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Service Designing for Human Relationships to Positively Enable Social Systemic Change

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Service design is increasingly seen as a means to enable systemic change in complex contexts. The contexts in which services are co-produced—the social group, network, service organisation, or ecosystem—can be considered complex social systems. A characteristic of complex social systems is that new system behaviour *emerges* through a mechanism called self-organisation. Self-organisation shows how human relationships are at the core of social systemic change. Such systemic changes are reflected in system behaviour such as adaptation, mutual learning, and collective creativity and motivation. As service design is in essence about human relationships, it becomes relevant to ask how we can design for human relationships to positively enable social systemic change? In this paper, I argue that expert design reasoning is an important source in designing conditions that enable positive human relationships, and that this design reasoning can be expanded to work towards a design rationale for systemic change by building on theories of complex social systems. I illustrate this perspective with the reasoning of service designers in two cases, who used their insights to design for human relationships. I conclude with a discussion of the implications for service design practice and service design education.

Keywords **–** Relational Design, Complex Social Systems, Design Reasoning, Service Design.

Relevance to Design Practice **–** Designing for human relationships and how that is connected to complex social systems is relevant to service designers who want to contribute to systemic change.

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Introduction

Over the past decade, service design scholars have increasingly recognized the complexity of the context in which service design operates (Manzini, 2011; Sangiorgi et al., 2017; Vink et al., 2021). At the same time, the service design field has started to change its intentions from designing of distinct services, to *an engine for wider societal transformations* (Sangiorgi, 2011) and a *catalyst for change* (Kimbell, 2014). In this paper I introduce a new perspective on the role of service designers in working towards systemic change in complex contexts. The argument I make is that: 1) systemic change in social systems can be understood through complex social systems theory that illustrates the influence of human relationships on system behaviour, and 2) expert design reasoning supports designing conditions that enable desired changes in relationships between humans in a social system, as well as changes in the behaviour of that social system as a whole.

The social context which influences—and is influenced by—new services include people involved in the co-production of services and their wider networks including, for example, families, friends, organisations, networks, and communities. These contexts can be described as complex adaptive systems and as social systems, which I will further refer to as a complex social system. Complex adaptive systems behave according to the principles of self-organisation and emergence, which means that new patterns of relations emerge through interacting *agents* which allows the system to adapt to its environment (Hasan, 2014). The agents in social systems are human beings who interact through human relationships. Emergent properties of complex social systems include for example adaptation and resilience. For example, an organisation that needs to adapt to a dynamic competitive environment by innovation (emergent property) benefits from collaborative connections between employees (self-organisation; Arena, 2018). Another example is a society that develops resilience to disruptions in the environment through a self-organising process of evolution grounded in interactions between diverse human (sub-)cultures, rather than insistence on a single culture that shuts down learning (Meadows, 1999).

In this paper I address two main questions: how do relationships between humans in a service design context impact the behaviour of the complex social system of which these humans are part? And how may service designers contribute to designing for these human relationships and for changes in the complex social system? In this conceptual paper I will address these questions by putting literature on complex social systems in dialogue with literature on expert design reasoning. I will argue that expert design reasoning can contribute to developing *relational and systemic* working principles that play a key role in designing for systemic change. I will illustrate this perspective

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with two case studies from social innovation practitioners who showed expert design reasoning in designing for human relationships. Based on the complex social systemic perspective and anecdotal evidence, I will then go on to speculate about the potential systemic change that may be enabled through the two examples. The paper concludes with implications for service design practice, service design education, and future research.

Human Relational Perspectives on Services

Human relational perspectives on services first developed in the health care context in the 1990s. In particular the introduction of the Relationship-Centred Care (RCC) framework (Tresolini & Pew-Fetzer Task Force, 1994) represented a shift towards recognizing that "the nature and the quality of relationships are central to health care and the broader health care delivery system" (Beach et al., 2006, p. 3). More recently, the importance of human relationships has also been increasingly recognized in other public services. Notably, Cottam (2018) argues for a welfare service system that moves away from a transactional culture towards one that is based on "the premise that everyday human connections matter and that they need to be nurtured and sustained [...]." (p. 205)

Human relationships are also recognized in the service design field, involving service staff-consumer relationships, but also relationships between service users (see for example Postma & Stappers, 2006; Snelders et al., 2014); between staff in collaborative services (see for example Baek et al., 2018); and between heterogeneous actors in service networks (Carvalho & Goodyear, 2017). The personal characteristics of such relationships are highlighted by Cipolla and Manzini (2009) who proposed a framework to reinforce the ability of the service design discipline to deal with the *interpersonal relational qualities* in services, which they refer to as a *relational service*. Their perspective is a response to what they call a *standard service* which sees a service staff member as an *agent* and consumer as a *client*. In line with the RCC model in healthcare, they instead introduce a *circular interaction model*, where benefits are reciprocally produced and shared by *participants* and our focus is turned to the importance of relational qualities such as intimacy, trust, and openness.

Systemic Perspectives on Services

Systemic perspectives on services are becoming increasingly common in service development and service design literature. For example, Sangiorgi et al. (2017) argued that service providers need to go beyond designing for dyadic relationships with customers, to designing and managing the service providers' role in encompassing value networks and service ecosystems. They illustrate this claim with the example of travellers who now have more autonomy, using the web, mobile technologies, social networks, and a myriad of service providers to create their unique travel experiences.

In systemic views on service systems, we can distinguish service design approaches that are focused on system design—in other words on the part of the system that can be designed (Patricio et al., 2011), and approaches that recognise the complexity and unpredictability of service systems and therefore focus on systemic change or designing *with* the system. In this latter category we can distinguish organisational, ecosystem, and network perspectives on service systems in service development and service design literature, each of which are further explained below.

An organisational perspective on service systems is offered by Junginger and Sangiorgi (2009) who argued that service interactions on the fringe or periphery of an organisation cannot be isolated from that organisational system. Here they conceive of organisations as complex social systems: "people with their norms, values, beliefs and behavioural patterns; its structures, which includes procedures, hierarchies and tasks; its resources and an organisation's vision" (p. 1). An important organisational characteristic to consider, according to Junginger (2015) is that design is already present in everyday organisational life and part of the organisational DNA, *long before any service designer or other design professional enters the scene*.

Another recent systemic perspective on services is the service ecosystem perspective which originates in the service science literature building on service-dominant logic (Vargo & Akaka, 2012). Vargo and Akaka define *service ecosystems* as "relatively self-contained self-adjusting systems of resource-integrating actors connected by shared institutional logics and mutual value creation through service exchange" (p. 207). This view highlights the complex, dynamic, multi-actor nature of value co-creation. The service ecosystem perspective has recently been adopted by service design scholars (Koskela-Huotori et al., 2016; Vink et al., 2021) and further been conceptualized into *service ecosystem design* by Vink et al. Like Junginger (2015), the service ecosystem design perspective recognizes the agency of all actors, highlighting that many actors are already involved in an ongoing process of collective designing (Vink et al.). Whereas Junginger focuses on organisational actors, the service ecosystem perspective also includes actors in the broader 'institutional arrangements': interdependent assemblages of institutions at various aggregation levels, from micro (for example B2B) to meso (for example *industry*)—to macro (broader societal structures and activities; Vargo & Lusch, 2016).

Vink et al. (2021) use the service ecosystem perspective to show how existing and interrelated rules, roles, norms, and beliefs strongly interact—e.g., resist or reinforce—with design efforts as, for example, in the primary care service ecosystem. In contrast, there are other types of services that can be described through a more flexible *network* perspective in which actors and the way they

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are related change more dynamically compared to the ecosystems described by Vink et al. Carvalho and Goodyear (2017) describe these service networks as situations where "service effects and opportunities are not constrained by the nesting of firm systems, or the solidity of established communities, but can be flexibly configured through connecting new sets of people and resources" (p. 33). A type of services in line with this flexible network perspective are the collaborative services described by Baek et al. (2018), for example a collaborative network aimed at local food production and consumption—one that includes employees of a community enterprise, producers, consumers, and local government—that dynamically changes with the collaborative services they produce.

Service Design Methods and Practices for Human Relationships and Systemic Change

The focus of this paper is on how we may design for human relationships and systemic change. In that context it is useful to further zoom in on the design methods, practices, and roles, that are proposed in service design literature to design for human relationships and for systemic change.

Sangiorgi and Prendiville (2017) explain how the term *service design* originates in service marketing literature from the 1980s (Shostack, 1984) and later appears as a phase in new service development (Edvardsson & Olsson, 1996). The service design literature I draw on in this paper is the more recent literature that views service design as a *human-centred design approach*. Meroni and Sangiorgi (2011) state that "A human-centred design approach to services manifests in the capacity and methods to investigate and understand people's experiences, interactions and practices as a main source of inspiration for redesigning or imagining new services." (p. 203)

An important shift in service design practice is the move from seeing service design as being about *design **of** services* to *design **for** service* (Kimbell, 2011). Rather than seeing services as *objects* that can be prescribed and controlled through for example the design of a service blueprint, the design for service perspective sees the purpose of designers' enquiry as the creation and development of *proposals for new kinds of value relation within a socio-material world*. Kimbell's conceptualisation sees *service as enacted in the relations between diverse actors, rather than as a specific kind of object to be designed*, referring to Vargo and Lusch's (2004) service dominant logic which sees service as a dynamic process in which value is co-created.

Following the design for service viewpoint we can view relational aspects of service design as being about *design **for** human relationships*. While relationships are inherently part of the design for service perspective in terms of its focus on value relation and value exchange (Kimbell, 2011), value exchange is only one way of looking at (designing for) human relationships. Cipolla and Manzini (2009), highlighting the interpersonal characteristics of relational services, suggest that such relational services cannot be designed; they can only be enabled, i.e., *they need to be designed in such a way as to support, and continuously sustain interpersonal encounters between the participants*. While these views are useful in getting a grip on what can, cannot and should be designed, they do not explain *how* we can design for human relationships. An exception is the work of Aguirre-Ulloa and Paulsen (2017) who propose a multi-sensory systemic design tool that aids public servants, designers and service users in understanding social relationships through the use of physical and sensorial material properties.

When we look at design methods and practices for systemic (service) design we can distinguish two dominant categories of approaches. The first category is focused on systemic analysis and visualisations, while the second approach concerns *inside-out design* involving co-design and capability building.

Examples of systemic analysis and visualisations are service (learning) network analysis and modelling of people, tasks, tools and other artifacts (Carvalho & Goodyear, 2017); social network analysis to analyse different attributes of how actors in a (collaborative) service network are related, for example the density of how actors are connected, the strength of ties in the network, and the role of participants in the network (Baek et al., 2018); and relational mapping that represents different types of relations between system actors and other elements, including for example social, causal, semantic, and economic relations (Sevaldson, 2016). The function of these systemic representations in (service) design processes are intended to *inform* design work. For example, Carvalho and Goodyear (2017) argue that a network analysis can be used to *inform future design work on service enhancement* and Baek et al. (2018) describe how a social network analysis "informs designers about the current state and desired state of collaborative encounters. It also supports their embodiment and evaluation of the design intervention" (p. 21).

A different, although sometimes overlapping, group of systemic design approaches can be characterised as, what Carvalho and Goodyear (2017) call, *design from the inside*. These approaches see design, as Vink et al. (2021) suggest, as ongoing, iterative and collective design processes by people within this service system. Carvalho and Goodyear (2017) refer to these practices as "'insider' approaches, which place a high value on the active participation of people close to the service interface—including service users and service providers" (p. 44), and which recognize the agency of all actors, highlighting that many actors are already involved in an ongoing process of collective designing (Junginger, 2015; Vink et al., 2021). In these insider approaches, the role of professional service designers is "to engage organisations they work with in high-level transformational thinking around their own design activities" (Junginger, 2015, p. 210); to stage experiences to challenge actors' existing assumptions (Wetter-Edman et al., 2018) and support reflexivity to shape service ecosystems (Vink et al., 2021), and to engage in organisational capability building (Karpen et al., 2017). Of particular interest here are service ecosystem design (Vink et al., 2021) and the soft systems method applied by Carvalho and Goodyear (2017) in learning networks, that engage actors not just in design processes, but also in gaining a systemic understanding of service design.

A Complex Social System Perspective on Services

While designing for human relationships and designing for systemic change have been described as relatively distinct areas above, complexity concepts explain how relationships are intrinsically connected to complex system behaviour and systemic change. This is an important perspective for service design, since although service design can control neither human relationships (Snelders et al., 2014) nor systemic change (Sangiorgi et al., 2017), service design can *enable* positive change in human relationships which in turn may establish a "leverage point" to enable systemic change in the broader service system. Leverage points are places within a complex system, where a small shift in one thing can produce big changes in other things (Meadows, 1999). I will now go on to explain a complex social systemic perspective on service design, before outlining how service designing may contribute to positive change in these complex social systems.

In line with the service system network concept (Carvalho & Goodyear, 2017) I adopt a broad and flexible perspective on service systems which includes interactions between (groups of) people and technology in for example organisations, communities, teams, families, or sectors (for example the health care system or the child protection system). These service design contexts can be perceived through various theoretical systems lenses. Sevaldson and Jones (2019) promote a pluralistic perspective on relevant systems theories in the context of systemic design. Here I will draw specifically on complex adaptive systems theory and complex social perspectives from the management field, to outline the connection between human relationships and system behaviour.

Complex adaptive systems consist of large numbers of interacting entities known as agents, such as a flock of birds and termites building large structures. By adapting to each other during their interactions, they form a system that adapts to its environment. Complex adaptive systems behave according to generally agreed principles, including self-organisation, and emergence (Hasan, 2014). Self-organisation is the ability of interconnected autonomous agents of a complex adaptive system to evolve into an organised form without external force. None of the birds in the flock nor any outside external party controls the murmuration. What emerges are new *patterns of relationships*. The process "is called self-organisation because the patterns of relationships that emerge are (a) not designed by an external agency, (b) what form they take cannot be predicted, and (c) they do not generally accord with any overarching principle such as maintaining stability or maximizing profits or minimizing energy" (Boulton et al., 2015, p. 17).

Because service systems and networks include people, they should not just be seen as complex adaptive, but also as social. Here we can learn from complexity management scholars who have adopted a complex and social perspective on organisations. Like complex adaptive systems, principles such as self-organisation and emergence have also been adopted to explain emerging behaviour in organisations (Mathews et al., 1999). However, in the social systemic perspective in management theories, organisational actors are not seen as (digital) agents, but as human beings with purposes of their own (Ackoff, 1999). In line with this view, Stacey argues that human agents that are part of organisations, are not simple rule-following beings but instead are "conscious and self-conscious beings capable of spontaneity, imagination, fantasy and creative action" (Stacey, 2006, p. 33). Scholars that view organisations as complex social systems underline the dependence upon positive human relationships to enable positive emergent system behaviour (Arena, 2018; Senge, 1990; Stacey, 2012; Wheatley, 2006). For example, Wheatley (2006) explains how organisations that have capacity for healthy relationships, have the capacity to adapt and grow.

The complex systemic nature of service has been recognized by service design scholars (Vink et al., 2021). For example, Sangiorgi et al. (2017) discuss how complex system concepts of interdependence, participation, and emergence play a role across service system aggregation levels. The complex *social* perspective presented above complements these views by drawing our attention to how human relationships may not just be important to consider in terms of relational services and its associated interpersonal qualities, but may also be an important intervention point for systemic change. In this paper I will present two empirical case studies of service design initiatives and discuss these cases based on the complex social systemic lens. This will show how expert design reasoning is an important skill in designing for human relationships, and offers opportunities to design relational intervention points for systemic change. Before introducing the cases I will first introduce what is meant by expert design reasoning.

Expert Design Reasoning

So far, the different approaches to service design described in this paper involve the human-centred design approach to investigate and understand people's experiences, interactions and practices as a main source of inspiration for redesigning or imagining new services (Meroni & Sangiorgi, 2011); systemic approaches that use systemic and network analysis to inform designing for systems (Baek et al., 2018; Carvalho & Goodyear, 2017; Sevaldson, 2016); and *insider* approaches aimed at ongoing and collective service designing from within service systems (Carvalho & Goodyear, 2017; Junginger, 2015; Vink et al., 2021). The first two groups of approaches consider service design as a process of analysis that subsequently *inspires* or *informs* a creative design process, while the latter approach presents a more circular and iterative approach in which professional service designers creatively stage or facilitate this collective design process. Acknowledging the importance of this latter role of professional designers, I argue that, in addition, expert design reasoning—a skill that professional service designers but also other innovation practitioners hold (van der Bijl-Brouwer, 2019)—uniquely contributes to designing for service and for systemic change. This *expert design* practice complements the ongoing collective designing that may be described as *diffuse design* (Manzini, 2015).

Designing has been considered to include distinct reasoning patterns since the 1980s when design established as a coherent discipline of study (Cross, 2007), and scholars started to refer to

this reasoning process as a *designerly way of thinking* (Archer, 1979) and *designerly way of knowing* (Cross, 1982). Here, I will particularly draw on the work of Dorst who, building on Schön's theory of reflective practice (Schön, 1983), has shown in empirical studies how designers reason (Dorst & Cross, 2001). In particular, I will apply his logical framework for abductive design reasoning (Dorst, 2011).

In this logical framework, Dorst (2011) explains how reasoning in design constitutes how a *what* and *how* lead to aspired value or outcomes (Figure 1). The *how* in this logic is a working principle that explains how a certain designed proposal or prototype (what) leads to a certain desired outcome. In this paper I will refer to this logic as the *design rationale*, the representation of reasoning behind the design of an artifact (Knudsen, 2020; Shum & Hammond, 1994). Dorst (2011) explains how at the start of a design process we only know the end value we want to achieve. The challenge is to figure out what to create while there is no known working principle that we can trust to lead to the aspired value. While novice designers can be seen to almost randomly generate proposals for both the *how* and *what* to find a matching pair, experienced designers tend to have much more deliberate strategies to tackle the complex creative challenge of coming up with both a *thing* and its *working principle* that are linked to the attainment of a specific value, by adopting a *frame*. A frame is the general implication that by applying a certain working principle we will create a specific value (Dorst 2011). Studies of the reasoning patterns of expert product designers show that frames are not developed *before* the generation of solutions, but that framing happens in a process of *co-evolution* between frame and solution (Dorst & Cross, 2001). In a preceding study (van der Bijl-Brouwer, 2019), I showed that such expert problem framing practices can also be identified amongst public and social innovation practitioners.

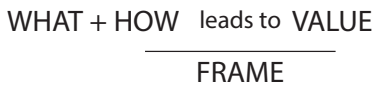

Figure 1. A logical framework for design reasoning developed by Dorst (2011). Image adapted by the author.

To show how service designers may design for human relationships and social systemic change I will focus on the design reasoning that service designers may adopt to work towards a desired relational and related social systemic outcome (Figure 2). If we want to enable social systemic change, then what are working principles to work towards these systemic outcomes? To contribute to answering this question I refer again to the principle of *self-organisation* which can be considered a *systemic working principle* that explains how interconnected human beings in a complex social system contribute to the emergent properties of that system. The working principle is therefore conceptually linked to working principles that impact human relationships. The follow up question is: if we want to enable certain relational outcomes, then what could potential working principles that lead to relational and systemic outcomes look like? To answer and illustrate this latter question I will draw on two cases taken from an empirical study into the design reasoning patterns of social innovators that showed their problem framing expertise. While other results of this study have been published in preceding articles, I conducted an additional round of data analysis to further focus on design reasoning patterns towards relational outcomes. I will next describe the research method and findings of the design reasoning patterns used by the practitioners to reason towards design for human relationships. These findings are followed by a discussion of and speculation about the potential social systemic outcomes of these cases based on anecdotal evidence and the above-described theory of complex social systems.

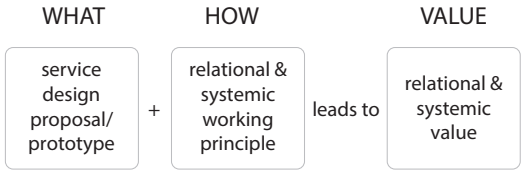

Figure 2. A design rationale that includes relational and systemic working principles.

Research Method

The study presented in this paper is partly empirical and partly conceptual. The research questions associated with the two parts are:

- Empirical question: how do expert designers involve relational working principles and outcomes in their design reasoning?
- Conceptual question: what is the anticipated working principle and social systemic impact of the interventions and corresponding patterns in human relationships?

I chose to focus on design reasoning and not on the actual impact of the proposed design proposals. This enables us to learn from the designers' reasoning patterns and suggests how other service designers might be supported in developing such reasoning patterns for other contexts. A limitation of this approach is that there is no data to show the actual impact of the designed service proposals beyond the data that was provided by the participating service designers themselves.

Research Method Empirical Study

The empirical study presented in this paper uses data from a broader study into *problem framing expertise* and *systemic design principles* employed by public and social innovation practitioners that we conducted in 2016 and 2017. The results of those studies have been presented in preceding articles (van der Bijl-Brouwer, 2019; van der Bijl-Brouwer & Malcolm, 2020). The studies were conducted using a retrospective case study approach, because design and social innovation practices are *situated* and cannot be separated from the case study context itself (Yin, 2009).

Case Selection

The broader study included five cases of social innovation teams that aimed to tackle a specific complex societal challenge in collaboration with (a) public and/or social sector organisation(s).

Two cases were selected for the purpose of the study presented in this paper. The reasons for selection of these two cases are the following: 1) both cases show a clear focus on fostering new types of relational experiences, 2) both cases provide the opportunity to show how these relational experiences might enable systemic change, 3) both cases had been extensively prototyped and tested and were in (early) implementation phase. As such the working principles that were part of the design reasoning to enhance relationships had been validated. The cases are the *Time-Quality Dilemma case* by MindLab, and the *Kudoz* case, developed by InWithForward (Table 1).

Data Gathering & Analysis

I collaborated with a research assistant to gather data via semi-structured interviews with at least two team members from each innovation team and at least one staff member from the partnering public or social sector organisation(s). Every agency also gave us access to project documentation including reports and other design materials. We interviewed staff members from the participating organisations individually or in their teams of two or three people. Individual interviews took 30-60 minutes, while group interviews took 60-90 minutes.

Participants were asked to first list their design activities on a timeline, and then reason from initial problem brief to final (or current) design proposal to get a basic understanding of their design reasoning in relation to design activities. In the next part of the interview, a deeper understanding of the reasoning of the proposed design was gained by asking participants what they thought the design meant to specific stakeholders and which needs or aspirations were met.

We had the interviews transcribed in full, and took an inductive thematic approach to analyse design reasoning. The triangulated data was used to summarise each project in a case study report which outlined the different steps in each design process, the methods used, and the way the design reasoning progressed through an evolving design rationale. For the purpose of the study presented in this paper, the data was coded according to the working principles that were used in the design reasoning of the teams and that shed light on how they arrived at a design proposal that enabled positive change in human relationships.

Design Reasoning about Human Relationships

Case 1: *MindLab—Speed Sharing Event*

MindLab was asked by a Danish municipality to help to design interventions for primary school teachers who needed to adjust their teaching practice in line with a reform recently introduced by the education ministry. The reform required teachers to deliver the same quality of education with less preparation time. The overarching idea was that if teachers would share more of their knowledge, it would help them reduce preparation time.

The MindLab team used provocative prototypes, inspired by practices from other industries, and various co-design sessions with teachers and the municipality to explore different ways of framing the problem and different types of interventions.

To show how MindLab's design reasoning evolved towards a focus on human relationships I will show an initial rationale that was not successful, and the final design rationale that includes a working principle that worked well for the teachers and led to the successful implementation of the speed sharing event intervention.

The lesson box consists of a box with "ingredients" that teachers can use in the classroom. It was inspired by a meal kit service, which contains ingredients and a recipe for a meal. The assumed working principle (see Table 1) was that if teachers are told exactly what to do (the recipe) and were given the right tools to do this (the lesson ingredients), then that would save time in preparing the lessons and teachers as a consequence could work more efficiently. To enable sharing of knowledge, the idea was to co-design the lesson box with teachers. However, in the co-design session, teachers indicated that they would not use a box like that, because they thought it was too static. Instead, they were looking for inspiration to develop their own lessons.

> We kind of heard okay, what is the issue here? Are they in general against that you share ideas with each other? No, […], not at all. They actually really liked it, it was just the way we proposed teaching material to be shared, that was the wrong idea because it didn't meet the expectations of […], fast and sharing, being able to modify other people's experiences according to your own preferences. (A design team member)

Table 1. The two cases.

Agency	Initial brief	Key partnering organisation(s)
MindLab	Address the dilemma of time versus quality for Danish primary school teachers.	Municipality, Denmark
InWithForward (IWF)	Address the question of how to reduce social isolation among adults living with cognitive disabilities.	Three non-profits and providers of services for adults living with disabilities, Canada

Table 2. First design rationale developed by MindLab.

What / design	How / assumed working principle	Aspired value & outcome
Lesson Box	• You can get people to share knowledge by collecting their knowledge and translate it into a recipe. • If someone is told exactly what to do and is given the right tools to do this, then that saves time in preparation.	• Teachers work more efficiently by sharing knowledge.

The team then went on to further explore working principles that would be more aligned to the needs and aspirations of the teachers. This eventually led to the design of a *speed sharing event* (based on the speed dating metaphor). Speed sharing would enable teachers to share ideas about lessons around a specific theme, for example physical education, during an event facilitated by the municipality or by schools themselves.

Table 3 shows the design rationale for the speed sharing event. Instead of a *one size fits all* product like the lesson box, this design enables (new) connections between teachers, and provides a format that enables learning and creativity to emerge between them.

> And then we got to think about speed dating because this is a structured way of, you know, meeting a lot of people and finding out who is interesting, who is not interesting. And we actually also talked with people who arrange speed dating sessions to kind of know what is going on in the area and what is important if you [facilitate a] meeting between strangers and that was actually quite inspiring. (A design team member)

An important part of this working principle is that teachers are *matched* as in a speed dating event, which enables teachers to on the one hand find teachers they can learn from, but also find teachers that learn from them. An unanticipated result of this idea was that it also made teachers feel proud, as explained by a municipality staff member who was involved in testing and implementing the intervention:

> [municipality staff member]: They [became] more conscious about [that] they have good ways of teaching and [..] good ideas in doing this and that. They [were] proud.
>
> [Interviewer]: So when you see someone else is using what you have developed you feel great?
>
> [municipality staff member]: Yes, just see how she—on her face, oh, I think it's a good idea, I think it's a good way of doing it and I accept you, I think you're good and then […] they were more proud.

Case 2: *InWithForward-Kudoz*

InWithForward collaborated with three non-profits, a provincial government agency, city government, adults with cognitive disabilities and their families, and various other stakeholders to reduce social isolation amongst people living with cognitive disabilities.

At the time that this study was conducted (2016), InWithForward's approach had included a 3-month in depth ethnographic study, living in a housing complex with a high percentage of residents with a cognitive disability. They had conducted research into social theories that could be helpful in developing a theory of change. Furthermore, they had looked for positive deviance, and developed and tested *mini-prototypes*. This first design phase was followed by a 6-month service prototyping phase of roles, and a one-year implementation-prototyping of the complete service system.

From the start, the team deviated from the common focus on safety in disability services:

> Most existing disability services focus on safety. Adults like Mark, with severe autism, are stuck in segregated services doing the same activities on repeat. By brokering people to novel experiences, Kudoz expands social networks, builds skills, improves wellbeing, and over time, should reduce chronic demand on the system. (project documentation)

One of the outcomes of the project was *Kudoz*. Kudoz is an alternative to disability day programs, involving an online catalogue of novel learning experiences hosted by volunteers in the community. Kudoz provides a new kind of face-to-face interaction between adults with disability and volunteers. It creates the conditions for these new relationships and interactions by providing an online booking system, a measurement system, a curator role to help volunteers to shape learning experiences, a taster role who does a quality check, and a *family ambassador* to support parents. Kudoz also organises a *reflection café* for *Kudoers* (adults with a cognitive disability) to reflect on their new learning experiences.

The design reasoning evolved over the course of the various prototyping stages. The design rationale at the time of undertaking this study is presented in Table 5. The project mainly reframed away from the common focus on safety (Table 4) and toward a focus on human flourishing:

> That was the real frame for my solution: how do you inject novelty into people's lives, because novelty is the father for all our relationship building […]. How are you going to make new friends if the only thing you can ever talk about is bowling? (A social innovation team member)

Table 3. Final design rationale developed by MindLab.

What / design	How / assumed working principle	Aspired value & outcome
Speed sharing event	• If someone is matched to someone with similar interests and different ideas, they can inspire each other. • It makes you feel proud to see that other people use your ideas	• Teachers share knowledge and are inspired to develop their own lessons. • Teachers are proud of their work

Table 4. The common design rationale for disability services as explained by IWF.

What / design	How / assumed working principle	Aspired value & outcome
Current offering of day activities	• Adults should be offered predefined and predictable day activities based on their demographic label (disability or age group)	Safety

This variety in new experiences not only contributes to higher quality relationships, but also helps individuals learn about themselves which may contribute to finding suitable jobs or other day occupations. Kudoz was therefore eventually presented as a *tool* to be used by service staff working in for example the employment space.

> [social innovation team member 1]: … for example, for the employment specialist, they've got a stage that they call discovery and it's about finding out people's interests.
>
> [social innovation team member 2]: So one of the problems that we encounter working with individuals with disability is that we have such a narrow set of reference, so the employment services ask them so what kind of job do you want, and they would say 'Oh, I don't know. I have no idea. Anything, anything that's good.' But then they will go 'Okay. So that's one problem.' So maybe we can use Kudoz as a tool to do discovery, so let's get this person to do Kudoz and try as many interests as possible and trial these ... experiences in the catalogue and see whether something would stick to them and whether they want to pursue that as a job, a volunteer, or a hobby or whatever.

The team developed this working principle based on a combination of prototype testing and social theories. They mentioned to have been particularly inspired by Ryff's theory of positive human functioning (Ryff, 1989; Ryff & Singer, 2008) and social cognitive career theory.

> There's a few theories that underpin Kudoz, one of which is something called social cognitive career theory. … So there's a theory that has some strong evidence behind it that sort of says 'Look, the reason why people struggle to get jobs is because they don't have interests' and interests—people don't have interests because they don't actually have good learning experiences, particularly people in the disability sector.' … So actually, if you create really rich, vibrant learning experiences, that creates interests and interests create goals and goals create jobs. (A social innovation team member)

From a relationship perspective, it is interesting that the prototype makes use of existing service relations. Kudoz also helps people make new connections: between Kudoer and host, between Kudoers (in reflection cafes), and aims to change relations between Kudoers and their families and (employment) service staff.

> This is something that other staff can tap into and also we see it as a growth strategy. … It's a lot of work to spend time with everybody, especially if you don't know people. And these people already have a relationship. (A social innovation team member)

The Systemic Potential of Designing for Human Relationships

Relational Working Principles

The two case studies provide insight into the working principles that the design teams developed to enable new human connections or changes in existing relationships. The innovation agencies referred to this working principle as their theory of change. Both cases designed for human relationships and developed a rationale that was tested through prototyping stages. Both cases have a strong focus on learning experiences enabled by new relationships. The MindLab speed sharing case involves a working principle that also enables creativity (new ways of teaching) and the Kudoz case has a strong focus on learning about purpose and a connection to human flourishing. Both designs enabled people not previously connected to link up through a *matching mechanism*: the speed dating mechanism in the MindLab case, and the Kudoz catalogue to find shared interests in the IWF case. In both cases, the working principles seem to depend on a good match between people to enable learning based on for example a common interest. While we can observe similarities between the working principles of the two cases, it is also clear that the designers recognised the uniqueness of the challenge at hand and used their expert design reasoning towards a matching design and working principle to achieve desired outcomes. While such working principles may not be directly generalisable to other design situations, future studies could be aimed at investigating a much broader set of cases, to discern patterns between working principles that could be used as heuristics or guiding principles (Fu et al., 2016) in service designing for human relationships.

Systemic Working Principles

Both cases worked towards value that included a certain positive relation with others, which we could refer to as *relational value*. In addition, we can use the complex social systems perspective to speculate how such newly shaped relations could enhance *systemic value*, value beyond value for individual people and relationships.

Table 5. Kudoz design rationale.

What / design	How / assumed working principle	Aspired value & outcome
Kudoz tool:	• If adults are connected to learning and purpose, they form higher quality relations • If you participate in a variety of activities and you reflect on these activities, then that helps you connect to learning and purpose • A brokering mechanism helps to connect adults with a cognitive disability to volunteers who offer activities (hosts) • If you help people find what their purpose is, it is easier to help them find a job or occupation that suits them.	Flourishing • Improving participants' sense of self • Builds people's motivation

Systemic Value: *Learning and Systemic Growth and Adaptation*

Both cases presented a design that enabled new connections between humans that involved learning: connections between teachers in the speed sharing event, connections between Kudoers and hosts with a shared interest in Kudoz, and connections between Kudoers in the reflection café that is part of the design. Such connected *learning relationships* can lead to *knowledge flows* (Brown & Duguid, 2001) through the organisation and broader system. For example, in the MindLab case, the municipality staff that was involved in design and implementation of the speed sharing event, indicated how this did not just enable positive relationships between teachers, but also within and between schools:

> [municipality staff member 1]: The principals will see that all the teachers … take responsibility more for each other and for the whole school ….
>
> [municipality staff member 2]: You can also have Speed sharing across two schools, between two schools.
>
> [municipality staff member 1]: Or even more schools.
>
> [municipality staff member 2]: Yeah. So in that way the principal of the school gets a lot of new knowledge from another school.

Such systemic learning and its dependence on positive human relationships has been described by scholars that view organisations as complex systems (Senge, 1990; Stacey, 2012; Wheatley, 2006). For example, as mentioned earlier, Wheatley (2006) notices how organisations that have capacity for healthy relationships, have the capacity to adapt and grow. And Senge (1990) describes how one of the principles for organisational learning is mastering the practice of dialogue, a collective skill that highly depends on *colleagueship*, "seeing each other as colleagues and friends" (p. 228) which comes into play when there are differences of view.

Working Principle for the Systemic Value of Creative Systems

The complex systemic perspective on adaptive organisations and communities furthermore includes an acknowledgement of the need for *diversity* to enable learning and creativity, and to enable an adaptive and resilient system. Birney (2014) explains that how resilient a system is depends on the multiplicity, diversity and variability of the relationships. Capra (1997) explains: "if the community is aware of the interdependence of all its members, diversity will enrich all the relationships and thus enrich the community as a whole, as well as each individual member. In such a community information and ideas flow freely through the entire network, and the diversity of interpretations and learning styles, even the diversity of mistakes—will enrich the entire community." (p. 295)

Both cases presented in this paper embrace diversity of people and interests. The catalogue presented in Kudoz is an *open catalogue*, where hosts can contribute novel experiences that might not have been anticipated by the service design team. Similarly, the MindLab case presents an open process from which new ideas for teaching can emerge from different perspectives and interests of diverse teachers. The examples in the case studies do not provide one-size-fits-all solutions or top-down prescriptions to change patterns of behaviour. Instead, these interventions let ideas for new behaviour, experiences and learnings *emerge* from fostering and supporting these relationships. In van der Bijl-Brouwer (2017), I refer to those relational interventions in service systems as *social infrastructures* and explain how they contribute to better service outcomes.

Other Systemic Value and Working Principles

The connection between relational learning and collective learning and adaptation, and the connection between diversity, relationships and collective creativity and emergence are examples of *systemic working principles* that have also been described in the complex social systems literature mentioned above, which focuses on learning and creativity as it contributes to resilience and adaptation.

The cases include anecdotal evidence that there might be other systemic outcomes as well. For example, the MindLab case showed that speed sharing might have led to increased optimism and motivation. This is illustrated by one of the public managers who suggested in an interview that teachers might change their mind set about how they could do their work differently through the speed sharing event.

> Now in a way I think this project will help the teacher to see 'I can do it in another way. Some of my work I can do it in another way.' … When I meet these teachers some of them they were thinking in another way, not in this stereotype way of how a teacher behaves and works. (A interviewed public manager)

This is unanticipated value; within the MindLab case we did not find any evidence that shows the intended working principle that might have led to this shared optimism and motivation. We therefore need a better understanding of patterns in working principles that lead to relational and systemic value, so service designers could more intentionally design for these types of systemic or collective outcomes.

Discussion

What is the Influence of Service Designers on Social Systemic Change?

The study presented in this paper contributes to the discussion about the level of influence and *loss of the illusion of control* (Manzini, 2011) of service designers. Vink et al. (2021) state: "due to the emergent and phenomenological nature of the desired forms of value cocreation, the outcomes of service ecosystem design are never fully controllable or predictable" (p. 174). This lack of control on emergent properties of complex social systems can also be observed at the level of human relationships, which can only

be enabled (Cipolla & Manzini, 2009) by designing the conditions that enable the emergence of these types of relationships. In the case studies we can identify different types of interventions that were used to create these conditions. This includes for example technology, process and materials to train people for new roles. For example, in the Kudoz case study, various *roles* were prototyped and implemented to forge a positive relationship between Kudoer and volunteer. The interaction was furthermore supported by materials for the volunteers, and a technology platform with a catalogue of learning experiences that Kudoers could choose from. The cases show that these designed interventions influence relational outcomes such as learning or creativity. We did not find evidence of the influence of the interventions on interpersonal relational qualities that are known to impact the quality of service interventions, such as trust and power relationships (Cipolla & Manzini, 2009). Such interpersonal relational qualities might be difficult to influence. Future research would include developing a further understanding of how designing contributes to enabling positive human relationships in the context of systemic change.

While the emergent properties cannot be fully controlled, the designers in the two cases did have influence on which actors were connected and included in their initiatives, and as such the designers influenced the system boundaries. MindLab's design reasoning moved from a focus on individual teachers to teacher networks within and across schools. While MindLab always worked within the boundaries of the formal education system, InWithForward initiated their work outside the traditional disability service system, generating a network of connected people with a disability, their families and friends, and community members, basically generating a completely new and dynamic social system. In later design phases they also connected their offerings to existing service ecosystems such as the employment system. While acknowledging the limitations of only presenting two cases here, these examples present interesting additional perspectives on systemic service design and the room that designers are given or may take to enable systemic change, and the aggregation level at which these systemic outcomes may be observed.

The Role of Design Expertise in Service Design for Social Systemic Change

The study also contributes to a more nuanced understanding of the plurality of design processes happening in and outside service design in complex service systems (Vink et al., 2021), and the differences between designing that might be described as *diffuse* and designing that might require more design *expertise* (Manzini, 2015), in particular with regard to design reasoning. For example, the teachers in the MindLab case can be considered to design their own lessons, and the community members and Kudo-ers in Kudoz co-designed specific experiences for Kudo-ers. While acknowledging that these types of designing also require expertise, for example teaching expertise, they are of a different nature than the designing of the speed sharing event and Kudoz platform that enabled this diffuse design.

Recently, this role of enabling other types of designing has been discussed in design studies (Sangiorgi et al., 2017). Manzini described how the role of designers is shifting to designing *action platforms* that make a multiplicity of activities possible (Manzini, 2011) and Björgvinsson et al. (2012) introduced the term *infrastructuring* to show how infrastructure—boundary objects that shape future design—is shaped over time by both professional designers and users. The examples shown in this paper might be considered as providing such platforms or infrastructures. However, it also shows that these interventions are not taken *off-the-shelf* but instead are intentionally designed for the situation at hand, carefully thinking through the framing and validating the underlying working principles through prototyping and using for example social theories. Insights in these expert design practices are important input for the development of service design education and the evolving field of service design practice.

Concluding Remarks

Manzini described how the complexity of our world has started to impact design (Manzini, 2011). This is also true for service designers who work in an increasingly complex service context. Dorst (2015) argued that when practices *jump* from one discipline to another part of society—as we attempt to do in service design for complex service contexts—they are not just *adopted* without substantial change, but should be *adapted* to the needs in the target field. Therefore, service design practitioners should adapt their practice to the context of designing for complex service contexts. While various strategies have already been proposed to deal with this complexity (Sangiorgi et al., 2017; Vink et al., 2021), it also requires that we develop a better understanding of the relational and complex systemic working principles—such as relational diversity—that enable systemic value such as collective growth, resilience, and adaptation. This includes letting go of control and letting behaviour within social relationships emerge by designing conditions and infrastructures that promote emergence. It also shifts the perspective from individual human beings to social relationships, which can be supported by drawing on social theories. Further research will be focused on expanding our understanding of relational experiences and the working principles that underpin these experiences, as well as the working principles that enable systemic value, and the design practices required to design to strengthen human relationships and to promote resilient and adaptive communities and organisations.

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