systems

MDPI

Article

Design-Driven Conflicts: A Design-Oriented Methodology for Mindset and Paradigm Shifts in Human Social Systems

Moein Nedaei * and Alexis Jacoby

Department of Product Development, Faculty of Design Sciences, University of Antwerp, 2000 Antwerp, Belgium; alexis.jacoby@uantwerpen.be

* Correspondence: moein.nedaei@uantwerpen.be

Abstract: Transformability is one of the essential attributes of social systems. To improve transformability, one should create the preconditions for strategic intervention on the underlying social structures. This paper proposes a design-driven conflict (DDC) methodology in response to the limitation of the systemic design approach by aggregating a network of allies essential for the paradigmatic shifts. The proposed methodology has more strategic implications. It starts with unfolding the actors and shared resources (phase one context mapping). It continues with defining the power relations between them, drivers, and spillovers that cause conflicts and disagreements (phase two analysis). After this, it shows how one can synthesize the commonalities and the core narratives of actors in the form of boundary objects (phase three synthesis). By using the existing narratives and the commonalities between actors as inputs for the translation phase, DDC creates the preconditions for a network of allies construction. Next, the methodology uses translation as a method, in relation to the four moments of a 'sociology of translation', problematization, interessement, enrolment, and mobilization, in order to gradually change the learning paradigm of the system. In the scaling-up phase (phase five), DDC proposes ways of creating a narrative platform, shedding light on how to mobilize the results of translation from the community level onto a broader social scale. The framework for the design methodology has been evaluated based on a method content analysis and by a group of experts from diverse backgrounds and disciplines. The results show, except for the efficiency of the method, which requires additional investigation in a real-life context, the efficacy and effectiveness of the method have been elaborated in a sufficient way.

Keywords: design-driven conflicts; paradigmatic shifts; transformability; systemic design; design methodology; network of allies construction

Citation: Nedaei, M.; Jacoby, A. Design-Driven Conflicts: A Design-Oriented Methodology for Mindset and Paradigm Shifts in Human Social Systems. *Systems* **2023**, *11*, 226. https://doi.org/10.3390/systems11050226

Academic Editors: Zhiyong Fu, Anna Barbara, Peter Scupelli and Yanru Lyu

Received: 31 March 2023
Revised: 26 April 2023
Accepted: 30 April 2023
Published: 3 May 2023

1. Introduction

For a long time, it has been assumed that resilience and adaptability are two essential qualities of human systems to achieve survival and success in a problematic situation [1,2]. Recent studies, however, have shown that in a problematic situation (e.g., social crisis), the success or the failure of social systems is tightly entangled with the capacity to create a new paradigm from which a fundamentally new way of living can emerge [3–5]. In particular, living in a condition of social crisis can greatly erode the resilience of human systems [6] if the dominant paradigm of a social system does not support meaningful changes from the underlying social structures [1]. This means that, in addition to resilience and adaptability, transformability is needed when the ecological, economic, or structural aspects of a social system cannot continue functioning in the face of social crises [1,3].

In general, transformability refers to the socio-ecological capacities of a social system that lead to fundamental or paradigmatic change in the regime's structure [2,3]. One can improve the transformability of a social system by creating the precondition for the paradigm shift in the normative attributes of human relations, such as a change in worldview, mindset, or deep narrative of a social system [7]. In spite of such transformative

impacts, the rigidness of mindsets and the multilayer structure of social systems [8] often result in a gradual change in the normative layers [8,9]. In other words, even if the intention is to transform a system, in practice, the speed and rate of reform are showing a transitional movement in social systems [8,10]. The issue of transformation, as opposed to transition, basically discloses one essential feature of designing for social systems: the higher the leverage points [11,12], i.e., mindset and paradigm level, the stronger the trigger needs to be [13,14].

To transform a system, it is recommended to have a purposeful intervention, a strategic approach that highlights what are the right places in a system to intervene and from where such an intervention should be initiated [5,12]. The requisite for such a pragmatic and strategic intervention has been discussed clearly in critical system discourse, often in response to the increasing need for purposeful interventions in a problematic situation [3,15]. Based on critical system discourse, to close the pragmatic gap between the intention (which is transformation) and the capacities to change (e.g., the paradigmatic capabilities), a heuristic approach is needed, aiming to gradually involve a broader community of people in sensemaking processes [15]. The objective is to amplify the voices of marginalized actors, empower the oppressed or contradictory voices [15,16], and ideally make the normative attributes of a system explicit and transparent for all members [15]. According to this viewpoint, only then one can reflect critically on the deep narrative or worldview of a social system and create the preconditions for a mindset and paradigm shift in a particular system [15].

Learning from social construction theories [17,18], one possible strategy for such an intervention is to play with controversies in social systems, particularly conflicts, tensions, or any form of disagreement [14,19,20]. Controversies are an inseparable part of social systems; they can improve and stimulate the self-organizing capacity of social systems [21,22]. Controversies between actors can act as a silver bullet or social catalyst that can facilitate destabilization, change, and growth from underlying social structures [21]. In other words, controversies have a transformative mechanism that, if constructed, can create the precondition for change on the mindset and paradigm level [7,19]. To construct controversies, the requisite is to aggregate a network of adaptive agents, and it is recommended to make this process purposeful using an action-oriented discipline [19,23]. One benefit of an action-oriented approach is to improve and facilitate aggregating a network of actors and creating the precondition for continued adaptation. In doing this, a call for the involvement of a pragmatic and creative approach is needed; thus, a systemic concept is embedded in the core concept of designing [19].

The focus of this paper is on the contribution of design (science and practice) to the ideal of a mindset and paradigm shift in a social system. Our main concern is that despite the prominent role designing in the condition of disagreements plays [10,24], it is not yet clear what the role of designers in a contradictory context is and how they can contribute strategically on the mindset and paradigm level in social systems [4,25,26]. Learning from past experience, such a limitation can result from a lack of complimentary steps, in particular, a design methodology to bridge the gap between theory and action [16,19,27]. In other words, an actionable framework is required to make the relation between these two steps (thinking and action) more reasonable and more time dependent [28]. The aim of this paper is to present and validate a design methodology to assist future social system designers toward the ideal of a mindset and paradigm shift in social systems. Considering the methodology is still in progress, the focus will be on the content knowledge quality rather than the user performance (or the outcomes), which requires additional investigation in a real-life context.

1.1. Objectives

The first objective is to briefly explore the current philosophical paradigm embedded in existing design methodologies (i.e., focus on critical discourse). Next, our attempt is to highlight the limitations and challenges toward the ideal of mindset and paradigm shift in social systems (i.e., focus on the systemic design approach). Then, we will continue by

introducing specific aspects of the proposed methodology, including the essential steps that one has to go through, the links and connections between these steps, and, more importantly, the underlying motivation for taking these steps. Finally, upon explaining the different parts of the methodology, the content will be evaluated based on semi-structured interviews with a group of six experts. The results will be deliberated in a way to support future researchers for further iterations both on the content and the structure.

1.2. Background

In the design of social systems, once we made the decision to redesign the system (not to create a new one), we have to leave the system behind and prepare for change by introducing a new mindset and paradigm [12,29]. The process of transcending the paradigm is the most problematic part of the design process, which is often dismissed by designers, particularly in social sectors [29]. Nevertheless, a few studies within the last decade tried to navigate the relationships between design and paradigm shifts, mostly with a focus on designed objects [30,31] or design responsibility for challenging the existing reality [32,33]. Among these studies, reflective design concentrates on the transformative aspects of design, mostly from a reflective point of view [34]. The objective is to create a reciprocal relation between designers and other actors in order to continuously shape the perception of an artifact based on a reflective conversation. Design as a catalyst focuses on the participatory aspects of designing and compares a design process with the procedural nature of games. For example, how one can increase the agency of actors through design to better diffuse new knowledge and experiences [35]. In contrast to these approaches, reflexive design has more critical implications, with a special focus on the issue of power, particularly on how the power of one actor might (or might not) influence knowledge validation, i.e., the extent to which a new experience can be assigned in a design process [7]. In line with a reflexive approach, critical design [36] or disruptive aesthetics are more provocative [37], meaning that they aim to design objects to challenge the existing patterns of thoughts or behaviors [33]. For designers working in the social sectors, utilizing such critical lenses has few advantages. It retains the attention on one fundamental question of designing, i.e., what is the right thing to do, or it discloses the design responsibilities as advocate of (marginalized) people.

One can claim that using such ontological lenses, e.g., seeing designers as activists or advocates of design in social systems [38], often reduces the design capacities to a mere rhetorical device. This means they end up with some suggestive remarks on what has to be done at the product level and what should not when it comes to design in social systems. In response to the lack of a deep analytical approach and the pragmatic limitation of system sciences [15,39,40], systemic design (SD) or system-oriented design (SOD) methodologies and frameworks have been developed as an integrative, cross-disciplinary, and participatory approach [41,42].

Systemic design, by integrating the pragmatic and reflective notion of design and the designers' tendency towards community involvement, e.g., participatory design, co-creation design, aims to bring more feasible changes in a real-life context [39]. Reviewing systemic design scholarly works clearly shows certain advantages of these methodologies regarding the complexity of social problems. A few examples are sensemaking in a complex context, envisioning the ideal future, or uncapping the places to intervene in systems [39,40]. All draw attention to the transition from a purely human-centered approach into a socially complex and culturally multistakeholder way of reasoning and implementation [43,44]. Undoubtedly, to some extent, such integration is appropriate for an analytical (system-oriented) approach. Nevertheless, the problem remains concerning design aspects (design as a process), implying how to intervene purposefully from underlying social structures. In other means, a form of a heuristic critical approach to empower the designer as a facilitator and design as a process is needed. Our premise is that by adapting a (heuristic) critical approach, one can shed light on the unknown part of the system (e.g., mindset and paradigm) and bring more meaningful changes from underlying social structures [45,46].

In response to this limitation, we will shortly investigate a few aspects of SD methodologies based on the requisite variety principle [47].

1.2.1. A Methodological Limitation

Looking into systemic design interventions, the limitation of SD methodologies is partly related to the optimistic view on the benefits of multilayer interventions and partly related to the limitation of participatory approaches for involving a real diversity of actors [47]. In other words, although requisite variety is one of the main principles of SD [39], most of the collaborative frameworks in the domain of design are based on the similarities of viewpoints, bridging the gaps between neutral actors and finding a mutual agreement, which might not be effective in the complexity of social systems [23,48]. A purely positive and pluralistic mindset embedded in a participatory setting has limited its application to a simple democratic device to legitimize the assignment of power based on an indirect representation of opinions (such as voting system) rather than seeing what the actual intention of the people is [49]. In this case, one can claim that the outcome of the current methodologies is still more descriptive rather than critical and pragmatic [16]. In other words, designers, together with other stakeholders, can only synthesize a complex view of the change in the form of boundary objects (e.g., products, tools, and techniques as a mediator) [40], as they do not have a strategic focus on where they need to intervene and how this intervention should be processed. A few consequences of such a malfunctioning is a lack of a clear strategy (e.g., epistemological consistency) for hearing voices from hidden layers, such as contradictory voices, but also seeing the underlying narrative of the context [50]. This means they can hardly illuminate what assumptions are embedded in the underlying social structures and how to contribute to value co-creation with stakeholders in a contradictory context [51,52]. Thus, reflecting on system paradigms, the outcome of existing SD methodologies is still more aligned with a soft system approach, rather than critical discourse, which is essential for more meaningful and value-oriented intervention [48]. In response to the limitations of SD, design-driven conflict (DDC) as a multidisciplinary, theoretical framework has been developed in order to address the limitations of a system-oriented approach by involving contradictory voices [19]. Next, we will further elaborate on design-driven conflict and its contribution to the systemic design approach.

1.2.2. The Underlying Theory

The main focus of design-driven conflict (DDC) is on social controversies and the possibilities for constructing them and opening places for social learning between antagonistic actors. As stated earlier, there is not a widely accepted theoretical framework that defines design abilities for a mindset and paradigm shift in social systems [19]. By integrating specific aspects of network theory with the design abilities for intervening in social contexts, DDC aims to empower the role of designers in dealing with complex social problems. Figure 1 is a conceptual visualization of this theory aiming to depict the circularity of change in social complex adaptive systems. Based on this model, (a) the extreme polarization in social systems by conflict and disagreement is one of the consequences of the increased complexity of social systems, (b) one characteristic of a polarized society is actively reproducing a contradictory form of social relationships, in particular, conflict and disagreement, and (c) the model highlights that controversies are not necessarily a destructive process but also that constructing them can create a condition for change on the level of deep culture and values, e.g., the mindset and paradigm level. This often happens through the diffusion of new knowledge, resulting from active and dynamic disagreements between social agents. One problem of this relational process is that a diffusion process and associated changes are not always a straightforward process: there is no guarantee that the result of controversies always leads to the transmission of desirable knowledge. For instance, one problem of a diffusion model is the dissemination and distribution of power between contradictory voices (d) [5,53]. In this case, as suggested in DDC, one way to navigate the issue is to work with specific interrelational objects, e.g., boundary objects or any form of collaborative artifacts. In a contradictory context, design as a process of

thought and planning can be a true representation of a translation process [30], and the designer can act as a translator who not only can facilitate the involvement of actors but also brings certain abilities to empower actors toward being connected as a network of adaptive agents or allies (f). In the next sections, a set of methods will be presented in a structural order. Each part will be presented in detail, and the connection between them will be discussed in order to highlight possible ways of intervening in social systems from the perspective of social controversies.

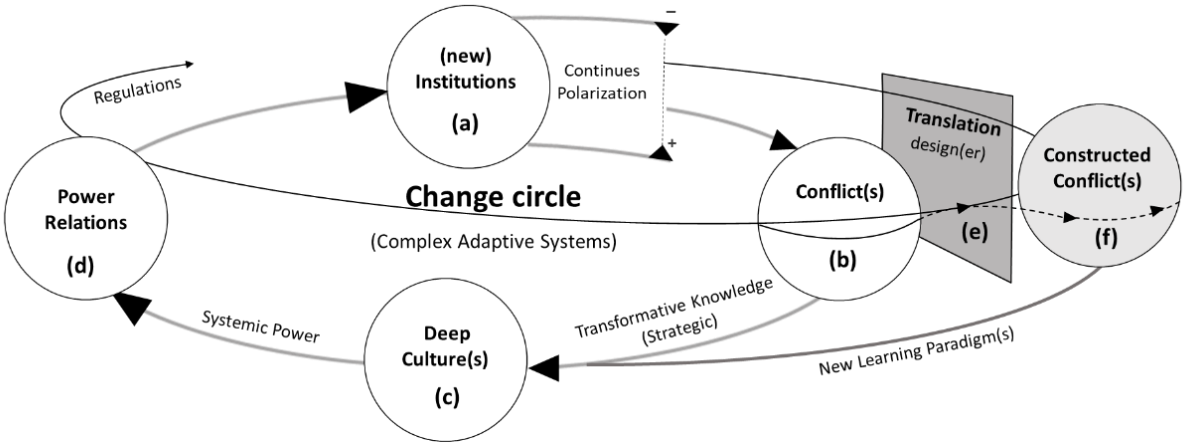

Figure 1. Adapted from design-driven conflicts (DDC).

2. Materials and Methods

2.1. Design Method Foundation

In response to the question of how design can facilitate the construction of a network of allies, developing a prescriptive framework or a design methodology is one essential step [16,19]. The structure, the mindset, and the theoretical foundation of the method, including the goal and procedure, are based on the design-driven conflict approach [19]. The method(s) rationale and framing has been developed based on some accumulative insights resulting from a set of panel discussions with other researchers.

The panel discussions were conducted in a lab setting wherein researchers from diverse backgrounds and locations were invited to participate in the sessions. In total, 12 PhDs, including 9 women and 3 men from the age of 32 to 45 (mean 37.25) with diverse backgrounds, including political sciences, design sciences, economy, and management, were part of the panels. The majority of sessions were in an online format; this was mostly due to the time and location constraints as well as some of the limitations associated with the Corona pandemic. Depending on the complexity of the topics, the number of participants, assignments, and questions, the timing of each session was slightly different, from 70 min to 90 min maximum. The panel procedure involved that, firstly, each week, a researcher gave a lecture about one specific aspect of systemic design, often based on a selected project (which opened the room for further discussion on how to improve the framing capacity of the method) and, secondly, theoretical sessions, which, again, created the opportunity for a deeper discussion on what should be done to improve the underlying motivation and reasoning behind each step. Moreover, the organizers established the condition for a more reflective discussion by providing some study materials prior to each session and asking participants to bring their own questions before their attendance. The sessions covered various subjects including service ecosystem logic [54], black feminist thoughts [55], boundary objects ecology [56], translation mechanisms [57], designer and system consciousness [29], object consolation, and some introductory sessions about systemic design methodologies and principles [39,43]. After each session, there were also some additional coaching sessions conducted individually to allow participants to gain a better perspective of the content and participate more effectively in the discussion

sessions. Each session has been recorded, and the content has been summarized by the organizer in order to integrate the essential insights into a cohesive body of knowledge.

Subsequently, these insights, along with our prior knowledge (from the model 1.2.2), provided us the essential ingredients for developing the first version of the methodology. To develop the first draft of the methodology, we carried out 5 internal workshops with a group of 6 researchers at the University of Antwerp, including 3 Ph.D. students, 2 university professors, and 2 practitioners, to discuss further the limitations, possibilities, and places for further improvements. For instance, a comparison between transition model(s) and design for transformation, the concept of boundary object ecology and its relation to design intervention, design abilities, and the translation process have been discussed through these sessions. The second improvement provides some additional clarifications in relation to the usability of the content and the difficulty of new terminology for the potential users.

2.2. Design Method Validation

After finalizing the first version of the methodology, we carried out a number of semi-structured interviews with a group of six experts in order to validate the efficacy (Section 3.7.1), the effectiveness (Section 3.7.2), and the efficiency of the methodology (Section 3.7.3). The first two elements are essential to validate the method content, and the latter is needed for knowing the quality of the method artifact [28]. The experts selection process was based on their levels of expertise and individual experiences in working with or developing a particular design methodology or framework. Among selected experts, two have expertise in social (systems) design, two have a special focus on actor–network theory, one on dilemma-driven design, and two have a special focus on strategic and systemic design innovation, each with at least ten years of teaching and working experience in the field.

The survey was organized into three sequential phases, starting with an introductory session, the semi-structured interview, and an open discussion session. Each session was planned for a maximum of 90 min, including 15 min for the introductory phase, 45 min for the interview session, and 30 min for the open discussion. During the introductory session, the foundational aspects of the methodology were highlighted, including the method goal and method rationale. It continued by introducing specific aspects of the DDC theory and its relation to the methodology content. Next, the researcher introduced five cycles of the methodology, including the context mapping, analysis, synthesis, translation, and scale-up processes, with a focus on the reasoning behind each step, the links between external dimensions, and the overall structure of the method. For the ease of understanding, specific steps such as the concept of power spillovers, boundary objects, and the translation process have been explained based on a problem scenario model in order to unfold the underlying motivations in a more meaningful way.

The second part of the survey was organized as a semi-structured interview. To frame the interview questions, we developed a seven-core questions model originally developed by J. Daalhuizen [28] as a (design) method validation framework. As outlined by Daalhuizen, we used the four key elements of a design methodology that are independent of the users and context of usage. Measuring these elements is essential to investigate both the efficacy and effectiveness of a (design) methodology prior to the implementation in the real world. The first two questions are designed in a way to facilitate unfolding the efficacy of the method. The first element is related to ordering in time information, or procedural knowledge, of the methodology. The second one refers to the embedded goal of the methodology, which, in our case, means the capability of the method to support future designers to achieve a specific goal, e.g., social learning. Likewise, the effectiveness of the methodology has been investigated by asking two additional questions: first, the method rationale, which refers to the underlying motivation of the method, and second, the method flexibility, also known as method framing, which refers to the capacity of the method for being used in broader (or different) socio-political contexts. In addition to these elements, to explore the efficiency of the method, we asked different questions about the interrelational aspects of the methodology,

including the mental conceptualization of the method, which refers to the relevance of the method for those who are the potential users, and two complimentary questions, including method goal-orientedness and method appropriateness. The former examines the trade-off or balance between rationale, consistency, and frame flexibility, and the latter investigates the relation between the structure and the goal complexity. The main reason for working with these seven elements is related to the following. While the user and outcomes of a methodology are dependent, a method's content and embodiments are relatively more stable. Therefore, it allows us to measure the quality of a method's content before any implementation, particularly in a case where the outcome has a relatively longer lasting impact, such as a change from the mindset and paradigm level. Finally, the results of each session have been summarized and later transcribed. In the following paragraph, the different parts of the methodology will be presented.

3. Results

From a pragmatic perspective, the key objective of the methodology is to highlight the possibilities and the steps that one must take for constructing social controversies. The focus is on marginalized actors and on ways of constructing a network of allies from a design perspective [19]. On one side, networks of allies can create preconditions for social learning and adaption [46,58], and on the other side, the designer's abilities are essential to utilize the revolutionary nature of conflicts [19]. Both are needed, as they can contribute to the ideal of the mindset and paradigm shift [19,46].

As mentioned earlier, to improve the framing capacity of the method, each method has been selected by one or more experts coming from diverse backgrounds and opinions (Section 2.1). Thus, they originate partly from analytical approaches such as system dynamics and partly from critical approaches such as conflict studies or system transformation. To synthesize the methods in the form of a design methodology, each part has been adapted based on the classical design processes, including analysis, synthesis, intervention (translation), and scaling-up process. The methodology introduces the origin or background of a particular method, the aim, and the objectives according to the methodology's main goal. Each part highlights the 'what' questions and continues with exploring why such an integration is needed toward the ideal of mindset and paradigm shift. Next to that, the steps will be elaborated on, with specific complementary elements aiming to ease the instrumentation for method users. Exploring the 'how' question has been included as well. It is a prerequisite for knowing what type of tools or techniques are needed for future interventions. Finally, for a brief overview of the method, the internal mechanisms including the inputs or outputs of each step and the links between different dimensions have been elaborated.

3.1. Context Mapping

The study of a problem's context is often defined as the earliest stage of a design process [31]. From conventional techniques such as interviews and questionnaires to more comprehensive approaches such as context mapping, a designer uses different tools and techniques in order to obtain more in-depth information about the context [9,59]. By mapping a problem's context, they aim to create empathy with the actual user, avoid fixation or early assumptions, and define strategies that are best suited for addressing a design problem [59].

Likewise, the design-driven conflict (DDC) approach is looking at a problematic context as the starting point of the design process [19]. The process starts with determining whether intervening by challenging the dominant mindset in a system is the right approach. This question is essential, as it can clarify the steps that one has to take according to the complexity of the related case or problem (Table 1) [9].

Table 1. Context mapping phase starts with one essential question: Does the system need to change its deep mindset or paradigm? (the question is in line with the transformation objectives).

Context Mapping		
Input(s)	**Methods**	**Output(s)**
(a) the spatiotemporal aspects e.g. time and place (b) the subjective attributes e.g. ascribed or achieved identities of actors	Multi-Actor Map F. Avelino et al., 2016 [60] Paradoxical Map K. Dorst et al., 2011 [61], Rhodes et al., 2005 [62]	(c) the actors and actants e.g. roles and responsibilities (d) shared resources e.g. the human, and monetary resources

The second step is to map the essential attributes of the context, such as the human or non-human actors and the spatiotemporal aspects of a problem. The latter aims to map the dynamic notion of a context, such as time and place (a) [63], and the former is needed in order to describe the subjective attributes of a context, such as individual differences (b), e.g., ascribed and achieved identities [63,64]. From a pragmatic perspective, the two attributes are also complementary. Information about the spatiotemporal aspects of the context along with insights on the individual differences can identify actors' roles and responsibilities.

To make the process more practical, a set of complementary methods has been adapted for use, mostly from transition studies. The first tool is the multi-actor map. It was originally created by V. Pestoff [65] under the title of 'welfare mix' and later adapted by F. Avelino [60] as a multi-actor perspective model. One essential objective of the actors' map is to cluster the results of individual differences, focusing on the mapping actors based on the communities or groups they are part of (c). For example, they can be divided based on state or public sector, community, market, and third sectors or voluntary organizations. While the suggestion is to adapt these categories according to the spatiotemporal aspects of the context to ease the completing of each part and to make the model more actionable, using a counterintuitive method, such as paradoxical mapping, is also recommended [61,62,66,67].

One benefit of such a counterintuitive method is to facilitate critical dialogues and stimulate thinking and action in an oppositional way [68]. Moreover, a paradoxical approach can facilitate completing the 'visible' aspects of the context, such as mapping actors' institutional differences. For example, several actors within a system, such as the health care system, might be part of the public sector. On the other hand, some might be affiliated with the private sector. The same is applicable for profit compared to non-profit and formal and informal sectors [60]. For DDC, knowing how roles and responsibilities are distributed can ease the unfolding of the 'invisible' part of the context as well. In particular, resources that one has access to or can mobilize within the context [64,69].

In this approach, resources are the essential outcomes of context mapping (d). They can shape both the visible and invisible sides of the context, and they can influence the power dynamics within the context. As such, resources are the key property of every context, and they can be manifested in many ways, such as human or monetary resources as well as knowledge and experience [46]. Unfolding the resources can support mapping the antagonistic form of relationships in the next step [17,19]. Defining the underlying resources as well as actors who share (or do not share) these resources is a way to better understand the power dynamics in a specific context.

3.2. Analysis

The second stage has been constructed in relation to the main dimensions of the social system: first, the subject's dependence on the systems, which is related to the multi-actor notion of the system [70], and second, the complexity of relationships between actors [29]. Similar to context mapping, the focus is on antagonistic relationships and defining actors with contradictory voices as well as power relations between them.

In particular, the analysis elaborates on the underlying drivers for a problematic context, focusing on the external and internal drivers that push people toward an antagonistic form of relationships. Looking from a broader perspective, actors are a representation of the components in social systems. As mentioned in Section 3.1, within a problematic situation, they often have different roles and responsibilities or experience a certain form of agency. While, in one way, institutional diversity might reinforce the collaboration between them, in social relations, they can also lead to conflict and disagreements between actors. Hence, the second part of the methodology aims to map the antagonistic power relations and the extent to which the roles and responsibilities are in contradiction with one another (Table 2).

Table 2. Analysis phase.

Analysis		
Input(s)	**Methods**	**Output(s)**
(c) the actors and actants e.g. roles and responsibilities (d) the shared resources e.g. human, and monetary resources	Power Dynamics M. Hensmans 2000 [5] Controversy Spillovers E. Cuppen, et al., 2020 [71]	(e) the power relations i.e. antagonistic actors (f) the underlying causes e.g. historical and technological

Regarding the invisible part of the context (i.e., the power relations), the methodology explores the dynamic of power or how actors exercise power [5]. For DDC, exploring the dynamic of power is one possible way to define the type of relationships between them [46,60]. The goal is to map the relation based on their power, including actors with more (or less) power, actors with power over, and actors with a different type of power (c) [5,60]. In transition studies, the literal meaning of power refers to the 'ability to mobilize resources' [46]. Hence, to map the power, it is recommended to cluster the range of resources that one might possess and focus on the output of the previous stage where resources were defined using context mapping (d).

By categorizing the resources, one can illuminate how power is distributed and also facilitate mapping the contradictory voices, e.g., one with less access to resources. Prior research has defined that power dynamics between actors can be divided into three dimensions, including natural actors (or actors without any special connection), actors with synergistic relations, and antagonistic actors [60,72]. For DDC, the advantage of defining these three types of powers is to have more in-depth information about antagonists, the relation between them, and their conditions of existence. Moreover, it can help to explore the following questions: where does such power come from, and which forces drive actors to behave as antagonistic actors?

As such, the last part of the analysis phase aims to investigate the impact of spillover effects, both from neighboring systems and systems with relatively similar structures. Based on spillover effects, change in one social system has certain impacts on the dynamic of power in other systems [71,73]. The concept has been originally proposed by E. Cuppen [71] as a controversy spillover model. The objective is to investigate the impact of controversies in one (social) system on the speed of reforms in others [74]. In particular, the focus is on the relations between different types of spillovers; for example, how geographical, historical, or technological spillovers might influence the dynamic of powers in other systems. Given the interconnected notion of controversies, the dynamic of power in one or more specific systems can uncover many hidden layers in other systems [71]. The advantage of spillovers is to obtain more in-depth information about the invisible side of the context, in particular, the underlying causes of conflicts and disagreements (f).

In sum, the analysis phase aims to create a unique and transparent picture of the context, not as a stale or musty collection of rules and regulations, but rather as a dynamic entity. In other words, the study of the context must be in relation to the components, the quality of the relationships, as well as the underlying resources that one might share. In the next phase, the insights from the analytical tools, including the antagonists' power relations

and the invisible or visible aspects of the context, become an input for the synthesis. The aim is to uncover the unique core story of each actor as well as the commonalities that they share within a controversy context.

3.3. Synthesis

The synthesis begins with exploring the stories and narratives behind each actor with a focus on antagonistic relations. The reason for working with stories is that stories area sort of medium, they can transfer meanings and values from one generation to another [66,68]. In other words, stories have a transformative power that can convey, distribute, and scale up messages from or within a community [24,66,75]. By synthesizing the individual stories (g), designers can unfold the core narrative of the actors but also confirm the outcomes of the previous steps: context mapping and analyzing (Table 3) [66,75]. To map the story, knowledge about the drivers within a problematic situation such as spillovers, fears, obstacles, or barriers are the input of the process (f) [62]. The stories can be completed if the drivers are ordered in time, in particular with the help of a narrative method.

Table 3. The synthesis phase.

Synthesis		
Input(s)	**Methods**	**Output(s)**
(e) the power relations i.e. antagonistic actors (f) the underlying causes e.g. historical, social and technological	The Hero's Journey K. Paulsen 2021 [75] Boundary Objects Ecology S. Star, et al., 1989 [56] KR. Fleischmann 2006 [76]	(g) the individuals' narratives i.e. antagonistic core stories (h) the commonalities e.g. repositories, forms, and labels

As such, an adapted version of the hero's journey has been integrated. The method was originally developed by J.J Campbell (i.e., Hero with a Thousand Faces book) and later used in other disciplines including by filmmakers, authors, or storytellers (e.g., K. Paulsen [75]). The method focuses on one experience as a potential hero in order to discover their journey in a problematic situation. The journey map starts with an actor's story in an ordinary world, which is the current situation, and progresses to the extraordinary world or the ideal situation [77]. During the mapping process, designers can depict different milestones that one has to face to get through the journey, for example, the sparking moments, forces, enemies, uncertainties, and all challenges that one must tackle along the way. Our premise is that by working with such a narrative structure, designers can synthesize many aspects of a problematic situation, for example, what is needed to encounter one's enemy.

Similar to the previous part, a complementary method is proposed to synthesize the results of a hero's journey. The objective is to cluster the individuals' narratives to highlight the essential (i.e., antagonistic) commonalities (h) [78]. While doing so, the concept of boundary objects ecology is proposed. It is a multifaced approach that can open possibilities for the mobilization of thoughts and opinions. The concept has been originally introduced by S. Star [56] in response to the limitation of M. Callon's [57] and Latour's [79] translation model. Boundary objects are aiming to ease the interrelation processes such as learning and adaptation by bringing different worldviews into one accepted system of reality. For DDC, such an inclusive approach including boundary objects is highly recommended, not only as a complementary approach for the synthesizing process but also as a prerequisite for the next step, the translation phase (the concept will be explained in Section 3.4) [76]. To map the commonalities, it is recommended to support actors to freely chose and reframe their own boundaries while uncapping the commonalities. To make it more actionable, the commonalities between actors can be divided into five categories, including repositories, forms and labels, ideal types or platonic objects, and terrain with coincident [76,78,80]. Each provides some tools and techniques to ease mapping the processes. Further, discovering the common deficiencies of people can additionally facilitate uncapping the commonalities.

For DDC, knowledge about non-existing actants, such as lack of access to resources or financial limitation, is equally important as the commonalities between them [56].

In sum, working with boundary objects has certain advantages for designers. On one side, designers can improve the balance of power by highlighting the potential commonalities or places to intervene, and on the other side, they can create common sense for (re)building the narratives of a context [76]. In the next step (Section 3.4), the network construction will be more inclusive if a designer includes more actors' narratives from the early stage of the design intervention. We will utilize the commonalities in a meaningful way: to facilitate the translation process, which is essential for network construction.

3.4. Translation

Translation aims to bring together actors with conflicts of views or interests in order to facilitate the ideal of a (new) network of allies construction [19]. The objective is to gradually change the learning paradigm of the context through multiple moments of translation [30,57]. The literal meaning of translation refers to the ability to displace one's opinion and thoughts from a prior context to an ideal situation [30]. For DDC, the translation process is the core of the methodology and is similar to the intervention strategies in conventional design methods. It originally comes from M. Callon's [57] studies, where he introduced elements of a 'sociology of translation'. Based on Callon's studies, translation is an opportunistic approach, hence never a completed accomplishment, i.e., it may fail under certain conditions. In other words, similar to the outcomes of a design process, the result of a translation is not an ultimate solution; it rather creates a condition or a situation for learning and adaptation in response to a problematic situation [57]. Therefore, to translate, one must facilitate continuous learning and adaptation between different social worlds. In such a situation, the designer's knowledge and design abilities provide added value to the act of translation [79]; designers in practice facilitate the exchange of thoughts and opinions [81], but they can also formulate problems as an open-ended process, which is essential for dealing with the uncertainty of a complex process [19]. For example, by helping to involve multiple actors or to create an interpretive context, design abilities can support translation as a process to better mediate the exchange of thoughts and opinions [79,82].

Likewise, to make the insights from translation actionable, we will further elaborate and reflect on four aspects of the translation process, including problematization, interessement (i.e., negotiation of interests), enrolment, and mobilization. All originate from the sociology of translation [19,30,57] and have been reframed in a rational order to support future (social) designers toward mediating the translation process. Our premise is that the knowledge and insights from the last two steps, the commonalities between actors (h) and the individuals' narratives, along with the design abilities in dealing with the complexity, can be ideal inputs to greatly enrich the translation process (Table 4).

Table 4. The translation phase.

Translation		
Input(s)	**Methods**	**Learning Output(s)**
(g) the individuals' narratives i.e. antagonistic core stories (h) the commonalities e.g. repositories, forms, and labels	- Problematization - Interessement (negotiation of interests) - Enrolment & Mobilization M. Callon, 1984 [57] A. Seravalli et al., 2021 [30]	(i) the new passage points i.e. new core stories (j) the network construction i.e. nominations & negotiations

3.4.1. Problematization (the New Passage Points)

The objective of problematization is to facilitate the creation of new possibility spaces known as passage points, essential for exploring new realities [30]. In order to define the underlying drivers or the core narrative of antagonistic actors (i), the new passage points aim to change one's objectives and thoughts from the current conditions into a new realm of possibilities and actions. Through problematization, by providing new alternatives,

a designer can change actors' objectives and interests as well as the way they approach the problems. For DDC, redefining the passage points is, in particular, essential for a contradictory situation where more convergence is needed between antagonistic actors [19]. In a situation of problematization, a designer, by using the commonalities between actors, can bring antagonistic actors together as a mutually negotiated community of people (h). As such, the feasibility of the problematization (as part of the translation process) is tightly entangled with how well the commonalities between actors have been discovered in the previous phase (3.3 synthesis). This means that, by utilizing the actors' boundary of objects and commonalties between them, one can claim that the flexibility or the openness of the new passage point has been negotiated in a proper way [56].

Nevertheless, in the translation processes, besides the problematization, additional reflections are needed on the results of the problematization [19,30]. In particular, the focus has to be on the actors' capability, e.g., individuals' empowerment in obtaining the new passage points. This is partly due to the existing barriers or obstacles and partly due to the uncertainty of new trajectories for one with little experience [57].

One vivid example on the organizational level is the contradictions in health care systems, commonly between nurses and doctors. Meanwhile, to facilitate creating new possibilities, for example, a new system of affairs, designers need to create a convergence between actors, ideally based on their commonalities. Certain limitations such as the lack of or access to resources or facilities to work with might postpone the entire process of constructing new possibilities [83]. Hence, in addition to problematization, complementary steps are needed, including the device of interessement, enrolment, and mobilization. In the following step, we will further elaborate on the device of interessement along with essential approaches such as enrolment and mobilization to ease the feasibility of a translation process.

3.4.2. The Prototyping Steps (Interessements, Enrolment, and Mobilization)

The term 'interessements', also known as negotiation of interests [30], is part of the translation process. It aims to replace the boundary objects or any interrelational devices to ease the problematization in the face of barriers or obstacles (Section 3.3) [30,57]. For the DDC methodology, the negotiation of interests along with the next three steps, enrolment and mobilization represent the prototyping phase in a design process. In conventional design methods, iterative prototyping is one mediating step between concept design and the production phase. Prototyping can allow testing a hypothesis or experiencing a concept that is abstract and complex. In addition, for users (or actors), prototyping is a representation of boundary objects that eases users' engagement, discussion, and reflections on a material object [77,84]. Likewise, the negotiation of interests along with using the boundary objects (as an input for the negotiation) can reduce the uncertainty of problematization by creating new conditions for more in-depth discussion between actors. Similar to problematization, the focus is on the commonalities, this time with more concentration on interrelational aspects of boundary objects, such as ease of communication or the interactions between different social worlds.

Using the health care system example, the negotiation of interests can be effective in a condition where lack of access to resources might increase the risk of accepting the new passage points. For example, placing an inter-objective device such as a new facility or new actors in the context might ideally create a new form of connections that disconnect one from the current realities, which is a contradictory context, into a new direction. However, in reality, translation and the ideal of network construction are more complicated than only using such interrelational devices. Upon creating the new passage point(s) and placing new boundary objects, an additional iteration, with a focus on continuous negations, is needed [19]. In particular, the device of enrolment aims to ease actors' performance within the problematization and the negotiation processes by assigning new roles and responsibilities, tools, and resources that one has to take before starting the journey. The enrolment can be done more effectively if the designer asks the following questions: (a) what level of problematization is needed and where should the device of interessements

be placed within the problematic context; (b) is that a physical change or rather more seductive, or even a transactional movement?

The fourth step is mobilization. The knowledge and experience from the previous problematization, interessement, and enrolment are the inputs for mobilization. The outputs are the lists of tangible and intangible items, which need to be designed by the actors within the problematic context. For example, a checklist of the requirements that can finalize any remaining complaints, questions, and limitations [57]. For DDC, the mobilization step must unfold the potential concerns that one might have during the whole translation process. For example, one can come up with questions about who speaks in the name of whom, to what extent they believe in the results of the interessment, how to approve the spokesman, and what is the best way to scale up the result of problematization in a real social context. Hence, the final outcomes of the translation phase are rather intangible (j). For example, improvements in the quality of user engagement or better negotiations between them, which ideally leads to learning and adaptation along with a network of allies construction.

3.5. Scaling Up

The last part is the scaling-up process, aiming to disseminate the results of the translation process. The outcomes of the translation, in particular, a new network of allies, new knowledge, and experience, have to be scaled up from a community level (the translation phase) to a broader social scale, as shown in (Table 5) [19]. In other words, only through a scale-up process one can claim that the translation has ideally changed the main paradigm of a social system.

Table 5. The scale-up phase.

Scale up		
Input(s)	**Methods**	**Output(s)**
(i) the new passage points i.e. new core stories (j) the new network of allies i.e. mutual learning	Story Sphere (e.g. core story, storyline, characters, objects, and universe) K. Paulsen 2021 [75]	(k) the narrative platform i.e. aspirational and gravitational (l) the new value set(s) i.e. mindset and paradigm shift

As mentioned earlier, DDC has more strategic implications: it starts with the revolutionary mechanism of conflict, continues with the constructive notion of design, and ends with strategic planning aiming to involve actors with conflicts of values or interests [5,19]. Hence, the focus of the final stage is to change and to develop the core narrative of the actors who are skilled and committed to learning from one another [4,62]. To scale up in social realms, Westly [85] mentioned that it is essential to choose the right actors, e.g., people with more agency, as well as the right places, the core of the problem, to intervene. In other words, a kind of consciousness toward initial conditions, individual agencies, and power relations between actors is needed [5], aiming to unfold the underlying narrative of the context that created the problems in the first place [62,85]. Therefore, the first part of the scaling-up process has already been elaborated in the first phases of the methodology, during context mapping, system analysis, and synthesis. The remaining part is about how to reconstruct a new narrative platform based on the outputs from the translation phase and how one can scale up the results of the new platform, essential for the lasting change in the social contexts.

For DDC, the objective of a narrative structure or a storytelling platform is to move and to spread the results of problematization across multiple scales [66,86]. Subsequently, a narrative structure is needed in order to open the opportunities to test and refine a complex system for the future (k). This can be defined as a purposeful attempt toward mobilizing the new forms of relations and the roles or responsibilities that one has to take within the problematic context [86]. As such, to purposefully spread one's story, creating an aspirational core story is the first step. Studies have shown that hidden or underlying

messages can come alive only through a deep connection with actual people [24]. An aspirational story can involve every actor whose mindset and worldview are part of a problematic situation. In other words, a great story along with a creative storyteller can ideally move ways of thinking, persuasion, and belief within and beyond the context (l) [75,86]. Thus, the proposed method for the final stage is a refined version of the story sphere. It is adapted from K. Paulsen's model and designed in a gravitational structure, and it highlights the necessity to design from the core narrative of the context [75].

Working with the story sphere starts from the core narrative of the context and continues with defining the main layers, the outer layers, and the boundaries of the new system. The layers in between represent the potential storylines, actors and actants, the new roles or responsibilities, and the new objects or the environment of the system of the future. To ease the amount of work with the method, it is essential to involve all beneficiaries, in particular, actors with creative power and experience, focusing on designers with a background and experience in design for the social system. Utilizing the design abilities for envisioning the ideal future, along with designers' experience in empowering people's creative knowledge [29,66], provides added value for the scaling-up process. Designers along with other creative disciplines can idealize a desirable future, but they can also make sense of an abstract concept, such as metaphors. Such creative power is particularly effective when the level of abstraction is high, similar to co-creating the narrative of the context.

In sum, creating a deep connection between the actors, the storyteller or designer, and the story itself are the essential steps that one has to take toward scaling up the process. Only through a deep connection between actors one can claim that the high ambition of a paradigm shift can gradually change the deep narrative of the context [1,53,87].

3.6. Method Content Analysis

3.6.1. The Method Goals

As mentioned in Section 2.2, the interviews started with an open question that required experts' opinions on what they see as the central goal of this method and how they see the structure (refers to the links and connections between different parts—Section 3.6.2). Our focus was on the quality of the method goal, such as the ease of understanding, the relevance, and the reliability, and about the quality of structure, our focus was on the timeliness, complexity, and reliability of the structure. In case of a negative response, the interviewees were asked to elaborate on their responses and give suggestions on how to improve one part of the method. Figure 2 is a visual representation of the interview process, originally developed by J. Daalhuizen (known as the method content theory) and adapted in this paper in order to ease the content analysis [28].

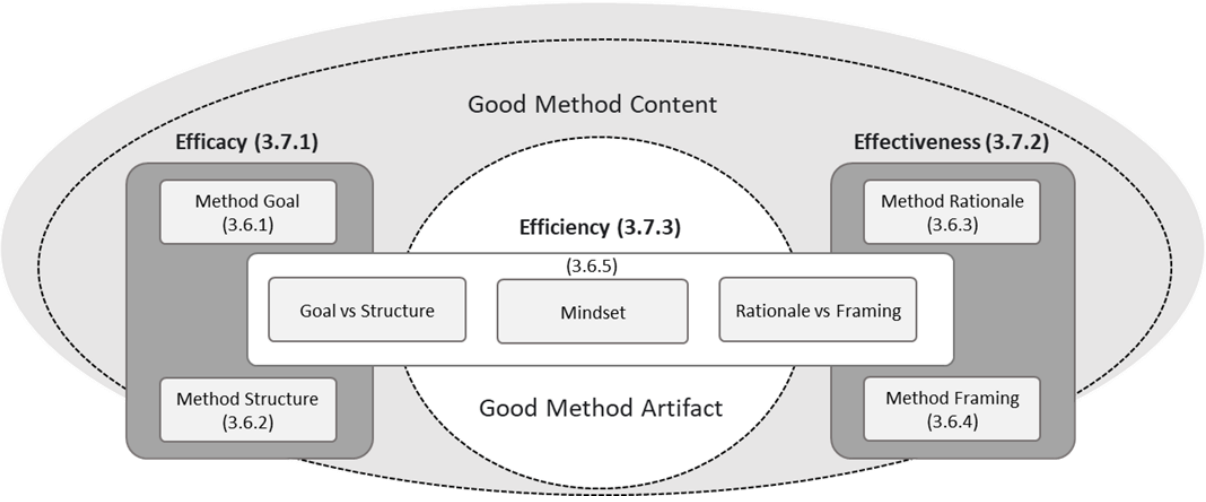

Figure 2. Method content analysis, the interview structure adapted from J. Daalhuizen's method content theory.

On the first question, most of the participants confirmed that the method contains a clear goal. Albeit with some differences, they all identified the main goal of the methodology to be a mindset and paradigm shift. While answers to the first question were clear and consistent, there was less agreement on the quality of the method goal. For instance, two participants had hesitations about the originality of the goal, as well as the intention and relevance of the method for one particular actor. In other words, it was not clear to them to whom the goal applied and to whom this notion of mindset and paradigm shift is desirable:

> *"The problematic is clear to me [. . .] what is not clear is the design intention of the goal. For example, if 'continuous learning and adaption' is the design intention of the method (my thought), then to whom this intention has to be ascribed?"*

Likewise, one interviewee claimed that the internal goals of the proposed methodology are not sufficiently defined. She believed that the current version does not show the necessary connection between the objectives of each part, the essential functions, and the main goal of the method. From her viewpoint, an internal mechanism is needed in order to facilitate monitoring the results as well as to align each part with the main goal. She further continued that the clarification on the design intentions, method users (e.g., social designers), and other stakeholders can improve the goal-seeking aspects of the method. In other words, in her view, the ease or difficulty of transformation is tightly entangled with how early designer attitudes are transparent toward the main goal, which is not clear in the current version:

> *"[. . .] I would like to conclude that the more the goal or purpose is explicit at the beginning the more comfortable people are in the rest of the journey, hence the less they will suffer from the chaos or the uncertainty of the problematics."*

Nevertheless, for most participants, the lack of a design intention was not necessarily a negative aspect of the method. Instead, the limitation was partly related to the methodological uncertainty of design as a process in handling a broader community of people and partly related to the complexity of the mindset and of the paradigm shift as an outcome of a design process. In response to the limitation, they focused on the purposefulness of the design methodology in order to be used in a wider social scope. One interviewee claimed that in the design of social systems, purposefulness is a prerequisite for designing a method. A method should facilitate the production of different outcomes in the same environment, which requires a purposeful approach. From this view, contrary to the design intentions that can be considered as an early objective, the proposed methodology has to improve a purposeful quality as well. Only through a purposeful quality one can create more possibilities for interventions in a complex situation, which, at the moment, is only visible in the translation phase due to the engagement of multiple actors and the open condition for learning and adaption.

> *"To me, it is hard to define the (design) intention in the first place [. . .] it is indeed problematic in design contexts that a complex goal such as a mindset and paradigm shift cannot be defined within a project's frame [. . .] rather purposefulness is needed, or a form of openness, not only from the structural point of view but also in people and experts who want to join. [. . .] we must go beyond our own projects' limits, by asking for the help of others (e.g., communities, societies, or disciplines) to help each other out in the face of problems"*

In the end, two researchers had concerns regarding the reliability of the method goal. They pointed out how difficult it is to trust the controversies and the values associated with conflicts, let alone to rely on the result of this process, which ought to be the paradigmatic shifts. For example, one interviewee had hesitation on the impact of these values in a broader sociopolitical context, particularly on the general discourse. From this viewpoint, whether these values are aiming to change paradigms or transcend and change the paradigms is something that requires additional investigation. Their suggestion was to revisit the notion of transcending the paradigm. In social systems, transcending a paradigm

is a prerequisite for transformation and a necessary step toward systemic change [2]. They believed that even if "we decided to design a new system instead of transforming, we still have to transcend the existing state of affairs". Therefore, while the notion of paradigmatic shift can remain a central goal of the method, the recommendation was to highlight the relevant sub-steps, in particular, how the creation of a new narrative (platform) can facilitate the scaling-up process.

> *"If we talk about conflict construction, as a means for paradigmatic change then I would say it is more about 'transcending the paradigm' rather than paradigmatic change. In other words, the methodology basically tries to combine different worldviews rather than choosing one from others. For example, selecting the boundary objects or the commonalities between them [. . .] all can support (mutually) a new learning process."*

3.6.2. The Method Structure

Similar to the questions about the goal, the answers related to the structure were relatively clear and consistent. The majority of experts claim that the method contains a stepwise structure, the prescribed procedure can contribute to the design goal, and that there is no particular gap between the different steps. In addition, the experts believed that the content of each step sounds familiar to them and is easy to understand. Despite the positive feedback, the second question revealed more in-depth information and concerns that one should be aware of before using the method. In general, we divided these remarks into two categories: first, the complexity of the structure, particularly in the translation and scaling-up phases, and second, the linearity of steps, e.g., the high consistency of inputs and outputs, which requires an internal mechanism for iteration.

Regarding the complexity of the structure, two interviewees claimed that the current structure is complex, difficult to follow, and overwhelming for non-research experts such as practitioners and design students. From this viewpoint, translation and scaling-up phases require additional time and effort for learning and planning. One expert mentioned it is not possible to work with "the current format of the methodology, in an easy way such as in form of a booklet or cardboard". The method is not similar to a creativity card that is passed out to students or other stakeholders, rather, it requires more time to learn if one does not have the background knowledge. In response to this limitation, their suggestion was to invest more in the connection between different parts, making the design interventions clear, and translate what has been set into tangible things as input for the next step.

> *"[. . .] To avoid unwanted complexities what I normally do is to make a system map after the analysis as an input for synthesis. It is a kind of boundary object, basically to discuss the content with other stakeholders which in your case can be a form of boundary steps."*

Nevertheless, to some experts, the complexity of the structure was not necessarily a negative aspect. They saw it more on the epistemological level rather than as the structure of the method. From this view, such complexity is inevitable and essential for one to design a method related to the mindset and paradigm level. In other words, the issue of complexity is more about the uncertainty of a design project, which aims to change the mindset and not the procedure or the structure of the method. Their opinion was that a design method must support the agency of the users who aim to use the method, including their rights and the possibilities to choose. They believed that such a quality can only be manifested through a high level of complexity, which, in the current format, is visible both in the translation and scaling-up phases. Their assumption was that if the structure supports such a flexibility, then there are more possibilities to have a purposeful outcome (i.e., the purposeful outcomes Section 3.6.1). The request for maintaining the complexity of the structure has been mentioned as follows:

> *"Only then with such complexity one can navigate the uncertainty of paradigm shift [. . .]. So, I assure you the structure here is not too complex, all things we have here are needed, even as I mentioned the scaling up needs to be more complicated, for example on how to create a new narrative (platform) and how to scale it up."*

With regard to the second concern, the majority of interviewees considered the internal or external iteration an essential feature of a design method that is not elaborated on in the current version. The linearity of the current structure and the sequence of the steps, e.g., the consistency of the inputs and outputs, are at a high level. A linear structure leads to the high predictability of the outcomes, which is not relevant for designing in social systems. One interviewee believed that although the linearity and sequence of steps in analysis and synthesis can increase the predictability, they are not contributing to the diverse possibilities. They found the linear format of the current structure a limitation for one aiming to design in complex contexts. In response to that, additional iterations are needed in order the improve the flexibility of the sub-sections. The suggestion was an inner feedback loop or an internal mechanism in order to facilitate iteration between and after different steps. One interviewee elaborated his views through Latour's notion of circularity references:

> *"There is no doubt that we (designers) do graph our processes, and then they always end up with some timelines [. . .] but the realities are not as simple. We cannot take the original problem for granted [. . .] always going back and forth is needed, when we move along the way we should be aware of the problem as well. Things can evolve, while we obtain more insights from actors and relations. Therefore, I think the space between the design experimentation which in your case is the translation and setting up the problem right is important to keep the circularity alive until we have a firm understanding of the problem which might be different from where we started".*

3.6.3. The Method Rationale (Underlying Motivation)

Starting with the question on underlying motivation(s), we asked the respondents' opinions on what is and how they see the method's rationale. Moreover, we asked them to elaborate their responses based on ease of understanding and relevance of the rationale. The questions provided a situation for experts to have more in-depth discussions on the motivation of the method and its relevance to the main objective, i.e., network construction. Similar to the previous part, a majority of respondents claimed that the method contains a clear rationale that is appropriate for the proposed aim and structure. Despite the quick responses, there were also considerable differences in what they identified as a method rationale.

Two respondents believed that the main motivation is to deal with the uncertainty of paradigm shift and the necessity of a comprehensive approach "to bring and unify different methods". The design problems are becoming more and more complex and that requires designers to learn new skills or to explore new tools and techniques. At the same time, generating different tools and techniques without a clear rationale can lead to polarization in using the methods. This shows that "synthesizing the method in form of a design methodology" can be a motivation for one to design a methodology. Nevertheless, one interviewee had concerns regarding the reliability of such a rationale. In particular, her concerns were partly related to the epistemological origins of the methods, where these methods are coming from and how they are combined in a form of a design methodology, and partly related to the issue of contingency in social systems. For example, the relation between the consistency of the results in context mapping (i.e., actors and resources) and the dynamic change in a broader context has to be elaborated more.

Despite the epistemological concerns, the two responders showed a different opinion; they emphasized the normative aspects of the method as a means to bond different methods. They believed that the method aimed at a very high level in a social context, which simply means "how one (a social designer) can make the world a better place to live". They both trust the rationale, including the epistemological aspects, and they found it highly relevant in the face of today's social problems. As stated by one expert:

> *"Although there are some uncertainties, I would trust to the motivation of the method [. . .] living in the time of crisis, such a social design approach has always been a part of the problematics in design projects. But now the situation is even more problematic, one can say: we 'badly need them'".*

Finally, we asked them to elaborate more on the reliability of the rationale. This question showed a significant ethical concern by the majority of respondents. They claimed that "the method users should be aware" if they are going to map such a complex network that there might be entanglements of conflicting values. For example, at the end of the process, some people might have more profits than others, and this might be a problem for other stakeholders. From this viewpoint, there are always ethical limitations, resulting in a goal and means conflict and requiring additional clarification.

> *"It is basically saying that something goes wrong in the system and the way that you think about the system is not working as it is. So, it is wrong, you need to think differently, and here is the way to think [. . .]. Then one can ask (from an ethical position) who you are to say this?" [. . .] conflicts remain there until we clarify the ethical dimensions".*

3.6.4. The Method Framing

We asked the same questions about the framing capacities of the method [28]. Framing, here, refers to the flexibility of the method for being used in different socio-ecological contexts. For example, what are the ideal types of situations to implement the method or what kind of problems might occur during the implementation? We asked them to elaborate on their responses based on the relevance, reliability, or completeness of the method.

Albeit with some differences, the majority of respondents believed that the method (including the goal and structure) is flexible and can be used in different contexts. When we asked them to elaborate further, they said "mindset and paradigm are at the core of every systemic problem, whether in social, political, or even cultural situations". It is feasible to work with such a method. They also claimed that the ingredients of this methodology, such as resources, actors, or power dynamics, are available in almost every context. Hence, independent of what type of problem we are addressing, the method has the capacity for being used in broader and different contexts.

While the majority of respondents believed the flexibility is an added value for the method and even some encouraged more flexibility (including openness), one interviewee had a different opinion. She did not find the flexibility of the method an added value; rather, more consistency is needed when it comes to design for social sectors:

> *"[. . .] I don't think this is the strength of the methodology. If your methodology is being applied in a different context it doesn't mean that it is a better methodology. In other words, you cannot use the same method for dealing with an issue regarding racism compare with one aiming to address a problem in the health care system. Hence, from my perspective, the more concrete and solid you be the better you can handle this sort of problems"*

At the end, there were a few concerns about the flexibility of the sub-sections. For example, in the synthesis phase, a few experts claimed that the "boundary objects are too defined and structured". In addition, the translations phase (i.e., interessment) is rather abstract in the current format. Additional explanations are needed for non-designer experts, students, or researchers from different backgrounds. Moreover, the normative orientation of the method limits the applicability of the method for systemic designers working in different area such as energy or financial sectors. Their suggestion was to simplify the difficult terminologies in the boundary objects and elaborate more on the epistemological aspects of each part. It has been suggested to give more agency to actors who are part of the problematic situation. For example, rather than defining a selected type of boundary object, they recommended to keep open the selection criteria of the commonalties, which can ease negation of interests.

> *"I do have a bit of epistemological concerns here about the use of different terminology. For example, what do you mean with a wicked problem might be different compared to someone who comes from a different background [. . .]? We cannot expect this from designers, they cannot take the responsibility for everything, if one wants to apply this methodology, equal attempts are needed from other sides or stakeholders. To what extent does the method support such flexibility? In other words, people must trust their own judgment and the method must support and reinforce people's judgment about their own judgment"*

3.6.5. The Interrelational Aspects (the Efficiency)

The last three questions assess the interrelational aspects of the method, including the method mindset versus the user mindset, structure complexity versus goal ambiguity, and frame flexibility compared with the rationale consistency [28]. As in the previous parts, we asked three questions in an open format, allowing respondents to further elaborate on their responses.

The first question asks for the method mindset and its alignment with the user mindset. Mindset, here, refers to the appropriateness of the method content to the perspective of the potential user, which, in our case, is a social designer. In general, respondents claimed that the method mindset is aligned with the designer's mindset who is willing to work in social sectors, such as systemic designers and social or participatory designers, even though their opinions were diverse depending on their background, expertise, and school of thought. One found the method appropriate for a designer willing to work with systemic issues, and two mentioned the normative aspects of the method, which makes it appropriate for one with the social design background. From this view, embracing multiple perspectives is an essential attitude of a systemic designer, which can be clearly seen in the entire process, particularly synthesis and the translation phase. Nevertheless, three interviewees had concerns for those who are not using a critical approach or avoid working with antagonistic actors such as participatory designers. This was mentioned by one of the interviewees as follow:

> *"I can clearly see a systemic designer mindset to use the method and enjoy working with it, in particular for a social problem, but I cannot claim that one with a background in participatory design uses the method at least with the same experience [. . .] there might be clash of epistemologies for them".*

Despite that, few interviewees claimed that it is not possible nor desirable to categorize or to separate designers' mindsets only based on their interests or background. They believed each part of the method can be suitable for a specific approach. For example, using boundary objects can be aligned with the mindset of a designer with a socio-technical background, or the translation phase might be interesting for one with experience in socio-political contexts. In other means, in their biggest mindset, "they are all designers and what they do at the end has social implications". For example, they all have the tendency for involving communities "or zooming out progressively" and using a holistic lens, which can be clearly seen in different parts of the methodology. This has been explained as follows by one interviewee:

> *"I don't think we really can divide whether someone is a social or techno-driven designer. They are all interested to work with the community, even to me, a designerly mindset is a voluntary mindset which always aims to bring improvement with or for people"*

With regards to the balance between structure and goal, the majority of respondents found the main goal of the methodology to be at a high level (mindset and paradigm shift) and, at the same time, the structure (links and connections) sufficiently comprehensive. Based on their suggestions, improving the circularity of the method along with the possibilities for internal iteration such as monitoring the processes and results can additionally improve the balance of the goal and means.

A few experts, concerned about the uncertainty of the goal and subjective attributes of the context, believed that it is impossible for any designed structure to process every aspect

of the change. This opinion was partly due to the expectations in the context (which are unstable) and partly due to the overarching impacts of the change (which are inherently uncertain). In response to the issue, their suggestion was to revise the current goal and discuss the limits of the structure. About the former, they suggest changing the goal from a paradigm shift to 'transcending the paradigm' and focusing on creating a new learning paradigm. Based on this view, transcending the paradigm can be manifested through the co-creating of a new learning narrative, which can start from the translation phase and end up at the scaling-up process. In terms of the structure, they recommend elaborating more on the ethical aspects of the method, the limits, and the conditions to use for future improvements.

> *"Regarding the goal, as a social designer, I do see the great potential in the translation phase, and its outcomes: the co-creation of a new learning paradigm. We social designers are talking a lot about mutual learning but it's more a matter of 'results', we rarely talk about how we can learn for the sake of learning. So, it is nice to see how one can use a design approach to create a new narrative which encourages learning rather than merely instrumenting for learning"*

In the end, we asked respondents about the balance between the flexibility of the method and the rationale consistency. The objective was to unfold the efficiency of the method in producing desirable outcomes. The responses were diverse but focused on a number of criteria such as improving the method rationale for diverse users. They claimed that what motivates someone to work with the method might be different from context to context. As such, the method rationale should support such a flexibility to ease producing desirable outcomes.

> *"To what extent you are considering the contextual aspects that are outside of your control? Like you are talking about social norms and social pressures, but we know the way knowledge is considered as truth in one society might be different from others. So, the motivation is sometime context dependent. There are situations where these imbalances are absent, and the method has to reflect them . . . "*

Likewise, two experts recommend diversifying the level of abstractions as well as the flexibility of method users. There was a general agreement that the method users and the level of abstraction can be separated from the context of usage. One interviewee claimed that the "flexibility is not always a property of design methods", instead, it requires a designer's ability to go beyond the rationale consistency when it is needed. Based on this view, there are possibilities to define the interrelational balances in advance, such as in the context mapping or by additional clarifications on the epistemological origins of the translation phase.

In sum, there was a general agreement that it is rather difficult to sufficiently evaluate the interrelational aspects of the existing methodology. Depending on how dynamic the contextual elements are, such as time, places, or actors who are part of the problematics, one can obtain a different result from the method. Hence, there are difficulties in terms of knowing how flexible the methodology is and how consistently the rationale compares with it. Suggested by experts, "to improve the relation between rationale and framing", a strategic openness or a flexibility over flexibility (i.e., the ability to back to initial rationale) is needed both on the content and the users. In addition to that, there was a consensus that a proper response to this question requires testing out the method content in a real-life context, which was one of the methodological limitations of this study.

3.7. Discussion

Transformability is one of the essential attributes of social systems that defines the future trajectories of human systems in the face of social crises. One can enhance the transformability of a social system by improving the paradigmatic capabilities of a system, in particular, a shift in the mindset, worldview, or deep narratives of a social system. To create the precondition for a paradigm shift, it is recommended to make the normative attributes of a social system

as explicit as possible. Based on critical system discourse, such a transparency requires a dialectical approach, which is embedded in the core concept of conflicts and disagreements. Adapted from construction theories, controversies are an essential property of human systems. They are an authentic form of relationships, and they have a reflexive power ideal for transcending the mindset and paradigm of a social system. From a theoretical view, one can create a dialectic condition, necessary for reflexive exchange of thoughts and opinion, by (re)constructing social controversies in human social systems.

With respect to the increasing needs of an authentic dialectic approach, a framework for design-driven conflicts (DDC) has been proposed here in order to facilitate conflict construction in social systems. The focus is on the features of the DDC framework for involving a broader community of people in the sensemaking processes. Learning from the literature, an inclusive approach is needed not only to address the limitations of systemic design such as how to involve the contradictory voices in a sensemaking process (which has been discussed in Section 1.2.1) but also to unfold ways of designerly constructing social controversies in social systems (Section 1.2.2).

Subsequently, an actionable version of the DDC framework, known as a design-driven conflicts methodology, has been presented here. The proposed methodology is partly based on the theoretical insights on the DDC framework and partly related to a number of panel discussions (which have been elaborated on in Section 2.1). The main objective of the DDC methodology is to integrate the pragmatic and systemic aspects of design to purposefully create a network of allies suitable for the higher-order possibilities: mindset and paradigm shifts.

Overall, the proposed methodology has five distinctive phases connected externally and prescribed internally based on the input and output of each step. It starts with context mapping, continuing with analysis and synthesis, and ending with a translation and scaling-up phase (Figure 3).

During phase 1, the context mapping, the goal is to map the social, spatial, and temporal aspects of a problem. The first intention is to depict both the human (or purposeful agents) and non-human actors (or persuasive agents), such as rules and regulations, tasks, and resources that they share within a problematic situation, e.g., a co-defined boundary of the system.

Phase 2, the context analysis, will focus on mapping the antagonistic forms of relationships as well as individual access to the resources. The objective is to map the power dynamic and underlying motivations that drive actors within the problematic situation. These two elements are the intended outcome of the analyses phase and the potential input for the next step: synthesis or mapping the commonalties.

Phase 3, besides for knowing the drivers and the power relations, is essential to change the attention from the antagonistic actors themselves to the underlying narratives of the context and the individual story within a problematic situation. The phase 'synthesizing' aims to map the commonalities between actors and define the possibilities for reassembling antagonistic relations. Actors' narratives as well as knowledge about the commonalities become the ingredients for the next step, translation.

Phase 4, translation, is similar to designing interventions in conventional design methods. The goal of the translation is to change the objectives as well as ways of obtaining ones' ideal ends. In other words, a new pathway has to be designed to change the antagonistic actors' directions (which, in our case, is a negotiated passage point) from a problematic way into a mutually accepted reality. By designing the new passage points, actors' commonalities along with individual narratives become the input for constructing a network of allies. The objective of the new network is to reassemble, mobilize, and facilitate (higher-order) learning and adaption between actors. Such a new learning paradigm must be extended into the last stage: the scaling-up process.

Phase 5 refers to the scaling-up process. The core narrative of a new community must be gradually amplified in order to involve a broader community of actors. It is essential to use the knowledge and experience from the previous part as an input for the creation of a new narrative platform. Along the scale-up process, the design abilities

such as conceptualization or future idealization can assist a social designer to mobilize the new narrative, norms, and values from the existing situation into a new system of affairs wherein there are more possibilities for mindset and paradigm shifts.

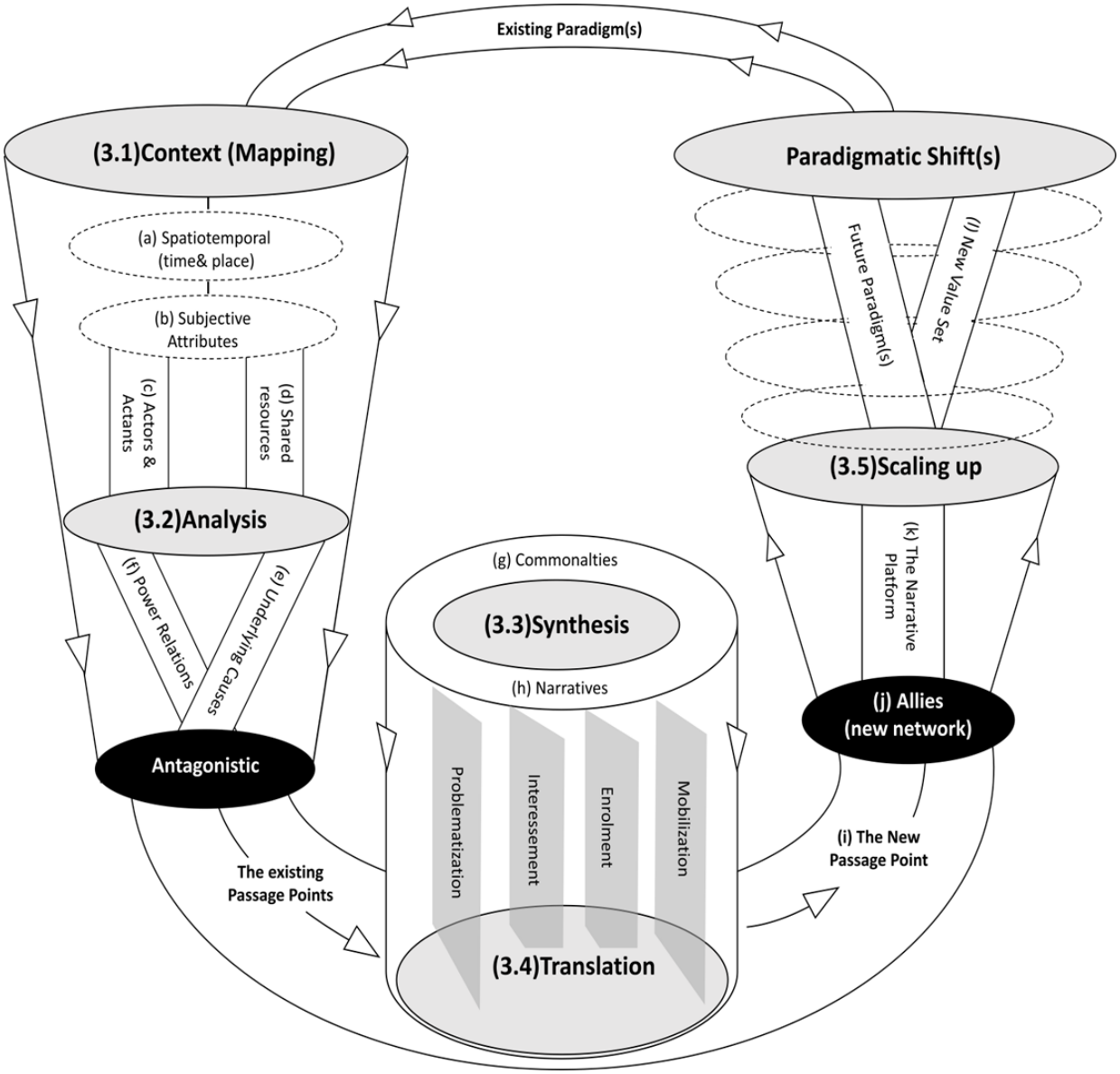

Figure 3. The design method conceptualization including the inputs and outputs of each step.

Additionally, a number of expert interviews have been conducted in order to unfold the efficacy (3.7.1), effectiveness (3.7.2), and efficiency (3.7.3) of the current version before developing a higher-fidelity version of the method (Figure 2).

3.7.1. Efficacy

The first part of the interview was designed to assess two essential qualities of the methodology, including the structure and the embedded goal: both contribute to a better understanding of the efficacy [28]. Synthesizing the results revealed that the method content has the potential to support the users to achieve the main goal. Hence, the efficacy is visible in the entire process. Nevertheless, a number of remarks have to be taken into account for future iterations, including the (lack of) goal-seeking quality as well as the issue of iterations.

Despite the linearity of the structure, particularly in the context mapping and analysis phases, the goal-seeking aspects of the content have been missing in some parts. For example, it is not clear to what extent each part can contribute toward the main goal or what the design intentions ought to be in the first place. The latter can be an extension for the context mapping (or the analysis) process, and the former requires a circular approach, which needs to be manifested in the entire process.

In the current version, the context mapping has been limited to certain criteria, such as actors and resources. One can ease the mapping process by additional elaboration on the design intentions as well as defining the users' attitudes in the earliest phases. In addition, it is suggested to improve the circularity of the method by continuous monitoring of results and by checking the alignment of each part with the main goal of the method.

Another challenge toward the efficacy is the issue of contingency and uncertainty of the paradigm shift. There is no doubt that moving towards a paradigm shift is an uncertain and complex process, but also, the design capacities are limited and time dependent. Therefore, there are few things that one can do: either impose more flexibility on the structure and results (which has been discussed earlier) or refine the main goal of the method, from obtaining a paradigm shift into transcending the paradigm. In the design of social system, transcending the paradigm is one step before transformation. Hence, there are more possibilities for designers to be part of the process (e.g., conceptualize, idealization, and envisioning the ideal future), which can be identified as an added value for the scaling-up process.

3.7.2. Effectiveness

The second part of the interview was designed to assess the underlying motivation and rationale as well as the flexibility of the method content: both contribute to a better understanding of the method's effectiveness [28]. The effectiveness here refers to the degree to which the method content can contribute to meaningful results. Based on the remarks on the rationale and framing, except for a number of concerns on the ethical dimensions and the epistemological complexity of the methods, the methodology has the potential to produce meaningful outcomes. As such, for future iterations, it is highly suggested to consider the ethical limitations as well as the complexity of the contents for non-expert users. Regarding the ethical aspects, the limitations are partly related to the goals and the means conflicts, for example, how to create a mutually accepted narrative, and partly related to the more fundamental question: who is giving the designers the actual mandate to work with the method?

To deal with the first concern, the goal and means conflict, it is recommended to identify the limitations of the method in the first place. For example, in a social design project, any prior clarifications, discussions, and reflections on the acceptable outcomes can decrease the risk of conflicts during and after the process. Likewise, continuous negotiations between and across the scales, boundaries, and actors can help to nominate the right actor who has more popularity. Thus, our suggestion is a form of multilateral negotiation along with the continued adaptations during the entire process. In the high-fidelity version (which will include tools and techniques), the negotiations have to be extended to a broader community of people.

In terms of the epistemological complexity, there is no doubt that the method content has a high level of complexity, particularly for non-expert users. Nevertheless, there were less agreements whether such a complexity has a negative impact on the effectiveness. Only few experts believed that the complexity of the content might decrease the effectiveness of the method in a social context. Nevertheless, for future iterations, our intention is to provide a low-threshold version of the method, particularly with a focus on the boundary objects or the translation phase, which requires additional time and efforts for one without background knowledge on the sociology of translation.

3.7.3. Interrelational Aspects (the Efficiency)

Finally, regarding the interrelational aspects of the method, i.e., the method mindset, goal and means complexity, as well as the framing versus rationale consistency, there was a general agreement that the method is appropriate for being used in social contexts. Nevertheless, for future improvements, it is suggested to elaborate on the limitations of the method, particularly for users with a background in participatory design or collaborative design.

The proposed methodology originates from the critical system discourse. It emphasizes the evolutionary nature of controversies that might lead to epistemological concerns for those having a background in a soft system approach. For future users, it has been recommended to have a 'flexibility over flexibility' or a continued openness to improve the framing capacities of the method. Nevertheless, a proper response to the interrelational aspects of the method and the relation between framing capacity and rationale consistency requires testing the method in a real-life context. Only then one can define the actual efficiency of the method.

Therefore, for future iterations, the first step is to develop a low-threshold version of the methodology for non-expert users. This can be completed with a higher-fidelity version that introduces the potential tools and techniques suitable for more practical and purposeful interventions.

4. Conclusions

This paper presents a design-driven conflict (DDC) methodology in which design is an action-oriented strategic process, and it aims to construct social controversies in order to facilitate the construction of a network of allies. With regards to the future direction, DDC is a designerly attempt to cultivate the methods, perspectives, and thoughts in the form of a design-oriented methodology. By using DDC as a design method, a social system designer can define the right actors (antagonistic), the individuals' core narratives, and the essential commonalities between antagonistic parties. Our premise is that having such a strategic lens provides additional value to the four cycles of the translation process necessary for a network of allies construction. The special agency of actors with conflicts of values along with the transformative outcomes of controversies can facilitate the creation of a new narrative platform, which, if scaled up in a creative way, can gradually change the main paradigm of a social system. The efficacy of the methodology has been evaluated based on the method's goal and structure and the effectiveness in relation to the rationale and frame capacities. While both elements have been approved by means of expert interviews, there are a few remarks that one must consider. In terms of efficacy, one can improve the circularity of the method by easing the internal iteration before and after each step, and in relation to effectiveness, it has been suggested to facilitate early steps of negotiations between the beneficiaries in order to unfold the ethical dimensions of the method before any interventions. There is a mutual agreement that the proposed methodology might cause a certain (epistemological) concern for one with a participatory design background, partly due to the origin of the method in critical system discourse and partly due to the linearity of the steps in early phases. Nevertheless, the main concern remains in relation to the efficiency of the method, which requires additional investigation in a real-life context.

Author Contributions: Writing—original draft preparation, M.N.; writing—review and editing, A.J. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: The essential consent was obtained from all participants involved in the research.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Walker, B.; Westley, F. Perspectives on Resilience to Disasters across Sectors and Cultures. *Ecol. Soc.* **2011**, *16*, 2–5. [CrossRef]
2. Olsson, P.; Galaz, V.; Boonstra, W.J. Sustainability transformations: A resilience perspective. *Ecol. Soc.* **2014**, *19*, art1. [CrossRef]
3. Walker, B.; Holling, C.S.; Carpenter, S.R.; Kinzig, A. Resilience, Adaptability and Transformability in Social-ecological Systems. *Ecol. Soc.* **2004**, *9*, 5. [CrossRef]
4. Westley, F.; Olsson, P.; Folke, C.; Homer-Dixon, T.; Vredenburg, H.; Loorbach, D.; Thompson, J.; Nilsson, M.; Lambin, E.; Sendzimir, J.; et al. Tipping Toward Sustainability: Emerging Pathways of Transformation. *AMBIO* **2011**, *40*, 762–780. [CrossRef] [PubMed]
5. Hensmans, M. Social Movement Organizations: A Metaphor for Strategic Actors in Institutional Fields. *Organ. Stud.* **2000**, *24*, 355–381. [CrossRef]
6. Adib-Moghaddam, A. A (short) history of the clash of civilizations. *Camb. Rev. Int. Aff.* **2008**, *21*, 217–234. [CrossRef]
7. Sangiorgi, D. Transformative services and transformation design. *Int. J. Des.* **2011**, *5*, 29–40.
8. Geels, F.W. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environ. Innov. Soc. Transit.* **2011**, *1*, 24–40. [CrossRef]
9. Joore, P.; Brezet, H. A Multilevel Design Model: The mutual relationship between product-service system development and societal change processes. *J. Clean. Prod.* **2015**, *97*, 92–105. [CrossRef]
10. Elzen, B.; Geels, F.W.; Leeuwis, C.; van Mierlo, B. Normative contestation in transitions 'in the making': Animal welfare concerns and system innovation in pig husbandry. *Res. Policy* **2011**, *40*, 263–275. [CrossRef]
11. Taheem, R.; Woods-Townsend, K.; Lawrence, W.; Baird, J.; Godfrey, K.M.; Hanson, M. How do local authority plans to tackle obesity reflect systems thinking? *Perspect. Public Health* **2022**. [CrossRef] [PubMed]
12. Meadows, D. *Leverage Points: Places to Intervene in a System—The Donella Meadows Project*; The Sustainability Institute: Hartland, VT, USA, 1997.
13. Marcuse, H. *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society*, 2nd ed.; Kellner, D., Ed.; Routledge & Kegan Paul: London, UK, 1991.
14. Della Porta, D.; Diani, M.; Tan, A.E.; Snow, D.A. Cultural Conflicts and Social Movements. *Oxf. Handb. Soc. Mov.* **2014**, 1–26.
15. Jackson, M.C. *Systems Thinking—Creative Holism for Managers*; John Wiley & Sons: Hoboken, NJ, USA, 2003; Volume 1, p. 378.
16. Ulrich, W.; Reynolds, M. Critical Systems Heuristics. In *Systems Approaches to Managing Change: A Practical Guide*; Reynolds, M., Holwell, S., Eds.; Springer: London, UK, 2010. [CrossRef]
17. Berger, P.L.; Luckmann, T. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*; Anchor Books: New York, NY, USA, 1967.
18. Collins, P.H. The Social Construction of Black Feminist Thought. *Signs J. Women Cult. Soc.* **1989**, *14*, 745–773. [CrossRef]
19. Nedaei, M.; Jacoby, A.; Du Bois, E. Design-Driven Conflicts: Exploring the Contribution of Design for Constructing Social Controversies from a Theoretical Standpoint. *Societies* **2022**, *12*, 137. [CrossRef]
20. Tureta, C.; Américo, B.L.; Clegg, S. Controversies as method for ANTi-history: An inquiry into public administration practices. *Organization* **2021**, *28*, 1018–1035. [CrossRef]
21. Bratton, L.B. Themes of Conflict Theory. *J. Teach. Soc. Work.* **1997**, *15*, 131–146. [CrossRef]
22. Heylighen, F. The Science of Self-Organization and Adaptivity. In *The Encyclopedia of Life Support Systems*; Eolss Publishers: Oxford, UK, 2002; pp. 1–26. Available online: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.38.7158&rep=rep1&type=pdf (accessed on 20 December 2022).
23. Seravalli, A.; Upadhyaya, S.; Ernits, H. Design in the public sector: Nurturing reflexivity and learning. *Des. J.* **2022**, *25*, 225–242. [CrossRef]
24. Milojević, I.; Inayatullah, S. Narrative foresight. *Futures* **2015**, *73*, 151–162. Available online: https://linkinghub.elsevier.com/retrieve/pii/S0016328715001160 (accessed on 16 December 2022). [CrossRef]
25. Karakiewicz, J. Design is real, complex, inclusive, emergent and evil. *Int. J. Arch. Comput.* **2020**, *18*, 5–19. [CrossRef]
26. Van Boeijen, A. Crossing Cultural Chasms: Towards a Culture-Conscious Approach to Design. Delft University of Technology. 2015. Available online: https://www.tandfonline.com/doi/full/10.1080/14487136.2015.1085681 (accessed on 29 December 2022).
27. Herlo, B.; Unteidig, A.; Jonas, W.; Gaziulusoy, I. Perspectives on socially and politically oriented practices in design. *Des. J.* **2017**, *20*, S4710–S4713. [CrossRef]
28. Daalhuizen, J.; Cash, P. Method content theory: Towards a new understanding of methods in design. *Des. Stud.* **2021**, *75*, 101018. [CrossRef]
29. Banathy, B.H. *Designing Social Systems in a Changing World*; Contemporary Systems Thinking; Springer: Boston, MA, USA, 1996. [CrossRef]
30. Seravalli, A.; Witmer, H. (Service) Design and Organisational Change: Balancing with Translation Objects. *Int. J. Des.* **2021**, *15*, 73–86.
31. Kummitha, R.K.R. Design thinking in social organizations: Understanding the role of user engagement. *Creativity Innov. Manag.* **2019**, *28*, 101–112. [CrossRef]
32. Mazé, R. 1 Design (Govern)mentalities: Implications of Design and/as Governance in Cape Town. *Des. Democr. Act. Thoughts Ex. Political Empower.* **2021**, 13–27. [CrossRef]
33. Heidingsfelder, M.L.; Bitter, F.; Ullrich, R. Debate through design. Incorporating contrary views on new and emerging technologies. *Des. J.* **2019**, *22*, 723–735. [CrossRef]

34. Schön, D. Designing as reflective conversation with the materials of a design situation. *Knowledge-Based Syst.* **1992**, *5*, 3–14. [CrossRef]
35. Bayrak, A.T. Games as a Catalyst for Design for Social Innovation. Unlocking legendary tools. *Des. J.* **2019**, *22*, 1409–1422. [CrossRef]
36. Liene, J. Critical Design as a Resource. Adopting the Critical Critical Design as a Resource. Adopting the Critical Mind-Set. *Des. J.* **2019**, *22*, 561–580. [CrossRef]
37. Vink, J.; Wetter-Edman, K.; Aguirre, M. Designing for Aesthetic Disruption: Altering Mental Models in Social Systems through Designerly Practices. *Des. J.* **2017**, *20*, S2168–S2177. [CrossRef]
38. Rezai, M.; Khazaei, M. The challenge of being activist-designer. An attempt to understand the New Role of Designer in the Social change based on current experiences. *Des. J.* **2017**, *20*, S3516–S3535. [CrossRef]
39. Jones, P.H. Systemic Design Principles for Complex Social Systems. *Social System and Design*. 2014, pp. 91–128. Available online: http://link.springer.com/10.1007/978-4-431-54478-4_4 (accessed on 21 December 2022).
40. Sevaldson, B. Visualizing Complex Design: The Evolution of Gigamaps. In *Systemic Design: Theory, Methods, and Practice*; Springer: Berlin/Heidelberg, Germany, 2018; pp. 243–269. [CrossRef]
41. Junior, J.D.C.; Diehl, J.C.; Snelders, D. A framework for a systems design approach to complex societal problems. *Des. Sci.* **2019**, *5*, 1–32. [CrossRef]
42. Sevaldson, B. GIGA-Mapping: Visualisation for complexity and systems thinking in design. *Nordes* **2011**. [CrossRef]
43. van der Bijl-Brouwer, M.; Malcolm, B. Systemic Design Principles in Social Innovation: A Study of Expert Practices and Design Rationales. *She Ji J. Des. Econ. Innov.* **2020**, *6*, 386–407. [CrossRef]
44. Dewit, I.; Jacoby, A.; Matthyssens, P. Design Preconditions for Product–Service Integration. *Designs* **2021**, *5*, 29. [CrossRef]
45. Aguirre, M.; Agudelo, N.; Romm, J. Design Facilitation as Emerging Practice: Analyzing How Designers Support Multi-stakeholder Co-creation. *She Ji J. Des. Econ. Innov.* **2017**, *3*, 198–209. [CrossRef]
46. Nogueira, A.; Ashton, W.S.; Teixeira, C. Expanding perceptions of the circular economy through design: Eight capitals as innovation lenses. *Resour. Conserv. Recycl.* **2019**, *149*, 566–576. [CrossRef]
47. Cuppen, E. Diversity and constructive conflict in stakeholder dialogue: Considerations for design and methods. *Policy Sci.* **2012**, *45*, 23–46. [CrossRef]
48. Jackson, M.C. Reflections on the development and contribution of critical systems thinking and practice. *Syst. Res. Behav. Sci.* **2010**, *27*, 133–139. [CrossRef]
49. Christakis, A.N. An Epic Learning Journey: From the Club of Rome to Dialogic Design Science and DEMOSOPHIA. In *Social System and Design*; Springer: Tokyo, Japan, 2014; pp. 37–69. [CrossRef]
50. Hussain, S.; Sanders, E.B.N.; Steinert, M. Participatory design with marginalized people in developing countries: Challenges and opportunities experienced in a field study in Cambodia. *Int. J. Des.* **2012**, *6*, 91–109.
51. Stirling, A. "Opening Up" and "Closing Down" Power, Participation, and Pluralism in the Social Appraisal of Technology. *Sci. Technol. Hum. Values* **2008**, *23*, 262–294. [CrossRef]
52. Hoven, J.V.D.; Vermaas, P.E.; van de Poel, I. Design for Values: An Introduction. In *Handbook of Ethics, Values, and Technological Design*; Springer Netherlands: Dordrecht, The Netherlands, 2015; pp. 1–7. Available online: http://link.springer.com/10.1007/978-94-007-6970-0_40 (accessed on 14 October 2022).
53. Gharajedaghi, J. Holistic Thinking. In *Systems Thinking.*, 2nd ed.; Elsevier: Amsterdam, The Netherlands, 2012; pp. 89–108. Available online: https://linkinghub.elsevier.com/retrieve/pii/B9780123859150000052 (accessed on 17 December 2022).
54. Godsiff, P.; Maull, R.; Davies, P. Systems Behaviour and Implications for Service-Dominant Logic. *SAGE Handb. Serv. Log.* **2019**, 214–229. [CrossRef]
55. Collins, P. Black Feminist Thought in the Matrix of Domination. *Black Fem. Thought Knowl. Conscious. Politics Empower.* **1993**, *625*, 615–625.
56. Star, S.L.; Griesemer, J.R. Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907–1939. *Soc. Stud. Sci.* **1989**, *19*, 387–420. [CrossRef]
57. Callon, M. Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of Saint-Brieuc Bay. *Philos. Lit. J. Logos* **1984**, *27*, 49–90. [CrossRef]
58. Ligtvoet, A.; Cuppen, E.; Di Ruggero, O.; Hemmes, K.; Pesch, U.; Quist, J.; Mehos, D. New future perspectives through constructive conflict: Exploring the future of gas in the Netherlands. *Futures* **2016**, *78–79*, 19–33. [CrossRef]
59. Visser, F.S.; Stappers, P.J.; Van Der Lugt, R.; Sanders, E.B.-N. Contextmapping: Experiences from practice. *Codesign* **2005**, *1*, 119–149. [CrossRef]
60. Avelino, F.; Wittmayer, J.M. Shifting Power Relations in Sustainability Transitions: A Multi-actor Perspective. *J. Environ. Policy Plan.* **2016**, *18*, 628–649. [CrossRef]
61. Dorst, K.; Hansen, C.T. Modeling paradoxes in novice and expert design. In *International Conference on Engineering Design*; Technical University Of Denmark: Lyngby, Denmark, 2011.
62. Rhodes, C.; Brown, A.D. Narrative, organizations and research. *Int. J. Manag. Rev.* **2005**, *7*, 167–188. [CrossRef]
63. Van Dijk, T.A. *Context in the Language Sciences*; John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2015.

64. van den, V.M.; Mörtberg, C. *Handbook of Ethics, Values, and Technological Design*; van den Hoven, J., Vermaas, P.E., van de Poel, I., Eds.; Springer: Dordrecht, The Netherlands, 2021; pp. 1–22. Available online: http://link.springer.com/10.1007/978-94-007-6994-6 (accessed on 29 April 2023).
65. Pestoff, V.A. Third sector and co-operative services—An alternative to privatization. *J. Consum. Policy* **1992**, *15*, 21–45. [CrossRef]
66. Price, R.; Matthews, J.; Wrigley, C. Three Narrative Techniques for Engagement and Action in Design-Led Innovation. *She Ji J. Des. Econ. Innov.* **2018**, *4*, 186–201. [CrossRef]
67. Dalsgaard, P. Pragmatism and design thinking. *Int. J. Des.* **2014**, *8*, 143–155.
68. Delw, N. *Imagineering the Butterfly Effect: Complexity and Collective Creativity in Business and Policy*; University of Groningen: Groningen, The Netherlands, 2014.
69. Dorst, K. *Frame Innovation: Create New Thinking by Design*; Massachusetts Institute of Technology: Cambridge, MA, USA, 2015.
70. Flanagan, T.R. *Social Systems and Design*; Metcalf, G.S., Ed.; Translational Systems Sciences; Springer: Tokyo, Japan, 2014; Volume 1, pp. 147–166. Available online: http://link.springer.com/10.1007/978-4-431-54478-4 (accessed on 9 September 2022).
71. Cuppen, E.; Ejderyan, O.; Pesch, U.; Spruit, S.; van de Grift, E.; Correljé, A.; Taebi, B. When controversies cascade: Analysing the dynamics of public engagement and conflict in the Netherlands and Switzerland through "controversy spillover". *Energy Res. Soc. Sci.* **2020**, *68*, 101593. Available online: https://linkinghub.elsevier.com/retrieve/pii/S2214629620301687 (accessed on 29 April 2023). [CrossRef]
72. Avelino, F.; Rotmans, J. Power in Transition: An Interdisciplinary Framework to Study Power in Relation to Structural Change. *Eur. J. Soc. Theory* **2009**, *12*, 543–569. [CrossRef]
73. Muir, K.J.; Keim-Malpass, J. Analyzing the concept of spillover effects for expanded inclusion in health economics research. *J. Comp. Eff. Res.* **2020**, *9*, 755–766. [CrossRef] [PubMed]
74. Meyer, D.S.; Whittier, N. Social Movement Spillover. *Soc. Probl.* **1994**, *41*, 277–298. [CrossRef]
75. Paulsen, K.S. *Integrated Storytelling by Design*, 1st ed.; Routledge: London, UK, 2021; Available online: https://www.taylorfrancis.com/books/9781003014454 (accessed on 2 July 2022).
76. Fleischmann, K.R. Boundary Objects with Agency: A Method for Studying the Design–Use Interface. *Inf. Soc.* **2006**, *22*, 77–87. [CrossRef]
77. Aguirre-Ulloa, M.; Paulsen, A. Co-designing with relationships in mind. *Forsk. Des Og Des.* **2017**, *10*, 1–14. [CrossRef]
78. Carlile, P.R. A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development. *Organ. Sci.* **2002**, *13*, 442–455. [CrossRef]
79. Latour, B. The powers of association. *Sociol Rev.* **1984**, *32*, 264–280. [CrossRef]
80. Akkerman, S.F.; Bakker, A. Boundary Crossing and Boundary Objects. *Rev. Educ. Res.* **2011**, *81*, 132–169. [CrossRef]
81. Guindon, R. Designing the Design Process: Exploiting Opportunistic Thoughts. *Hum. Comput. Interact.* **2011**, *5*, 305–344. [CrossRef]
82. Norman, D.; Verganti, R. Incremental and Radical Innovation: Design Research vs. Technology and Meaning Change. *Des. Issues* **2014**, *30*, 78–96. [CrossRef]
83. Cullati, S.; Bochatay, N.; Maître, F.; Laroche, T.; Muller-Juge, V.; Blondon, K.S.; Perron, N.J.; Bajwa, N.M.; Vu, N.V.; Kim, S.; et al. When Team Conflicts Threaten Quality of Care: A Study of Health Care Professionals' Experiences and Perceptions. *Mayo Clin. Proceedings: Innov. Qual. Outcomes* **2019**, *3*, 43–51. [CrossRef] [PubMed]
84. Sanders, E.B.-N.; Stappers, P.J. Probes, toolkits and prototypes: Three approaches to making in codesigning. *Codesign* **2014**, *10*, 5–14. [CrossRef]
85. Westley, F.; Antadze, N.; Riddell, D.J.; Robinson, K.; Geobey, S. Five Configurations for Scaling Up Social Innovation. *J. Appl. Behav. Sci.* **2014**, *50*, 234–260. [CrossRef]
86. Zaidi, L. Worldbuilding in science fiction, foresight and design. *J. Futur. Stud.* **2019**, *23*, 15–26.
87. Vigliano Relva, J.; Jung, J. Through the Eyes of Another: Using a Narrative Lens to Navigate Complex Social-Ecological Systems and to Embrace Multiple Ways of Knowing. *Front. Mar. Sci.* **2021**, *8*, 678796. [CrossRef]