal and sub-conscious for experienced professionals. For data collection, we benefitted from the materials where the students articulated their practices, decision-making processes and reflections, which we will unpack in the method section later.

Barriers to Frame Acceptance in Government

An extensive literature review was conducted to understand the factors hindering government organizations from adopting new frames proposed by designers. We review the government's culture and practices that may form magnifiers and/or antecedents of barriers to frame acceptance and map them under three types of barriers identified by Paton and Dorst (2011). We then draw relations between the barriers and possible frame failure modes.

Government's Culture and Practices as Magnifiers of the Barriers

Despite receiving scant research attention (Vermaas et al., 2015), a few extant literatures discuss barriers for organizations to adopt new frames within themselves. They center around three types of tendencies as identified by Paton and Dorst (2011): *fixation*, *problem-solving mental model*, and *resistance to the journey*. For government organizations, their existing culture and practices may form magnifiers and/or antecedents of those barriers.

Jung-Joo Lee is an assistant professor and deputy head of research in the Division of Industrial Design, National University of Singapore. Since 2014 she heads Service Design Lab Singapore and her recent research focuses on human-centered innovation in public services and policy by tapping on the potential of design, digital technologies and data. She has collaborated with various government agencies in Singapore and Finland, aiming at growing design capabilities within those organizations.

First of all, *fixation* happens when a client clings to the initial frame and is not willing to explore alternatives (Paton & Dorst, 2015; Yu & Sangiorgi, 2018). Dorst (2015a) calls it a *routine reaction*, which may stem from fear and the tendency to cling to a feeling of control. Van Leeuwen et al. (2016) reported that even during the frame creation workshop, it was difficult to detach the organizations from the original frame. This mental model deprives the designer of chances to discover opportunities that can ultimately meet the core desires yet to be recognized by the client.

In government organizations, they possess a risk-avoiding culture (Mulgan, 2014) and, because of that, often adopt a very narrow view of failure, which in turn limit their innovation capacity (Bason, 2010). Bason (2010) discussed that the government's tendency to avoid risk and resistance to ambiguity discourages the exploration of alternatives and fixates them on initial ideas. The public officers who usually participate in design collaboration projects are from the middle management or the front-line department (Bason, 2017; Holmlid & Malmberg, 2018). Their practices in the organization are relatively task-oriented, which deter them from gaining a clear understanding of the overall strategy or vision of the organization. When introduced to new frames, they are not sure whether the new frames or goals are in line with their organizational strategy. Bason (2017) argued that the culture and practice in many public sector organizations are to readily accept what 'the top'—whether politicians or top management—defines as the problem or the task. Such institutional environment influences the public officers to remain fixated on their initial ideas and directions.

Secondly, according to Paton and Dorst (2011), organizations often react in a way that requires the least effort and fewest resources: they set out in a conventional *problem-solving mental model*. The conventional problem-solving mindset centers around induction or deduction, which works when there is only one problem that can be predefined (Dorst, 2011). Design, however, employs abductive thinking, which is suitable for situations where problem and solution spaces are unknown (Dorst, 2011; Kimbell, 2015; Kolko, 2010) and co-evolve (Dorst, 2019). This mode of working is foreign to organizations and takes effort to adapt, leading to the tendency to cling to a conventional problem-solving mode.

In innovation projects, government organizations are used to problem-solving approaches that focus on reacting to existing problems and analyzing them (Christiansen, 2013; Junginger, 2015). Junginger (2015) explains that the problem-solving approach begins after a problem has been identified and tends to follow top-down, linear decision-making. When it comes to policy making, it is rooted in rationality and validity of evidence produced by induction and deduction to justify decision-making (Kimbell, 2015). This is contrary to the nature of the framing process, which is abductive and provisional (Dorst, 2011; van der Bijl-Brouwer & Dorst, 2017). Similarly, government organizations function using a set of formulaic practices and patterns, where the use of other methods is often not welcomed (Bailey & Lloyd, 2016). Bailey and Lloyd discovered from their interview studies in the UK that policy makers often work with a predefined solution and designers were invited to fabricate evidence to support the solution area.

The third barrier is *resistance to the process involving a dialogical mode* of interaction between a client and a designer to achieve a shared understanding (Paton and Dorst, 2011). This dialogic journey is imperative, especially in the fuzzy front end of the design process (Sanders & Stappers, 2008), necessary for a client to gradually adopt a new frame, iteratively check and confirm proposed solution areas along the new frame.

A few studies on the innovation practices in the public sector, however, showed that one of the largest barriers to innovation was resistance to working in new ways and experimenting with new solutions (Bailey, 2012; Malmberg, 2017; Deserti & Rizzo, 2014; Pirinen, 2016). In other words, innovation can be perceived as "a barrier to real work" (Bason, 2010, p. 120) and government employees may find difficulties in picturing operations and innovation processes within the same context. A divergence from the existing habits requires a change in mindset, conscious effort, and allocation of resources from the government. This tendency results in the government's resistance to a dialogical process that considers alternatives and reframes the problem space together with designers.

Frame Failure Modes

In design projects with the government, these barriers may lead to *frame failures*, where the government cannot adopt a proposed frame or the frame cannot achieve desired outcomes (Vermaas et al., 2015). Vermaas et al. presented a formal explanation for the design practice of framing, to define ways in which framing may be unsuccessful, and explained two possible modes for framing to fail: the *goal reformulation failure mode* and the *frame failure mode*. (see Figure 1). In the goal reformulation failure mode, the framing (F[T]) fails when designers reformulate the goal of the client in the design task and give design solutions that solve the reformulated goal (Ğ) but not the original goal (G). In the frame failure mode, framing fails when designers propose a frame (F[Ť]) for the design task that cannot be accepted and carried out by the client.

The abovementioned barriers to reframing explain some factors that result in framing failure modes. First of all, the client's *fixation* to their initial problem space makes it difficult for them to accept a new goal or a frame identified by the designer. For those with a *problem-solving mental model* of design, the abstraction of problem situations and exploration into new approaches are seen to achieve ambiguous outcomes and are thus problematic. New frames invariably disturb organizational cultures, processes, and structures that have been set up to support the conventional problem-solving approach (Dorst, 2015a). Lastly, *resistance to the framing journey* shuts down a door for communicating and negotiating new frames. Figure 2 overviews how government's culture and practices may form barriers to frame acceptance, which may lead to possible frame failure modes.

Reframing in a design process might require "taking distance for existing solution directions or stepping into the unknown" for client organizations (Vermaas et al., 2015, p. 136). The situations of frame failures may be ever-present in reality, rather than abnormal or unfortunate, which require in-depth studies to discuss reasons and possible strategies to cope with. With the exception of the few studies above, there have been scant empirical studies on challenges from clients' unfavorable responses to new frames and reframing dialogues between designers and the client to manage frame acceptance.

Cases and Methods

Data for this paper were gathered from two university-government collaboration projects where undergraduate design students worked on problems introduced by one ministry in Singapore—referred to as *the Ministry* hereinafter. Recent years has seen a growing interest from the Singapore government organizations toward design. This is evidenced by the Ministry initiating the collaboration projects; they engaged the design department of the university so that they could benefit from students' fresh
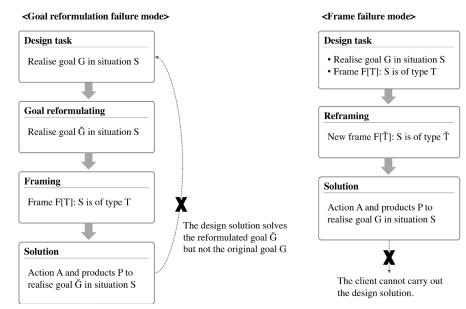

Figure 1. Two modes of frame failure [adopted from Vermaas et al. (2015)].
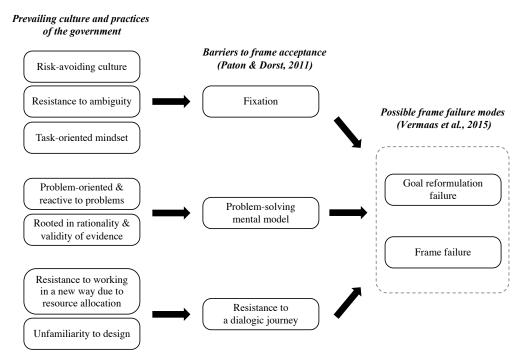
Figure 2. Prevailing culture and practices of the government (left) **forming the three types of barriers to frame acceptance** (middle)**, which may lead to possible frame failure modes** (right)**.**

perspectives. The first project, on the topic of foreign domestic worker employment, was conducted from January to May of 2016, followed by the second project, on job redesign, from August to December in the same year. Each project was conducted in the 14-week service design course in National University of Singapore. The supervising team was specialized in service design, consisting of a professor in service design, a service design practitioner, and two teaching assistants. In each project, more than 20 design students participated and worked in groups of three. There were 7 student groups in the first project and 8 groups in the second project. All participating students had prior experiences with human-centered design projects with industry partners, and some of them had experiences with service design projects.

One of the main learning objectives was how to frame and reframe complex problem areas through service design processes and tools. From the beginning of the class, the student teams learned how to conduct stakeholder research and system mapping in order to widen a problem area around a given brief and identify networks of the problems and root-causes, steered by the service design process (Polaine et al., 2013). They consulted the supervising team every week, presenting their findings and challenges.

Another key learning point was to manage communications with the partners, in this case the Ministry. The students had organized sessions with the Ministry representatives on their own throughout the project period, to deepen their understanding of the problem areas and receive feedback on their design propositions. The final deliverables included research findings and new design concepts in the forms of video scenarios, prototypes, customer journey maps, stakeholder maps, and service blueprints. After each project, selected design propositions were presented in the Ministry's top management meetings, led by a permanent secretary.

According to Dorst's (2015a) observations on the general patterns of frame creation projects, the two projects—the detailed backgrounds of which will be provided below—carried sound problem situations that would benefit from the utilization of frame creation rather than other problem-solving approaches. As identified by Dorst, several characteristics were present in the cases: there were opposing views or conflicting aims; no obvious solution was apparent; the problem could be placed in an expanded context; earlier solution attempts had not resulted in a satisfactory resolution, and there was a willingness to take a different approach.

Project 1: *Early Contract Termination Rates of Foreign Domestic Workers*

In Singapore, one in every five households hires foreign domestic workers from neighboring countries like Indonesia, the Philippines or Myanmar. Although the employment is based on a 2-year contract, there has been an increase in early terminations of the contractual period. Early termination results in burdens for all involved parties: there is cost for additional administration, recruitment and transference fees; the employer needs to cope without a domestic worker until a new help can be found; the domestic worker may be left with a bad reputation or summoned back to her home country. The Ministry wanted to understand reasons for early contract terminations and create new solutions to reduce the early termination rates.

Project 2: *Job Redesign for Aging Workers*

The second project focused on ways to encourage companies to take on job redesign, which essentially refers to the change of work environments and job scopes to sustain an ageing workforce.

To entice the adoption rate, the Ministry provided a specific grant for companies to initiate their job redesign practices. Despite financial incentives, few companies took up this grant as they often lacked ideas on how to implement the job redesign. The Ministry wanted the design students to help companies discover the areas for improvement and create solutions through a service design project.

Research Process

The research process for this study consists of three parts: (1) preliminary analysis of the students' weekly project reports; (2) project journey mapping with the students; and (3) in-depth interviews with the Ministry representatives who participated in the projects (Figure 3). First of all, the review of the students' project reports helped us identify the preliminary working themes and sample cases for more in-depth analysis. Then, the project journey mapping with the students provided detailed contextual information on the students' framing processes, including the influential factors and contingencies that surrounded the framing. Finally, the interviews with the Ministry representatives revealed the reasons and circumstances for their responses to the students' proposals, plus their reflections after the projects. The interviews also helped us uncover any impact caused by the projects thereafter.

Preliminary Analysis of the Weekly Reports

Over the course of each project, the student teams were tasked to submit the weekly reports, describing their activities each week, challenges encountered and actions conducted, and interactions with various stakeholders including the Ministry. Two researchers who were part of the supervising team did the first scan of total 195 reports (91 reports from the Project 1 and 104 reports from the Project 2) and chose four student teams' cases—two teams from each project—for in-depth analysis. The criteria for sampling were, firstly, whether the student teams carried out sufficient design actions according to the frame creation (Dorst, 2015a)—essentially field research, abstracting the findings into themes, framing, ideations, iterations, and interactions with the

stakeholder—and secondly, whether the process and outcomes created sufficient discussions and obtained adequate feedback from the stakeholders.

The same researchers conducted a preliminary analysis of the four chosen teams' reports, in order to identify decisive activities during framing and reframing, such as the students' interactions with the stakeholders, and challenges and reflections expressed in the reports. The frame creation model by Dorst (2015a) and Vermaas et al. (2015) helped us identify the framing work done by the students, which would have otherwise been very challenging to identify due to its tacit underlying nature (Dorst, 2015a; Hey et al., 2007).

Project Journey Mapping

After the review of the weekly reports, the four student teams were chosen to continue and invited to project journey mapping sessions. Project journey mapping is a visual narrative method offered in this study to help participants recount their experiences, key activities and circumstances of the project, thus reconstructing the project process. Using a process mapping tool like journey map offers a valuable way to make temporal information more tangible (Sperano, Roberge, Benech, Trgalova, & Andruchow, 2019), allowing to break participants' experience into phases, steps and actions which then facilitate the analysis (Shostack, 1987). The project journey mapping shares similar principles with timeline-based visual mapping tools, often used in a co-design setting (e.g., Hakio & Mattelmäki, 2011; Kronqvist, Järvinen, & Leinonen, 2012), in terms that visual materials serve as tinkering or sensitizing tools for participants to recall and reflect on their past experiences and recounting them. There have been a few studies where the similar visual mapping tools were used to understand project experiences, for example, annotated timeline (Bowen, Durrant, Nissen, Bowers & Write, 2016), project experience map (Thurgood, O'Donnell, Peppou, Lulham, & Bucolo, 2016), or project planning journey map (Sperano et al., 2019). While the project experience map (Thurgood et al., 2016) and the project planning journey map (Sperano et al., 2019) adopted a standard template of customer journey mapping (e.g., Shostack, 1987) in

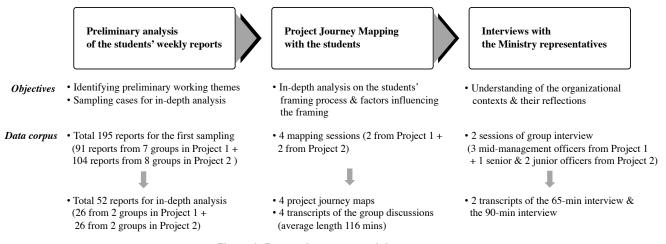|	Preliminary analysis of the students' weekly reports	Project Journey Mapping with the students	Interviews with the Ministry representatives
Objectives	• Identifying preliminary working themes • Sampling cases for in-depth analysis	• In-depth analysis on the students' framing process & factors influencing the framing	• Understanding of the organizational contexts & their reflections
Data corpus	• Total 195 reports for the first sampling (91 reports from 7 groups in Project 1 + 104 reports from 8 groups in Project 2)	• 4 mapping sessions (2 from Project 1 + 2 from Project 2)	• 2 sessions of group interview (3 mid-management officers from Project 1 + 1 senior & 2 junior officers from Project 2)
	• Total 52 reports for in-depth analysis (26 from 2 groups in Project 1 + 26 from 2 groups in Project 2)	• 4 project journey maps • 4 transcripts of the group discussions (average length 116 mins)	• 2 transcripts of the 65-min interview & the 90-min interview

Figure 3. Research process and data corpus.

their studies, the project journey mapping in our study allowed an open mapping, encouraging the participants to create their own visual maps with the given visual, tangible materials as their thoughts and actions unfolded (see Figure 4).

In this study, the design students were given visual materials containing various types of project information. The mapping materials included excerpts from students' project documentations, such as weekly reports, intermediate and final presentation slides, research finding reports, images from user research, various visualizations on their research findings, early idea sketches, and images of the final solutions. They were designed into keyword cards, image cards, and stakeholder cards containing each individual team's project information. Different types of indicator symbols were also provided for the students to mark key findings, solution directions, and key milestones of their projects (for example, important moments that determined the framing) on the project map.

Our foci of inquiry from the project journey mapping were (1) frame creations over the course of the project; (2) responses from the government on the frames; (3) modifications in the solutions and what influenced the modifications; and (4) challenges when trying to convince the government with the new frame. We broke down the topics around framing into the following mapping elements and had the students map these points chronologically throughout the course of their project activities:

- Key findings from the project activities during various phases
- Solution directions based on the findings
- Iterations in solution directions and influencing factors
- Challenges in introducing new solution directions to the government
- Actions and strategies for the government to understand the value of their solutions

Prior to the mapping session, the students were tasked to read their weekly reports to recall their memories. During the session, they completed the project journey mapping by engaging in group discussions, helping each other in recalling and correcting their memories. The group discussion naturally allowed think-aloud for the students through which the researchers were able to have access to their thought process and ask relevant questions. The researchers emphasized to the students that the mapping exercise is not about evaluation of the project performance or success but for rich description of what had actually happened and how they experienced during the project.

After the mapping was done, the students explained each element of the map and answered clarifications on the framing processes and the factors that influenced the processes. The mapping sessions took from 90 to 135 minutes, in average 116 minutes. All student discussions during the mapping process were voice-recorded and transcribed for further analysis.

In-depth Interviews with the Ministry

After understanding the students' experiences, we conducted in-depth interviews with the Ministry representatives to understand the Ministry's point of view. The interviews focused to examine the organizational context of their feedback to the students' proposed solutions. Two sessions of group interviews were conducted, one session for each project. For Project 1, three mid-management officers from the collaborating department participated; for Project 2, one senior-management officer and two junior officers from the collaborating department participated. The first interview session took 65 minutes and the second one took 90 minutes. Each interview was recorded and transcribed verbatim for analysis. Following a thematic analysis (Braun & Clarke, 2006), the author coded the two interview transcripts. After that, another researcher
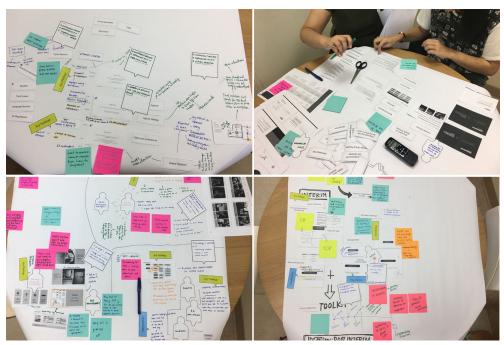

Figure 4. The project journey maps of the four student teams.

blind-coded a section of one transcript and compared codes with the author. Thereafter, the codes were combined and collectively analyzed to create a set of themes.

Reframing Dialogues

The project journey mapping revealed challenges the students faced when introducing new frames to the government and their situated work to gain better buy-in. For detail description in this paper, we take two teams' cases out of the four student teams invited for the project journey mapping. The two cases were chosen as they introduced different types of challenges and *ad-hoc strategies* devised by the students. The mode of formal description of framing by Vermaas et al. (2015) was adopted to account for the dynamic processes of reframing dialogues in a systematic manner.

Case 1: *Enablers and Roadmap for the Frame Failure Mode*

Case 1 is one of the student teams' work from Project 1, where the Ministry aimed to deal with situations resulted from the fragile relationship between foreign domestic workers and their employers (original situation S). Their goal was to reduce the number of early contract terminations before the first term of the 2-year contract ended (original goal G).

The Case 1 student team studied the issues surrounding the situation by conducting design probes and stakeholder interviews. The problem they discovered was that the current employment process limited opportunities for foreign domestic workers and their employers to know more about each other, thus the employment decision was made based on very vague information or a "gut feeling". As a common practice, prospective employers approach employment agencies to hire foreign domestic workers. As the workers are not in Singapore yet, the only information provided was a biodata document. The biodata includes previous work experiences and skills of the workers, but employment agencies tend to aggrandize the biodata to promote, for example by advertising the individuals being capable of completing any task that a domestic worker maybe expected to do. This practice reduces the credibility of the biodata for employers.

From the worker's point of view, they gain little information about potential employers when accepting a job. The first-time employers are often not prepared with clear job descriptions or house rules, which results in situations where workers are confused with unclear tasks, on top of other challenges such as language barriers and cultural differences. These circumstances result in a mismatch of expectations and emotional disappointment for both parties.

The government's current approaches have relied on restrictions and regulations (original frame F[T]). Their existing methods have focused on making the termination option very difficult, causing an early termination to be disadvantageous for all parties. To tackle the root cause of early terminations (S), the students proposed to reformulate the design goal from "reducing early terminations" (G) to "ensuring a better match" (Ğ). The

Ministry initially felt that the reformulated goal was too personal and could not imagine the kind of tangible solutions that can be created. However, they agreed that a better match could potentially lead to a better relationship, thus pre-empting early terminations.

One of the opportunities found by the students was that the emerging employer generation in Singapore comprises of newly married millennials, who are familiar with online platforms for searching information, purchasing services and even finding jobs. For them, the current process of visiting physical agencies and filling out extensive documentation appears very cumbersome. These findings led the students to frame a design hypothesis of direct communications and mutual matching between employers and foreign domestic workers during the employment process, instead of using a middle-man—employment agencies in this case—who can potentially manipulate the process into their favor. The students started to look at the opportunity space using a new frame, "open matching" (F[Ť]).
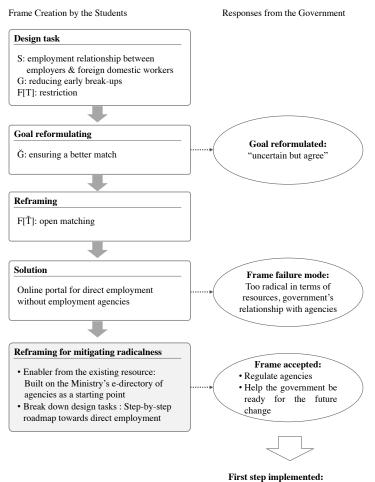
With a new frame of open matching (F[Ť]) for a better match (Ğ), the students proposed the idea of an online platform for direct employment without involving employment agencies. The online platform guides prospective employers to fill up their information, helps them clarify and prioritize their needs and figure out which types of foreign domestic workers would be suitable. At the worker's end, she can sign into the system with her smart phone and fill in her relevant biodata, experiences and skills. Based on data collected from both parties, the system will suggest probable matches to the employer, and allows the employer to contact the foreign domestic worker directly. The contacted worker is able to review the employer's profiles along with the job scopes, followed by a phone or video interview.

When this idea was proposed to the Ministry for the first time, they found it too futuristic and disruptive. Besides the necessary resources, one key concern was the open matching solution would threaten the business of employment agencies. The government cannot implement a program that may threaten the existing businesses of the private sector. They then requested for another solution from the students. Through further benchmarking studies on emerging open matching cases in Hong Kong and a few initiatives in Singapore for transfer workers, the students however believed that direct employment is "already happening and should be the future direction for which the government should be ready" (Student—'S' hereinafter - _WT).

Instead of giving up the idea, the students started to ideate ways to achieve the principles of open matching without eliminating the use of employment agencies. The students modified the solution wherein the workers' profiles continued to be provided by the agencies, but not listed by agency. Instead, the profiles of the workers are listed as an integrated list online. This modification was to show the Ministry the first step to take to achieve the open matching without agencies in the future.

In addition, the students proposed to build a new online matching platform on top of the existing e-directory of employment agencies currently provided on the Ministry's home page. The existing e-directory could work as an enabler for the Ministry to implement their proposed solutions: "the directory

Frame Creation by the Students   Responses from the Government

Design task

S: employment relationship between
   employers & foreign domestic workers
G: reducing early break-ups
F[T]: restriction

Goal reformulating

Ğ: ensuring a better match

Goal reformulated:
"uncertain but agree"

Reframing

F[Ť]: open matching

Solution

Online portal for direct employment
without employment agencies

Frame failure mode:
Too radical in terms of
resources, government's
relationship with agencies

Reframing for mitigating radicalness

• Enabler from the existing resource:
  Built on the Ministry's e-directory of
  agencies as a starting point
• Break down design tasks : Step-by-step
  roadmap towards direct employment

Frame accepted:
• Regulate agencies
• Help the government be
  ready for the future
  change

First step implemented:
The employment platform built on e-directory
is introduced in the Ministry website.

Figure 5. The reframing dialogue in Case 1.

was already there. That was how we tried to moderate… based on their reactions and to change their perspectives. We should understand the entire eco-system for the new idea to work" (S_WT). The integrated platform also featured a new rating system for employment agencies based on customers' reviews and the Ministry's regular inspections. This system encourages employment agencies to provide rich and reliable biodata of workers to obtain an edge over their competition.

The students presented step-by-step design tasks in the roadmap "to make the proposition more acceptable by the Ministry and there was a subtle, incremental change between steps that will eventually lead to the open matching without hiring agencies" (S_SC). Building their new solutions upon the existing system as an enabler and utilizing step-by-step design tasks were the students' strategy to mitigate the radicalness of their solution and encourage the Ministry to start thinking about possibilities.

When the modified proposition built upon an existing enabler in a step-by-step future roadmap was presented, the Ministry found that the proposition was feasible and could in fact bring additional value. The integrated platform could provide employment agencies, especially small-sized enterprises, with a better chance of getting exposed to their prospective customers, if their biodata

provision and ratings were good. The platform could also present ratings of different agencies, which would aid in decision making for customers. This proposition was especially well received by the senior management. The top management in the Ministry was keen to develop ideas to "speed up the process toward a direct matching platform if that's the future direction to go."

Case 2: *Simulation for the Goal Reformulation Failure Modes*

Case 2 is one of the student teams' work from Project 2. The Ministry's expectation from the project was to gain a set of ready-made job redesign solutions and showcase them in the grant brochures and campaign events (G). Case 2 team worked with a local food manufacturing company - referred to as *the Company* hereinafter, who was looking for physical solutions to guide them in figuring out what equipment to buy and how to implement the solutions.

The student team conducted design ethnography in the Company's restaurant outlets and central kitchen and in-depth interviews and design probes with older workers. They realized that the main issue experienced by these older workers was not

related to physical difficulties but their unmet psychological and social needs. Most critically, the motivational level of the older workers was quite low due to job mismatches. The restaurant managers did not have a good understanding of the older workers' needs and skills, and the older workers were too passive to communicate their wishes, thinking that they were unable to make any differences in their jobs. The current workplace culture and structure did not facilitate effective communication between the two parties.

The students inferred that any physical solution would remain a short-term solution or a quick fix if there was no organizational practice for the identification of the workers' needs. They formulated their design goal to help the company build organizational practices to discover older workers' pain points and needs (Ğ). Their approach to job redesign was a continuous, holistic process and co-discovery of the workers' needs (F[Ť]), rather than the provision of physical transformation solutions (F[T]).

With the reformulated goal and new frame, the student team proposed the design of a digital system, where workers could comfortably express their concerns and job satisfaction levels using a very simple visual interface on a tablet computer placed at the workers' resting areas. The data would reveal the individual workers' physical, psychological and social needs to managers.

The student team, however, had difficulty convincing both the Ministry and the Company to accept their design proposal. First of all, they did not agree that the reformulated goal could achieve the original goal as the needs identification (Ğ) seemed to be a far step from the immediate solutions (G). Secondly, to both the Ministry and the Company, the students' proposal was not viewed as job redesign as they strongly associated job design with physical transformation (F).

Tasked to design tangible solutions, the student team went back to the restaurants for more observations to identify design opportunities for physical interventions. The further research, however, gave them a reassurance of what could improve the older workers' experiences, which was a change to current organizational practices and a tool for needs discovery.

The student team believed that they needed to "integrate the physical transformation outputs in the solution to make them [the Ministry and the Company] start to see the potentials from the idea" (S_PS). Their strategy was to simulate how their proposed idea could eventually lead to physical transformation of the work environment and "help them see the benefits of the idea from the job redesign perspective" (S_PS). They also felt that it was necessary to "frame the concept of a needs discovery platform as an actionable tool for employees' welfare than just problem identification" (S_PS). Along with needs identification, the new system was incorporated with features such as a recommendation list and some precedent exemplar cases of physical solutions that could cater to the identified needs. This design decision sought for the Ministry and the Company to understand how their original goal, i.e. ready-made job redesign solutions, could be achieved by the reformulated goal, i.e. identifying the workers' needs.

The modified solution generated different responses from the Ministry and the Company. The Ministry started to see it as a scalable solution for companies across various industries as the proposed system could help companies devise job redesign ideas that were fitting for their particular needs. However, the Company did not accept the proposal, as it did not provide clear solutions for them to immediately work on. Apparently, these different responses resulted from different goals of the stakeholders, which was confirmed by the follow-up interviews. For the Ministry, their deep underlying goal was to find ways to help companies embark on job redesign. Thus, they saw potential in the proposal as it formed a preparatory step that would help companies across various industries diagnose their problematic areas and plan their own solutions. For the Company, however, translating the recommendation list into physical interventions would take time and resources, which could be a burden for a small and medium enterprise like them.

What Shaped the Government's Responses

After analyzing the reframing dialogues from the students' point of views, in-depth interviews were conducted with the Ministry representatives to understand the reasons behind their (unfavorable) responses to new frames. While this Ministry in Singapore had a mandate from the top management to transform their services and operations to be citizen-centered, the interview findings revealed the inertia to changes and the challenges the middle management had in decision-makings and sharing top management's visions.

Fitness to the Existing System

When the government was introduced to new solution frames, they evaluated the proposals from the perspective of how the existing system works. For example, in Case 1 herein, the students' idea on direct employment felt "futuristic" as it disrupted the existing employment agencies' business, and the government should "play a neutral role between the agencies and the customer citizens" (Ministry—'M' hereinafter - _NF, mid-management officer from Case 1). The existing system immediately set up a barrier, leading them to shut down any opportunities to consider possible benefits and future impacts of the proposal.

> The solutions from the project suggested us a fundamental relook at how we did, how we bridge the customer and the service…I think the natural tendency when you show a very big change to a partner, they block it out immediately, I mean, on one hand they will ask for new ideas, radical ideas, but when you give it to them then they are like "oh, my gosh, it's so hard, it's too difficult to do…" (M_NF)

In Case 2, the government officers had a fixed plan to create ready-made solutions that could help the companies apply for the job redesign grant. This fixation resulted in a situation where anything deviating from the definition of a job redesign grant scheme was not considered a relevant solution. The officers shared that they "actually like the idea, but it was just not job redesign" (M_KD, senior officer from Case 2). In fact, there was another grant scheme that focused on job allocation
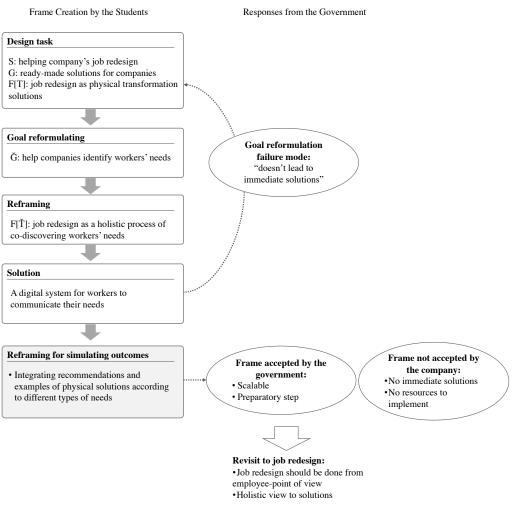
Frame Creation by the Students

Responses from the Government

Design task

S: helping company's job redesign
G: ready-made solutions for companies
F[T]: job redesign as physical transformation solutions

Goal reformulating

Ğ: help companies identify workers' needs

Goal reformulation failure mode:
"doesn't lead to immediate solutions"

Reframing

F[Ť]: job redesign as a holistic process of co-discovering workers' needs

Solution

A digital system for workers to communicate their needs

Reframing for simulating outcomes

• Integrating recommendations and examples of physical solutions according to different types of needs

Frame accepted by the government:
• Scalable
• Preparatory step

Frame not accepted by the company:
• No immediate solutions
• No resources to implement

Revisit to job redesign:
• Job redesign should be done from employee-point of view
• Holistic view to solutions

Figure 6. The reframing dialogue in Case 2.

and organizational processes of ageing workers, called 'age management'. Evaluating the students' proposal based on the fixed system caused the proposal to be rejected from the start and eliminated any chance of further discussion about the potential of pursuing the proposed direction.

In both cases, the tendency to interpret the proposals from the perspective of the existing system was arguably unfortunate as it shuts down opportunities to unpack possible benefits and opportunities (Deserti & Rizzo, 2014; Bason, 2010). This is an ironic situation as one of the driving motivations for the government to engage design was to create an understanding about citizen experiences and seek innovative ideas from the citizens' perspective. While they acknowledged the learning about citizens' actual experiences, when it came to solutions, the system-centered view came into play.

Decision-Making Hierarchy and Task-Oriented Mindset

The organization's decision-making structure and hierarchy majorly shaped the responses of the government officers. The government officers who participated in the projects came from the middle management, and became a 'gatekeeper' to innovation

intentionally or unintentionally. The interviews revealed that their immediate responses were often reflected through "what the boss would say."

> As a ministry, this is what, the outcome that we want to achieve, so sometimes we'll be thinking from the bosses' lens, from the ministry's lens, I think… it's quite hard to break away from that and look at issues from the users' perspective…. Even though it should be the case. (M_NF)

> …a lot of times she [mid-management] will act based on what she thinks her bosses will react to… Because she, in her mind, she would think this is what her boss would say, this is what her boss would think and act. So although she can feel very strongly for a matter, but if she knows that her boss will disagree, then she will change her stance. Based on what her bosses say… (M_HK, mid-management officer from Case 1)

This finding aligns with Bason's observation, where he argued that working with the middle management on frame creation is always challenging, as the roles and tasks of the middle management are defined within the conventional way of problem-solving in an organization (Bason, 2017). Their practices in the

organization are more task-oriented, lacking a clear understanding of the overall strategy or vision of the organization. From the similar observation, Dorst (2015a) suggests that when working with frame creation, it is ideal to target working with members at the top of the organization hierarchy, as they are able to think without boundaries.

Learning from the Reframing Dialogues

The interviews also revealed that after these projects, there were reflective voices from the participating government departments urging a relook at existing system from a human perspective. In Case 2, for example, the Ministry started to think of job redesign as a holistic process of mutual communication, identifying and catering to workers' needs.

> It [job redesign] has been mostly about uh, improving productivity so that the employers would see the benefits. But what the students brought to this game is that, look, employers will take care for their workers as well. It needs not be necessarily always about productivity, but it could also be small incremental things that really improve the, uh, the workers' experience at work. (M_KD)

The senior officer from the interview shared that they are now revisiting the job redesign and age management schemes and exploring possibilities of an integrated scheme, which they believe can "provide conditions for companies to develop more diverse and novel job redesign ideas, going beyond automation machines" (M_KD).

Going through the reframing dialogues with the design students, the government officers were able to reflect on what kind of mindset to have towards new frames. In Case 1, the reframing dialogue eventually helped to convince the Ministry to accept the new frame and plan future steps for implementation. During the interview, one officer shared that the students' strategy enabled the Ministry to learn about how to approach the proposed solution.

> We have to... to break it down and say that, oh, maybe we don't need to go whole scale, maybe we can do it at a small scale first. So what's the idea that you really like about this, what's the transformative bit? Uh, we can take that and let's see how we can do it on a small scale first. I mean, we could see, we could use them as a test bed for example. (M_HK)

In the following sections, we will discuss more in detail a few tactics situated in the reframing dialogues that encouraged a perspective change for the government, as we identified from the cases.

Discussion

In this study, we see a reframing dialogue as a situated practice (Paton & Dorst, 2011), socially and dynamically organized through interactions between designers and client organizations, working around contingencies of the project. Our findings from the retrospective project journey mapping and in-depth interviews, revealed the challenges from the government for accepting new frames and the students' ad-hoc tactics and practical actions to manage frame acceptance as part of the reframing dialogues.

The notion of frame failure modes by Vermaas et al. (2015) was adopted in this study, firstly as a sensitizing concept (Blumer, 1968) to interpret the challenges from the government, and secondly as a vocabulary—"formal description" in their terms (Vermaas et al., 2015, p. 133)—to account for the dynamic processes, otherwise difficult to discern and articulate. In doing so, our cases and analysis add to an explanation of causes and circumstances of possible frame failure modes, which Vermaas et al. (2015) called for. In addition, the analysis of the reframing dialogues with the lens of frame failure enabled us to identify possible tactics to turn failure modes into frame acceptance. What we present in the following sections are students' ad-hoc tactics and practical actions organized to manage frame acceptance, which we believe could be indicators or sensitizing concepts for further analysis in the future study. These tactics, namely *frame mitigation*, *frame simulation* and *frame familiarization*, should be further tested and reinforced by similar research on professional designers' work. Limitations from the student cases and suggestions for further study are discussed by the end of this section.

Frame Mitigation

In the Case 1 illustration, the students almost faced a dead end, after receiving feedback from the Ministry that "this is not going to work." Their strategy was to encourage the Ministry to think about the potential of the new frame, instead of just closing the case, through mitigating the radicalness of the new solutions and reducing the expected emotional resistance to the design tasks. Their concrete actions for mitigation were to first identify the enabler from existing resources, then figure out the core changes that needed to be made and broke the solution down into a stepwise scale. This mitigation strategy eventually helped to convince the Ministry to agree on the new frame and envision future steps for implementation.

The mitigation strategy does not aim at the mitigation of the new frame itself, but mitigation of the radicalness of *design tasks* (Dorst, 2011) to engage the government in the journey of identifying enabling solutions to achieve the vision, instead of shutting down the opportunities in the very early phase. We argue that the mitigation strategy would be helpful when the design team faces the frame failure mode (Vermaas et al., 2015) resulting from barriers due to existing resource plans and work systems.

Frame Simulation

In Case 2, to convince the Ministry and the Company who were fixated with their original goal and existing scheme on what is job redesign and what is not, the student team decided to provide a more tangible simulation of their defined goal. They included certain features such as recommendations and examples of actionable solutions in the digital system to help their clients envision how the proposed solution could possibly lead to the identification of the physical solutions.

As a result, the Ministry broadened their original goal into one that embraces a solution for helping companies identify workers' needs. By reformulating the goal and engaging in the

students' proposed idea, the Ministry positioned the proposed solution of a needs discovery and communication system as a preparatory step for companies to devise their job redesign plans. This journey led to a perspective change for the Ministry and allowed them to think of job redesign as a holistic process of mutual communication, identifying and catering to workers' needs.

This finding, where the Ministry adjusted their frame after seeing the simulation of the expected outcomes, is in line with the recent report from van der Bijl-Brouwer's study (2019) on *frame evolution*. Using case studies of the public sector innovation agencies, she found that teams revisit their understandings of the problems and adjust the frames accordingly by reflecting on potential solutions and prototypes as thinking tools (van der Bijl-Brouwer, 2019). As found from the interviews, the students' proposals helped the Ministry realize that they had approached the entire job redesign scheme from a corporate point of view, i.e., the productivity of the company, rather than a viewpoint focusing on employee experiences. They also learned that physical solutions could not be separated from company's culture and processes, and separating the funding schemes into physical solution and management solution hindered them from approaching the topic of aging workers in a more compassionate manner.

We argue that the simulation strategy may be feasible when a client organization has a more fundamental goal or motive, as the simulation can picture how the new frame can achieve the fundamental goal. In the case of this study, the fundamental motive of the Ministry was to help companies better prepare for job redesign, and the goal of ready-made solutions was part of the strategy to achieve this motive. That was the reason why the student team failed to gain buy-in from the Company, as their goal was to have a proposal that could immediately be implemented.

Frame Familiarization

Although it was not explicitly elaborated in the case illustrations, what was common among the students' work was that they communicated new frames to the government over the entire project journey. They met the government officers at crucial moments, including interim presentations for sharing early framing, feedback sessions for design ideas, and prototype testing. Throughout this journey, the students communicated their ideas, checked the government's responses, attempted to convince them, modified ideas, and obtained feedback again. What is important here is that, instead of giving up, they devised ad-hoc tactics and practical actions to engage the government in the new frames, such as modifying their solution features, rearranging the design tasks, and simulating goal achievement. This process engaged the government officers little by little in the proposed frames by increasing their familiarity with the new direction. This finding was also reflected in one officer's sharing during the interview: "with constant touchpoints, like more frequent touch points with the department partners, then this framing can seed into them. If the partner departments that are working with were brought into the process, somehow, they might buy-in, and they take away from the project with this idea" (M_HK).

This finding is in line with the suggestion of Vermaas et al. (2015), which states that frame failure may in practice be avoided if designers regularly brief clients about the way they develop the original design task. Dorst (2015b) also argues that continuous interactions and multiple projects with a partner organization can create interesting new experiences for the government to move away from their old ways of thinking and reliance on current practices.

We acknowledge that the constant touchpoints with the government in this study were made possible under the condition of these collaboration projects where the government had a motivation to experience the design project and agreed to provide contextual knowledge. Such interactions may not be always there in a professional design project. How to create meaningful modes of interaction with a client, for example, by strategically understanding organizational contexts during the briefing or in the early phase of the project (Paton & Dorst, 2011), should be further studied.

Understanding of Organizational Design Legacies

These discussions bring us to the point where the designer's understanding of *organizational design legacies* (Junginger, 2015) should be a prerequisite for the effective engagement of the government in the new frame, instead of pushing the government to think in a new way. Junginger (2015) describes organizational design legacies as "practices people take on from previous generations, which tend to be shaped or influenced by organization's everyday management and operational practices" (Junginger, 2015, p. 213). The challenge for designers, then, is to disentangle and articulate existing design legacies of organizations.

Likewise, we argue that a frame or framing process serves as a *conversation piece* (Junginger, 2015) for designers to disentangle the constraints and desires, and even hidden agendas, of the government. At the same time, the government is able to better clarify what designers are trying to propose and envision the potential of the design propositions. In the students' projects, the entire journey of reframing, delivering new frames, discovering the barriers of non-acceptance of the new frame, and devising the ad-hoc tactics and practical actions to still gain buy-in from the government, revealed some aspects of the design legacy of the government. Through this knowledge, the students were able to gradually test the boundaries of frame acceptance and frame failure.

Bowen et al. (2016) observed from the academic industry collaboration that constraints provided framings for the design work which suggested avenues for exploration and subsequent design tasks. In the students' situated work to engage the government, they did benefit from the constraints, by mitigating the solution areas within the frame or simulating the frame through the modified solutions. In other words, the constraints from the stakeholder that the students chose to attend in order to deliver their frames had instrumental value (Dorst, 2011). Using their frame proposals as *boundary objects* (Star, 2010), which elicited knowledge, values and opinions from participating stakeholders (Vines et al., 2013), the students generated potential solutions by seeing and acting upon the unfamiliar situations and using constraints in the problem setting (Dorst, 2011).

Limitations and Suggestions for Future Research

While this study benefitted from the students' cases that can be observed more explicitly than professionals (Dorst, 2011), we acknowledge that experienced professionals might work differently. For example, they may more thoroughly take into account existing system and government's organizational legacy in their framing, or communicate new frames in a more skillful manner. As mentioned, the constant touchpoints between the students and the government allowed from the university collaboration projects may not be the norms in professional design practice. In this sense, types of challenges, or even types of frame failures, might be different for professional designers.

As we have argued, our intention from understanding students' reframing dialogues and situated work around frame failures is not to develop them into a prescriptive process or similar, but to add to an explanation of what actually happens when frames are delivered and how they are negotiated and iterated in social situations of the project, beyond the cognitivist explanation of framing (e.g., Schön, 1995; Ylirisku, 2014). Similar research should be conducted in the context of professional designers to compare the findings from this study and reinforce the knowledge. We believe that a robust study on these topics would provide insights for both practice and education, on what kinds of design competence are required and how to build the competences to be able to deal with increasingly complex problems, and with new types of clients. The suggested future research will help to discover other types of frame failure modes beyond the two illustrated in this study, as well as new strategies to manage the failure modes. In the context of design education, frame failure modes will be a sensitizing concept for the students to understand the challenges around the delivery and acceptance of new frames and build their competence in managing those challenges.

Acknowledgement

References

1. Annala, M., Kaskinen, T., Lee, S., Leppänen, J., Mattila, K., Neuvonen, A., Nuutinen, J., Saarikoski, E., & Tarvainen, A. (2015). *Design for government: Human-centric governance through experiments.* Retrieved from https://www.demoshelsinki.fi/wp-content/uploads/2015/09/Design-for-Government-%E2%80%93-Governance-through-experiments.pdf

2. Bailey, S. G. (2012). Embedding service design: The long and the short of it. In *Proceedings of the Conference on Service Design and Service Innovation* (pp. 31-41). Linköping, Sweden: Linköping University Electronic Press.

3. Bailey, J., & Lloyd, P. (2016). The introduction of design to policymaking: Policy Lab and the UK government. In *Proceedings of the Conference of Design Research Society* (pp. 3620-3633). Brighton, UK: Design Research Society.

4. Bason, C. (2010). *Leading public sector innovation: Co-creating for a better society.* Bristol, UK: Policy Press.

5. Bason, C. (2017). *Leading public design: How managers engage with design to transform public governance* (Doctoral dissertation). Copenhagen Business School, Copenhagen, Denmark.

6. Blumer, H. (1968). *Symbolic interactionism: Perspective and method.* Berkeley, CA: University of California Press.

7. Bowen, S., Durrant, A., Nissen, B., Bowers, J., & Write, P. (2016). The value of designers' creative practice within complex collaborations. *Design Studies, 46,* 174-198.

8. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

9. Christiansen, J. (2013). *The irrealities of public innovation: Exploring the political epistemology of state interventions and the creative dimensions of bureaucratic aesthetics in the search for new public futures* (Doctoral dissertation). Aarhus University, Aarhus, Denmark.

10. Deserti, A., & Rizzo, F. (2014). Design and organizational change in the public sector. *Design Management Journal, 9*(1), 85-97.

11. Dorst, K. (2011). The core of 'design thinking' and its application. *Design Studies, 32*(6), 521-532.

12. Dorst, K. (2015a). *Frame innovation: Create new thinking by design*. Cambridge, MA: MIT Press.

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

14. Dorst, K. (2019). Co-evolution and emergence in design. *Design Studies, 65*, 60-77.

15. Hakio, K., & Mattelmäki, T. (2011). Towards customer centric services; Suspension of expectations and trust. In J. Buur (Eds.), *Proceedings of the Conference on Participatory Innovation* (pp. 186-189). Sønderborg, Denmark: PIN-C. Retrieved from http://pin-c.sdu.dk/2011.html#track-3

16. Hey, J. H. G., Joyce, C. K., & Beckman, S. L. (2007). Framing innovation: Negotiating shared frames during early design phases. *Journal of Design Research, 6*, 79-99.

17. Holmlid, S., & Malmberg, L. (2018). Learning to design in public sector organizations: A critique towards effectiveness of design integration. In *Proceedings of the Conference on Service Design and Service Innovation* (pp. 37-48). Linköping, Sweden: Linköping University Electronic Press.

18. Hyvärinen, J., Lee, J. -J., & Mattelmäki, T. (2015). Fragile liaisons: Challenges in cross organizational service networks and the role of design. *The Design Journal, 18*(2), 249-268.

19. Junginger, S. (2015). Organizational design legacies and service design. *The Design Journal, 18*(2), 209-226.

20. Junginger, S., & Sangiorgi, D. (2009). Service design and organizational change: Bridging the gap between rigour and relevance. In *Proceedings of the 3rd IASDR Conference on Design Research* (pp. 4339-4348). Seoul, South Korea: Korean Society of Design Science.

21. Kimbell, L. (2015). *Applying design approaches to policy making: Discovering policy lab.* University of Brighton, UK. Retrieved from https://researchingdesignforpolicy.files.wordpress.com/2015/10/kimbell_policylab_report.pdf

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

23. Kronqvist, J., Järvinen, M., & Leinonen, T. (2012). Games as design medium - Utilizing game boards for design enquiry with cancer patients. In *Proceedings of the Conference on Service Design and Service Innovation* (pp. 121-132). Linköping, Sweden: Linköping University Electronic Press.

24. Malmberg, L. (2017). *Building design capability in the public sector: Expanding the horizons of development* (Doctoral dissertation). Linköping University, Linköping, Sweden.

25. Mulgan, G. (2014). *Design in public and social innovation.* Retrieved from https://media.nesta.org.uk/documents/design_in_public_and_social_innovation.pdf

26. Park-Lee, S., & Person, O. (2018). Briefing beyond documentation: An interview study on industrial design consulting practices in Finland. *International Journal of Design, 12*(3), 73-91.

27. Paton, B., & Dorst, K. (2011). Briefing and reframing: A situated practice. *Design Studies, 32*(6), 573-587.

28. Pirinen, A. (2016). The barriers and enablers of co-design for services. *International Journal of Design, 10*(3), 27-42.

29. Polaine, A., Løvlie, L., & Reason, B. (2013). *Service design: From insight to implementation.* Brooklyn, NY: Rosenfeld.

30. Sanders, E. B. -N., & Stappers, P. J. (2008). Co-creation and the new landscapes of design. *CoDesign, 4*(1), 5-18.

31. Schön, D. A. (1995). *The reflective practitioner: How professionals think in action.* Aldershot, England: Arena.

32. Shostack, G. L. (1987). Service positioning through structural change. *Journal of Marketing, 51*(1), 34-43.

33. Sperano, I., Roberge, J., Benech, P., Trgalova, J., & Andruchow, R. (2019). Exploring new usages of journey maps: Introducing the pedagogical and the project planning journey maps. In *Proceedings of the 20th Congress of the International Ergonomics Association* (pp. 964-982.). Basel, Switzerland: Springer Nature.

34. Star, S. L. (2010). *This is not a boundary object: Reflections on the origin of a Concept.* Science, Technology, & Human Values, 35(5), 601-617.

35. Stompff, G., Smulders, F., & Henze, L. (2016). Surprises are the benefits: Reframing in multidisciplinary design teams. *Design Studies, 47,* 187-214.

36. Thurgood, C., O'Donnell, M., Peppou, G., Lulham, R., & Bucolo, S. (2016). A tool to bridge design innovation research and practice: The project experience map. In *Proceedings of the 20th Conference on Design Management* (pp. 1486-1502). Retrieved from http://hdl.handle.net/10453/47166

37. Vaajakallio, K., Keinonen, T., & Honkonen, J. (Eds.) (2013). *Designing for wellbeing.* Helsinki, Finland: Aalto University publication series.

38. Vaajakallio, K., Lee, J.J., Kronqvist, J., & Mattelmäki, T. (2013, July 2). *Service co-design with the public sector: Challenges and opportunities in a healthcare context.* Paper presented at the Include Asia Conference, Hong Kong, China.

39. van der Bijl-Brouwer, M., Kaldor, L., Watson, R., & Hillen, V. (2015). Supporting the emerging practice of public sector design innovation. In *Proceedings of the 6th IASDR Conference on Design Research* (pp. 2156-2172). Brisbane, Australia: QUT.

40. van der Bijl-Brouwer, M., & Dorst, K. (2017). Advancing the strategic impact of human-centred design. *Design Studies, 53*, 1-23.

41. van der Bijl-Brouwer, M. (2019). Problem framing expertise in public and social innovation. *She Ji: The Journal of Design, Economics, and Innovation, 5*(1), 29-43.

42. van Leeuwen, J., Rijken, D., Bloothoofd, I., Cobussen, E., Reurings, B., & Ruts, R. (2016). Thematic research in the frame creation process. In *Proceedings of the Conference on Service Design and Service Innovation* (pp. 352-364). Linköping, Sweden: Linköping University Electronic Press.

43. Vermaas, P., Dorst, K., & Thurgood, C. (2015). Framing in design: A formal analysis and failure modes. In *Proceedings of the 20th International Conference on Engineering Design* (pp. 133-142). Glasgow, Scotland: Design Society.

44. Vines, J., Clarke, R., Wright, P., McCarthy, J., & Olivier, P. (2013). Configuring participation. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 429-438). New York, NY: ACM.

45. Yee, J., & White, H. (2015). The Goldilocks Conundrum: The 'just right' conditions for design to achieve impact in public and third sector projects. *International Journal of Design, 10*(1), 7-19.

46. Yeo, Y., Chew, J. Y., & Lee, J. J. (2016). Towards sustainable impact after university-government design projects: Case of worker services in Singapore. In *Proceedings of the Conference on Service Design and Service Innovation* (pp. 537-543). Linköping, Sweden: Linköping University Electronic Press.

47. Ylirisku, S. (2014). *Frame it simple! Towards a theory of conceptual designing* (Doctoral dissertation). Aalto University, Helsinki, Finland.

48. Yu, E., & Sangiorgi, D. (2018). Exploring the transformative impacts of service design: The role of designer-client relationships in the service development process. *Design Studies, 55*, 79-111.