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Facilitating organizational flexibility

a design based study of complex service environments

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Facilitating organizational flexibility:

A design based study of complex service environments

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Preface

Before you, dear reader, lies my master thesis, the summary of my research efforts during the last phase of my studies at the Eindhoven University of Technology. Written at the Zandbeek Communication Group, it describes a design oriented study of complex service environments. I chose this topic because of its representation of the current 'trend' of our society as a whole. Spurred on by the 2004 article of Vargo & Lusch; "Evolving to a New Dominant Logic for Marketing", my interest in viewing the world as a network of service providers pushed me to rethink my assumptions about organizational science. As you might notice throughout this paper, traditional 'enlightened' research practices have been not been neglected, but definitely took a step back. With this in mind I first and foremost have thank dr. Van Eijnatten for introducing and continuously aiding me in understanding the concepts and implications of chaos & complexity science and design based research practices. Chaos & complexity theory still baffles me in the details, but did provoke a mindset change in my view towards research practices.

The main body of my research project took place at the Zandbeek Communication Group in Eindhoven. Here I worked in an environment that struck me by its informal nature, organic feel, and openness to new information. Although not familiar with the workings of a communication agency, I not once felt viewed as an intruder. I therefore have to thank my company supervisor Fleur van Zandbeek for taking on the responsibility of translating the scientific lingo into real life situations. What struck me about Fleur was here eagerness in taking on new challenges.

Last but not least, I would like to thank everyone that, through whatever means, stimulated, motivated, and facilitated me in my research endeavors, thank you.

Tom Vranken
July 2011, Eindhoven

Abstract

Background – This thesis was spurred on by the need to apply work design theory in complex service environments. In conjunction with the Zandbeek Communication Group a research was defined with the goal of increasing Van Zandbeek's flexibility, i.e. its ability to effectively self-organize itself around a customer need. The research was a problem oriented, design based research project and consisted of two main stages, namely (1) Diagnosis and (2) Design.

Results – Organizational diagnosis revealed that lack of knowledge sharing was a major organizational issue in the organization. This research project advocated an intervention based on the principles of dialogue in order to create a learning organization.

Conclusions – Facilitating organizational dialogue is one step in the process of developing towards a network organization, and is a vital tool for complex service companies to continuously renew themselves and the value proposition they voice toward the market.

Keywords – Work Design, Flexibility, Design Based Research, Complex Service, Dialogue

Executive summary

Spurred on by the developments in service science literature, this design based project seeks to maximize the positive aspects of organizational flexibility in complex service environments. Organizational flexibility here refers to the organization's ability to react to its environment. Being a design based project, the project followed the regulative cycle. The regulative cycle consists of five phases, namely: problem definition, diagnosis, design, intervention, and evaluation. I will here briefly discuss the findings during each step.

Problem definition

The problem definition stage consisted of defining a problem statement so that it will guide the project's actions. During informal meetings before the project started, the project goal was said to be to increase organizational flexibility. The problem statement step clarified the notion of organizational flexibility as being "(1) The ability to identify and shape potential co-creation opportunities; (2) The ability to integrate these opportunities by means of planning; and (3) The ability to implement and measure these opportunities" (Payne et al., 2008, p. 86). Organizational flexibility is here seen as a requirement to be a continuously learning organization. According to service-science literature, the ability for an organization to continuously learn is seen as the prerequisite of long term survival.

In addition to the project goal, organizational parameters were defined on the basis of an intuitive analysis of the problem statement[1]. These three organizational parameters differentiate between three types of organizational inertia, and are defined as: (1) Organizational structure; (2) Individual work structures and routines; and (3) Role of IT systems. These three parameters guided the diagnosis in terms of data collection.

Diagnosis

Diagnosis involves the process of producing specific knowledge of the context and nature of the management problem. Diagnosis involved data collection and analysis. Data collection was done by means of semi-structured interviews. During these interviews organizational parameters were used as themes, guiding the interview. Data analysis involved a consensus analysis based on the work of Porras (1987) and resulted in a stream analysis chart (see Figure 1). The diagnosis identified eleven bottlenecks which were later categorized in terms of their placement within the stream analysis[2].

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[1] See Figure 5.
[2] Bottlenecks were classified as external root causes, root causes, contextual bottlenecks, mediating bottlenecks, and symptoms.

Lack of knowledge sharing was identified as the single root cause falling within the scope of influence for this project. The design step of the regulative cycle focused on improving knowledge sharing in order to increase organizational flexibility, i.e. its learning capacity.
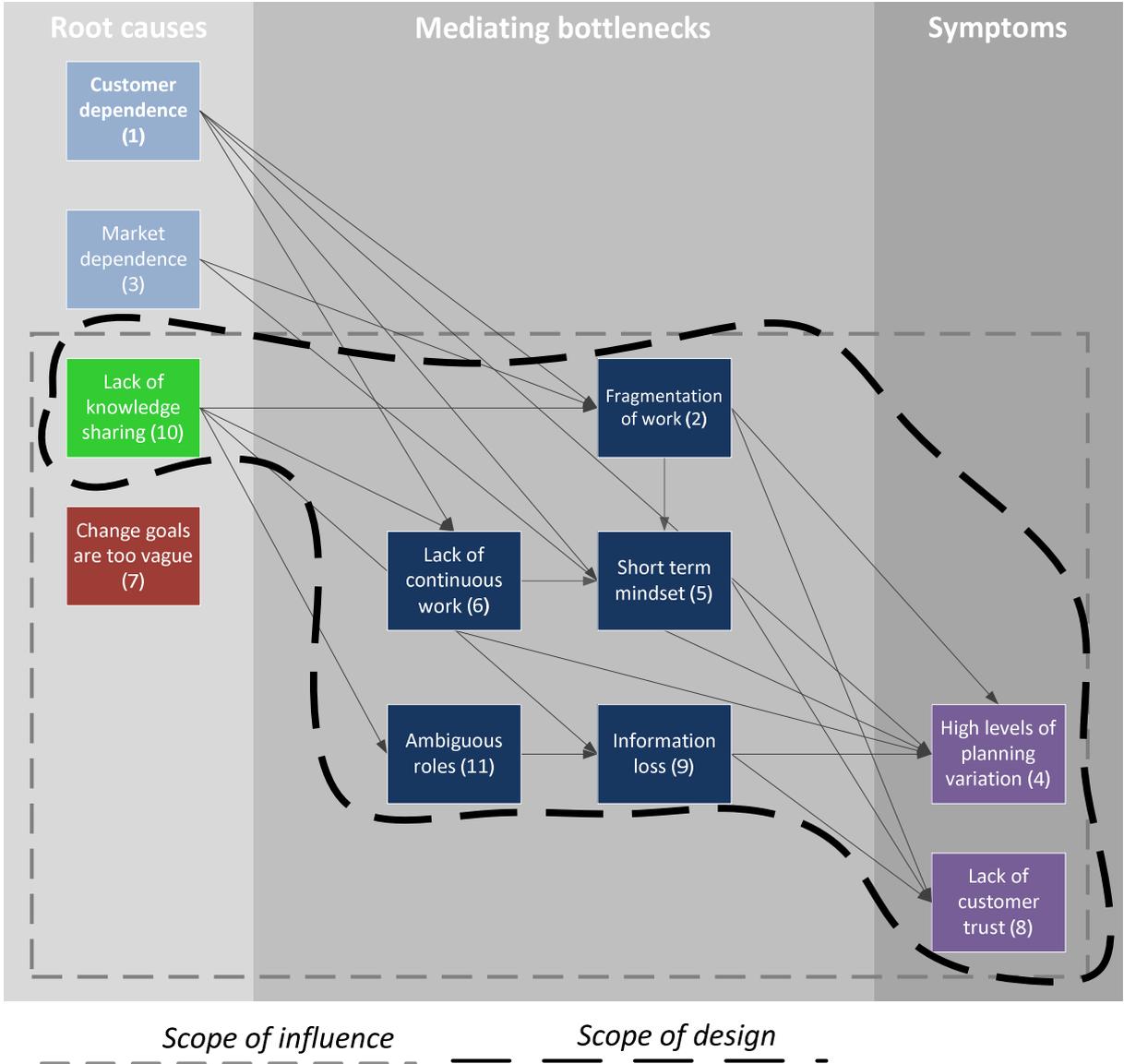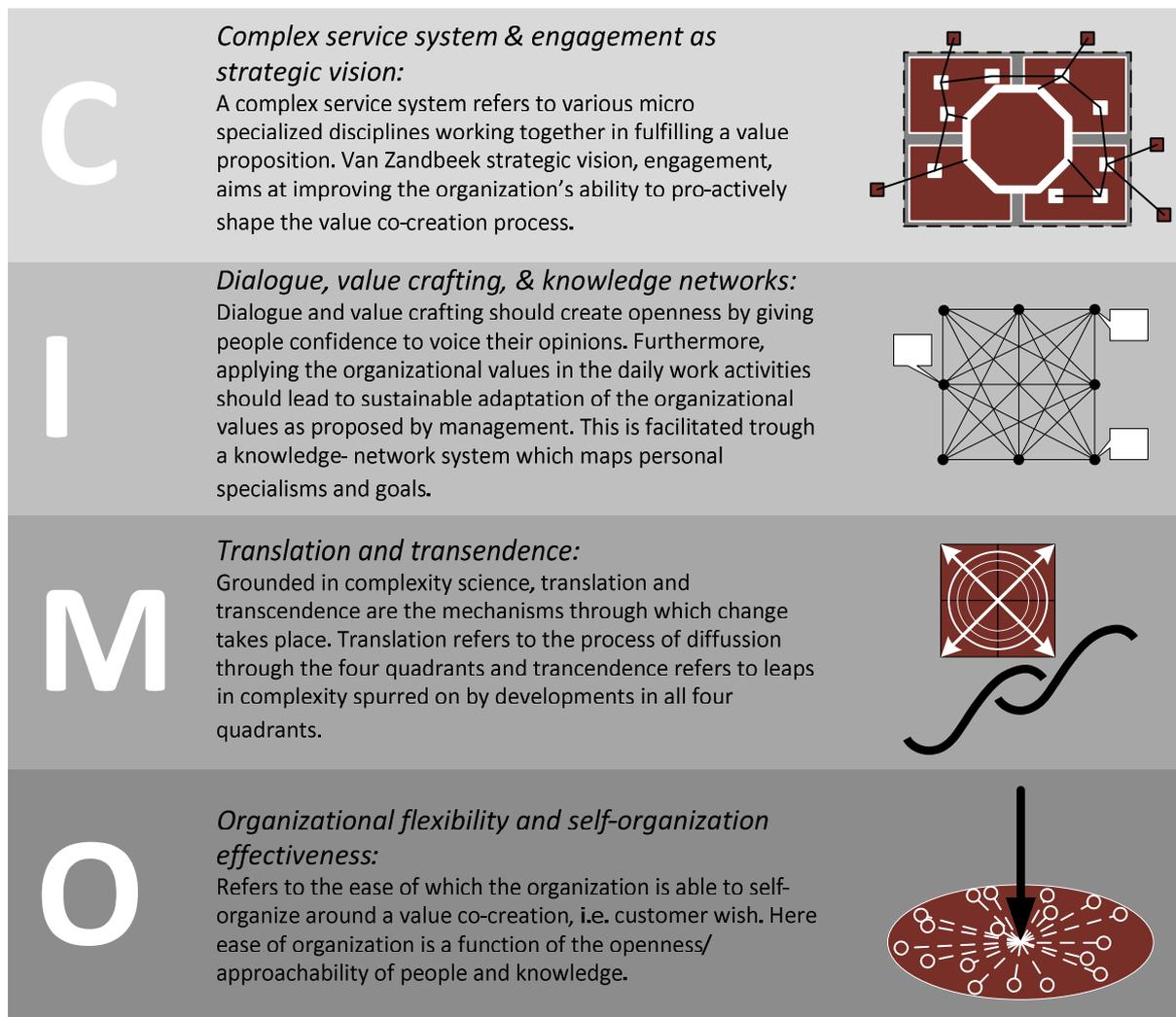

| Root causes | Mediating bottlenecks | Symptoms |

- Customer dependence (1)
- Market dependence (3)
- Lack of knowledge sharing (10)
- Change goals are too vague (7)
- Fragmentation of work (2)
- Lack of continuous work (6)
- Short term mindset (5)
- Ambiguous roles (11)
- Information loss (9)
- High levels of planning variation (4)
- Lack of customer trust (8)

Scope of influence — — *Scope of design*

Figure 1, Stream analysis

Design

The design step of the project followed the CIMO logic as proposed by Denyer et al. (2008). The CIMO logic states that: "in this class of problematic Context (C), use this Intervention type (I) to invoke these generative Mechanisms (M) to deliver these Outcome(s) (O)" (2008, p. 395-396). As depicted in Figure 2, service-science literature and Van Zandbeek's strategy are seen as the design context. As mentioned earlier, the project's goal is to increase the organization's flexibility, i.e. its flexibility and self-organization effectiveness (O).

C

Complex service system & engagement as strategic vision:
A complex service system refers to various micro specialized disciplines working together in fulfilling a value proposition. Van Zandbeek strategic vision, engagement, aims at improving the organization's ability to pro-actively shape the value co-creation process.

I

Dialogue, value crafting, & knowledge networks:
Dialogue and value crafting should create openness by giving people confidence to voice their opinions. Furthermore, applying the organizational values in the daily work activities should lead to sustainable adaptation of the organizational values as proposed by management. This is facilitated trough a knowledge- network system which maps personal specialisms and goals.

M

Translation and transendence:
Grounded in complexity science, translation and transcendence are the mechanisms through which change takes place. Translation refers to the process of diffussion through the four quadrants and trancendence refers to leaps in complexity spurred on by developments in all four quadrants.

O

Organizational flexibility and self-organization effectiveness:
Refers to the ease of which the organization is able to self-organize around a value co-creation, **i.e.** customer wish. Here ease of organization is a function of the openness/ approachability of people and knowledge.

Figure 2, Design outcome

As with the diagnosis step, the design step involves collection and analysis of data. Data collection entails divergent data collection on possible design interventions that could contribute to the organization's goal. Data analysis involved the process of selecting the most appropriate design intervention(s). Selection occurred on the basis of user and managerial requirements. A combination of dialogue sessions based on the principles of value crafting and a knowledge network system were found as the most promising combination of design interventions (I).

With its methodological foundations in chaos and complexity theory, translation and transcendence were identified as the mechanisms (M) through which the interventions work in order to lead to a certain outcome[3].

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[3] I will not go into detail concerning the process of transcendence and translation, information can be found in the following sections: 3.2, 3.3.2.1, and 3.3.2.2.

Intervention

Because of the project's time restrictions it was not possible to achieve full implementation. The intervention step involved a trial session of the dialogue/value-crafting intervention conducted by the researcher in the presence of the intended owner of the intervention. Due to time restrictions, it was not possible to complete a trial intervention with regard to the knowledge-network system

Evaluation

Because of the emergent nature of the behavior intended to stimulate, it is not possible to accurately predict the trial session's outcome. Rather effects that were expected to emerge are defined, see Table 1. Table 1 furthermore depicts the outcomes found during the evaluation step of the project. Data collection during evaluation was done by means of a questionnaire. Data analysis was done on the basis of frequency plots.

Table 1, Evaluation outcomes

Effect expected to emerge	Mean score	Outcome of evaluation
Dialogue sessions as a platform for open communication on all levels (Bohm et al., 1991).	6.6/7	Fully emerged
Giving meaning to organizational values (Holloway et al., 2011)	3.7/7	-
Finding shared meaning (Bohm et al., 1991).	3.7/7	-
Increasing organizational knowledge sharing (found as main organizational bottleneck, see section 5.1).	3.4/7	-
Dialogue as a means of creating a learning organization (Eijnatten & Galen, 2007).	4.9/7	Partially emerged
Integration in daily work routines	5.6/7	Almost fully emerged

Conclusion

This project highlighted the importance of organizational flexibility. Because of the dynamic and emergent nature of work within complex service environments it is impossible to adhere to strict routines and formalized structures. In order to maximize the organization's effectiveness, the organization's self-organizing capacity needs to be increased. In this project this was achieved by forwarding knowledge transparency and dialogue. Recognizing the importance of flexibility and organizational dialogue can be seen as a shift from a matrix to a network organization.

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1 Introduction

This chapter will introduce the reader to the research project by describing the context of the project, the project's goals, and the organization of the project. Section 1.1 will elaborate on the project in terms of the its nature and organization. Section 1.2 will described the organization in which the project will take place. Section 1.3 will elaborate on the specific context of the project. Lastly, section 1.4 will elaborate on the organization of the report.

1.1 Nature and organization of research

This section will discuss the nature and the organization of this research project. The nature of the research refers to the research's orientation and the researcher's view towards the function of research within the field of organizational science, namely design oriented research. This perspective is important because of its implications for the organization and goals of this projects. Section 1.1.1 will elaborate on design oriented research. The organization of the research project will follow the reflective cycle (Van Aken, 1994; Van Aken et al., 2007, see section 1.1.2) and will be limited to interventions concerning organizational cultures, structures and individual work packages, see section 1.1.3. Section 1.1.4 will discuss the value of this project for relevant research fields.

1.1.1 Design oriented

Following Van Aken (2007) and Denyer et al. (2008), the field of organizational science is seen as a design oriented discipline. "A major aim of design science research on a certain class of problems is to develop design propositions on alternative types of solutions for this class of field problems" (Van Aken, 2007, p. 3). These design propositions are based on a certain context in which interventions take place that through general mechanisms lead to a certain outcome (Deyner et al., 2008). Design science researchers engage in knowledge intensive problem solving design projects[4].

1.1.2 Reflective cycle

The research is guided by the regulative cycle (Van Aken, 1994; Van Aken et al., 2007), which by nature makes the research problem focused. Here research in social sciences is seen as practical and action directed, i.e. design oriented (Van Aken, 1994)[5]. In its simplest form, the goal in the research is to diagnose an organization based on a problem definition, and to design solutions to improve the situation at hand.

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[4] Within the IS community, there is an ongoing debate between design-science research on one hand and action research on the other hand (Hevner et al., 2004). The goal of this project is to produce context specific solutions based on general mechanisms described in theory, making the project design-science based, rather than action research (Papas et al., 2012).

[5] See section 1.1.1.

The scope of the research will involve the full regulative cycle, namely: problem definition, diagnosis, design, intervention, and evaluation (Figure 3). The diagnosis stage of the research will produce specific knowledge of the context and nature of the management problem. Then the design stage will design a solution to the management problem on the basis of the outcomes of the diagnosis and the theoretical background. Here an improvement direction will be chosen and interventions will be designed to improve the situation. A trail will be held in the intervention stage, which will be evaluated in the evaluation stage.
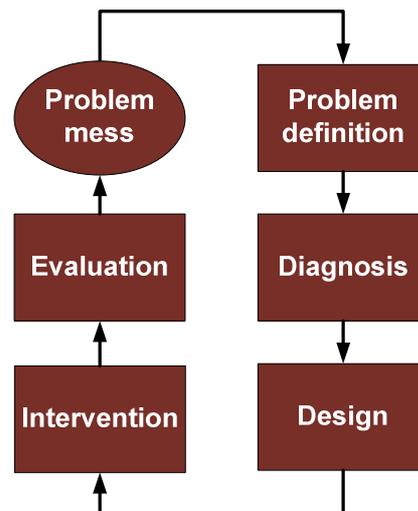
Figure 3, Regulative cycle

1.1.3 Boundaries of the research

The research preparation focused on the area of work design in complex service environments. Interventions in this area involve changes to organizational cultures, structures, and individual work packages. Research actions should be limited to this specialization.

The final deliverable is subjected to time restrictions and is therefore not a complete and implemented solution. The final deliverable entails a design deliverable which will be an advisory statement to Van Zandbeek Communication in their quest to become a more flexible organization.

1.1.4 Value for relevant research fields

This research adds value to three relevant disciplines within organizational science, namely: (1) Work design; (2) Service science; and (3) Information systems. Work design is concerned with organizing work so that employee fulfillment and organizational goals are achieved to the highest level possible (Cummings & Worley, 2007 p. 376). This research contributes to the understanding of how work design principles on both individual and organizational level lead to certain organizational outcomes in complex service environments. Service science, as an emergent field, is limited in examples of practical implementation and integration with other research disciplines (Vranken, 2012a). This research thus contributes to service science by using service-science principles in an action-based research setting. Information-systems research benefits from this research because of its integration with other disciplines in a single research project. Here information systems are seen a means and/or facilitator in organizational design.

1.2 Company description

This research project is conducted at the Zandbeek Communication Group in Eindhoven, The Netherlands. Van Zandbeek is one of The Netherlands' major communication agencies. The Zandbeek Communication Group was established by Willem Van Zandbeek, Ad van Beers, and Jos Feijen in 1995. Originally founded as an PR-agency, Van Zandbeek evolved to a multidisciplinary partner in corporate communication. Van Zandbeek provides customer specific advisory projects. Besides the Eindhoven office, Van Zandbeek also has locations in Maastricht and Nijmegen and is an active member in European communication networks.

1.2.1 Collective of organizations

Acquisition has always played a major role in the development of the organization. Van Zandbeek considers itself as a collection of micro-specializations, providing a one stop solution. The process of acquisition and detachment enables Van Zandbeek to grow and direct itself towards a certain desired future position. The following sections briefly discuss Van Zandbeek's sub-organizations and their position within the research.

Nexwork

Nexwork develops websites and acts as an advisory function in the area of web-based communication. Van Zandbeek has a majority holding of Nexwork and considers Nexwork as an internal discipline. Although seen as an internal discipline, Nexwork still adheres to its own procedures and is said to have an unique culture. Therefore Nexwork will not be included in the organizational diagnosis, rather Nexwork will be seen as a reference point when necessary.

Ravestein & Zwart

Ravestein & Zwart is concerned with high-end textual problems. The value that Ravestein & Zwart adds to the Zandbeek Communication Group is expertise in the area of 'content rich' writing. Van Zandbeek has invested in Ravenstein & Zwart but does not have the majority holding rights. Ravestein & Zwart is seen as a semi-external source of competence.

Dialogic

Based in Brussels, Dialogic focuses on public relations and public affairs. As with Ravenstein & Zwart, Dialogic is seen as a semi-external source of competence.

Events

Van Zandbeek is beginning to focus more and more on the interaction between digital, written, and life media. Expertise in the field of events is beginning to take shape within the Zandbeek Communication Group. Because of its pure integration, events will be included in the diagnosis.

<u>CMM</u>

The latest addition to the Zandbeek Communication Group is the marketing agency CMM. CMM focuses itself in the area of direct and database marketing. Van Zandbeek obtained the majority holding right of CMM, thus CMM will be included in the organizational diagnosis.

1.2.2 Organizational knowledge flows and organization of work

Van Zandbeek relatively recently introduced a client service director (CSD) based structure. CSDs are responsible for the interaction with customers and translating the customer's wishes into work packages. This involves integrating certain disciplines into the project and providing them with the necessary knowledge and specifications. CSDs have the highest level of responsibility with respect to customer interaction. A CSD often delegates tasks to the senior consult or project manager. This group of functions is named 'account'. Account is responsible for coordinating work and guiding the disciplines involved. These disciplines are: (1) Strategy; (2) Public relations; (3) Art & concept; (4) Marketing; (5) Studio; (6) Copy; and (7) Events. Work within the disciplines strategy and public relations is coordinated by a discipline manager and frequent feedback sessions occur. Work within arts & concept and the studio is coordinated by 'traffic'. Traffic is responsible for planning and coordination of work concerning the creative disciplines. For job holders within the creative disciplines tasks are planned in specific timeframes.

1.2.2.1 Organizational structure

Van Zandbeek is structured as an process or project driven matrix organization. Figure 4 shows Van Zandbeek's organigram.
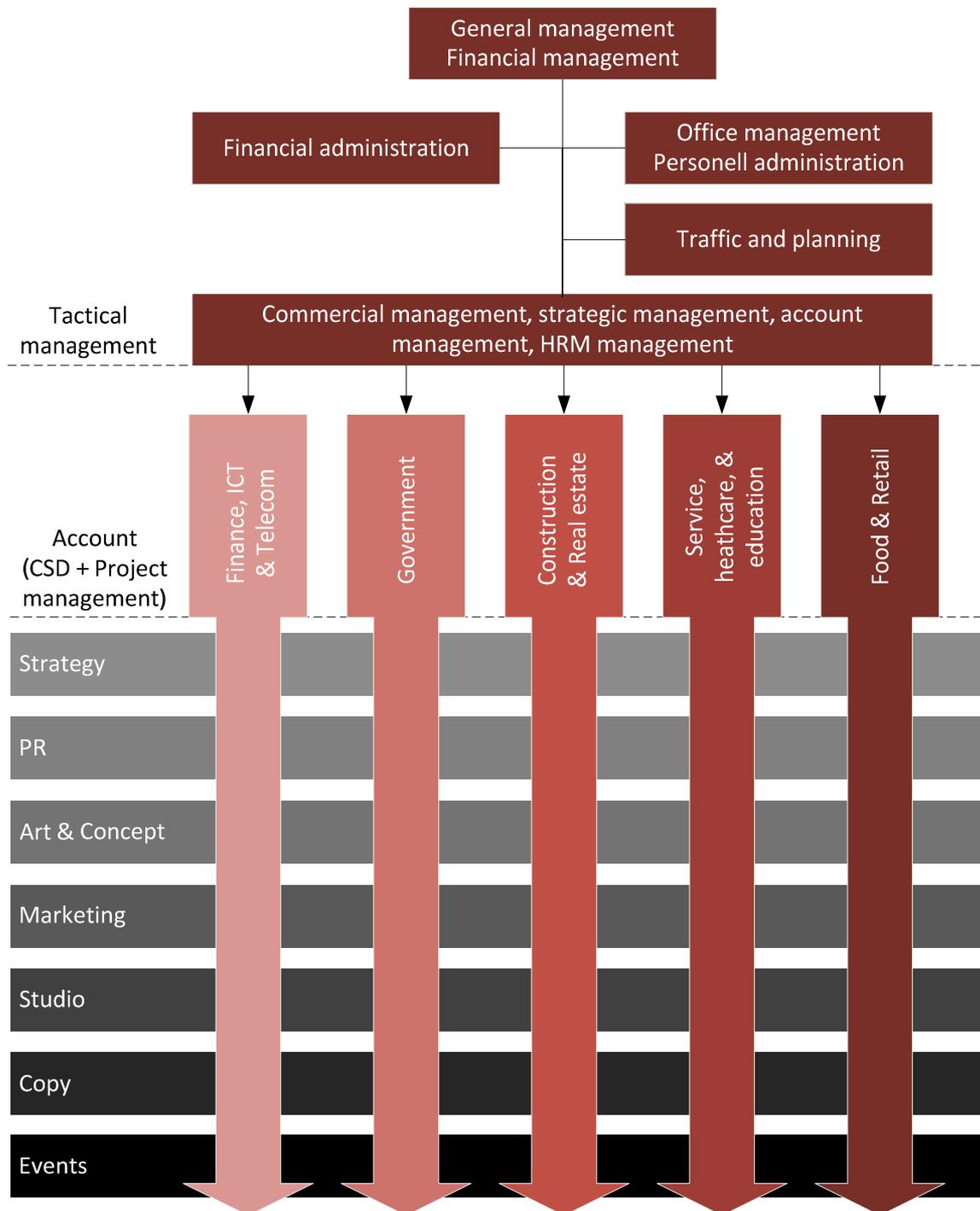
Figure 4, Van Zandbeek's organigram

<u>Levels of authority</u>

Four general authority levels exist. The general and financial management is the highest authority level and is responsible for the company as a whole including its strategic decisions within the environment it operates in. The second authority level entails managerial functions in the area of commercial activities, strategy, account, and HRM. These managerial functions operationalize decisions made by the general/financial management layer. This management level overlaps to a high extent with the level of account. Account plays a major role in the process structure Van Zandbeek adheres to. Account is composed of client service directors (CSDs), project managers, and consultants. Members of the second management layer all are also CSDs. The account layer is responsible for customer specific project management activities. The forth layer of authority consists of the four disciplines responsible for applying their specialism to the project at hand, i.e. execution of micro specialized tasks in the context of a client specific situation.

Besides the authority layers, three supporting functions exists, namely: (1) Financial administration; (2) Office and personnel management; and (3) Traffic and planning. Besides traffic and planning, these supporting functions are not company specific and their objectives and activities are assumed to be known. Traffic and planning is responsible for planning internal and external suppliers, the responsibilities of this function will become clear in the next sections.

<u>Process/project structure</u>

Given the authority structure discussed in the previous section, Van Zandbeek's customer specific projects which define daily work for account and the specialized disciplines are guided by a process structure (indicated in Figure 4). Besides the roles of account, traffic, and the specialized disciplines, no formal project management practices are defined in the organization. Based on the client's project specifications teams are composed. Five general customer clusters exist, namely: (1) Finance; ICT & Telecom; (2) Government; (3) Construction & Real estate; (4) Service, Healthcare, & Education; and (5) Food & Retail.

<u>Knowledge/work flows</u>

Because of the strong coordinating role of account, providing the disciplines involved with the information required to perform a certain task is one of account's main responsibilities. Account is the sole connection between the customer and Van Zandbeek. Therefore extracting the specific information from customers is one of the main functions of account. The rationale for account's sole responsibility for customer contact is one based on the idea of maximizing the customer's ease of contact and the organization's control over customer interaction.

Division of work

As mentioned earlier, the division of work is subjected to the subjective translation of the customer's wishes by account. Disciplines are included on the basis of the projects specifications. No standard solution and/or process exist and planning is project specific. Except for art & concept, studio, and copy all disciplines are contacted directly. Within the discipline, work is delegated by the discipline's manager. For art & concept, studio, and copy work is organized through traffic. Work within the creative disciplines is often highly fragmented and characterized by a lack of control.

1.2.3   Economic model

At the beginning of a project, Van Zandbeek estimates the number of hours the different disciplines are going to spend on the tasks at hand. Every function has its own specific hourly fee. Van Zandbeek monitors its financial performance real-time by means of the cumulative hours spend on a certain project. Based on their job content, job holders have targets for hours directly spend on value adding activities. Here differentiation is made between new business generating hours, direct value adding hours, and non value adding hours. There are no indications that these targets are enforced by management.

1.3   Context

Van Zandbeek recently engaged in an organizational change project and experienced difficulties with the organization's resistance to change. Van Zandbeek sees its ability to change as a prerequisite for sustainability. In the communication industry, the market is shifting from one-stop-shop service to specialized service providers and from analogue to digital and interactive. Companies more and more operate in a network of specialized service providers. The ability to adjust to these market forces, and changes in the environment to come, is seen as Van Zandbeek's ability to long-term survival. Based on resistance to change as the management problem, the researcher and Van Zandbeek decided to define a problem oriented and design based research project. A research proposal was defined and used as a guideline for the actual research project, see Vranken (2012b).

1.3.1   Strategic fit

Van Zandbeek relatively recently underwent a strategic repositioning. In this project Van Zandbeek critically reflected on the organization's values and its position in the market. This section will discuss the relevant strategic implications on the project. Adherence to the organization's strategy is a requirement in a sustainable design. The relevant strategic propositions are: (1) Van Zandbeek as an 'engaged organization' (section 1.3.1.1); and (2) The definition of Van Zandbeek's core values (1.3.1.2).

1.3.1.1 Engagement

Van Zandbeek considers itself as an engaged organization (Zandbeek Communication Group, 2011). Engaged means the organization's ability to contribute to and actively pursue improvements beneficial to the customer's process. Engagement requires high levels of customer trust, and freedom to engage in activities without adhering to formal routines. In light of the design process, this implies that the design should be directed so that job holders across all functions are able to actively contribute to furthering both Van Zandbeek's as well as the customer's business.

1.3.1.2 Core values

During their strategic repositioning, Van Zandbeek defined five organizational values. These values were directed at creating a certain organizational mindset in support of the organization's positioning, i.e. engagement. These core values are[6]: (1) Open; (2) Motivated; (3) Commercial; (4) Pragmatic; and (5) Enthusiastic. These values should foster suitable work attitudes and create the mindset required for the organization to be truly engaged.

1.4 Organization of report

This section will guide the reader by elaborating on the organization of the report. Chapter 2 starts with elaborating on the problem definition which will be a guideline throughout the research project. Section 2.1 will introduce the problem statement and will elaborate on its causal structure. Section 2.2 will describe the goals within the research, followed by the project's goal (section 2.3). Section 2.4 will introduce three organizational parameters which will guide the diagnosis. Chapter 3 will go into detail concerning the theoretical background guiding the researcher during this project. Chapter 4 discusses the methods used in this project concerning the diagnosis (section 4.1), design (section 4.2), intervention (section 4.3), and evaluation (section 4.4). Chapter 5 will report on the results of the five stages brought forward by the methodology chapter. Chapter 6 will reflect on the project by formulating a formal conclusion. Chapter 7 will reflect on the project in terms of limitations, assumptions made, and the value of the research project and its implication for researchers and practitioners in the relevant fields.

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[6] Translated from Dutch, original values are: (1) Open; (2) Gedreven; (3) Commercieel; (4) Pragmatisch; and (5) Enthausiast.

2 Problem definition

As mentioned earlier, a need for analysis and redesign of the organizational structure was spurred on by an awareness of the mindset of the organization in organizational change projects. This section will go into further details concerning the project's organization and goals.

2.1 Problem statement

The management problem that Zandbeek Communication is struggling with is the resistance to change i.e. its inertia in light of change initiatives. This resistance to change has a profound impact on the future position of Van Zandbeek. Being a service oriented company, Van Zandbeek seeks to maximize its flexibility in delivering value. Value should be unique and customer specific. Resistance to change limits the organization's ability to continuously adjust to its environment. For example, in rigid organizations, job holders might find it difficult to go outside of their routines and deliver non-standard value propositions demanded by the market, something inherently linked with complex service environments. During this project, resistance to change experienced in organizational change initiatives served as an indicator of the organizational mindset during daily and long term activities. Figure 5 depicts an intuitive analysis of the management problem created during an open discussion session. The symptom is something experienced in the organization and the 'tangible artifact' of the management problem[7]. Symptoms of the management problem are lack of: flexibility, organizational learning, and efficiency. Resistance to change is something that arises from both individual/group, organization, and system level inertia (Cummings & Worley, 2008; Landy & Conte, 2006).
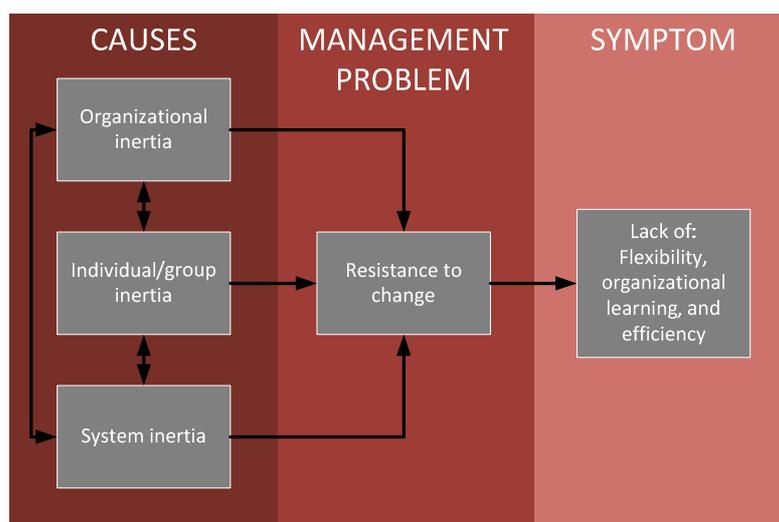
Figure 5, Causal diagram of the management problem

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[7] In line with Van Aken et al., a symptom is seen as "an unsatisfactory performance or a state-of-affairs that is directly related to an unsatisfactory performance" (2007, p. 47).

2.2 Goals within the research

The research project itself consists of five stages, namely; (1) Problem definition as discussed in the previous sections; (2) Diagnosis; (3) Design; (4) Intervention; and (5) Evaluation. This section will discuss the goals of each project step following the problem definition.

2.2.1 Diagnosis

The goal of the research in the analysis stage is to perform a diagnosis of the processes and elements that shape the three forms of inertia, i.e. the causes of resistance to change. The process of diagnosis will be discussed in section 4.1. During diagnosis, data will be collected and analyzed. The process of data collection and data analysis will focus on the organizational parameters underlying the causes of resistance to change, see section 2.4. The outcome of the diagnosis stage is a deep understanding of specific knowledge of the context and nature of the management problem. Furthermore a design direction is proposed. This design direction represent a promising adjustment to certain organizational parameters, which will be the input in the design stage.

2.2.2 Design

During the design stage the goal is to redesign parts of the organization's structure, culture, or systems so that the organization's flexibility and ability to learn is increased, i.e. the resistance to change is overcome. The direction of design will be based on the outcome of the diagnosis. In the design stage a balance has to be sought in participative and normative techniques so that both knowledge transfer and organizational ownership are facilitated.

2.2.3 Intervention and evaluation

The goal of the intervention and evaluation steps is to test and evaluate the aspects of the design that can be tested and evaluated during the time span available. This should lead to an indication of the effectiveness of the design.

The next section will describe the impact the research, i.e. the effect the design deliverable has on the organization.

2.3 Impact of the research

The impact of the research is improvement of organizational flexibility and the ability for the organization to learn. The outcome of the project is therefore aimed at the first steps toward optimizing the organization in terms of flexibility, and achieving an organizational mindset that will further the organization's change processes in the future. The following sections will elaborate on what organizational flexibility in complex service actually is and what contributes to 'good work' in complex service environments.
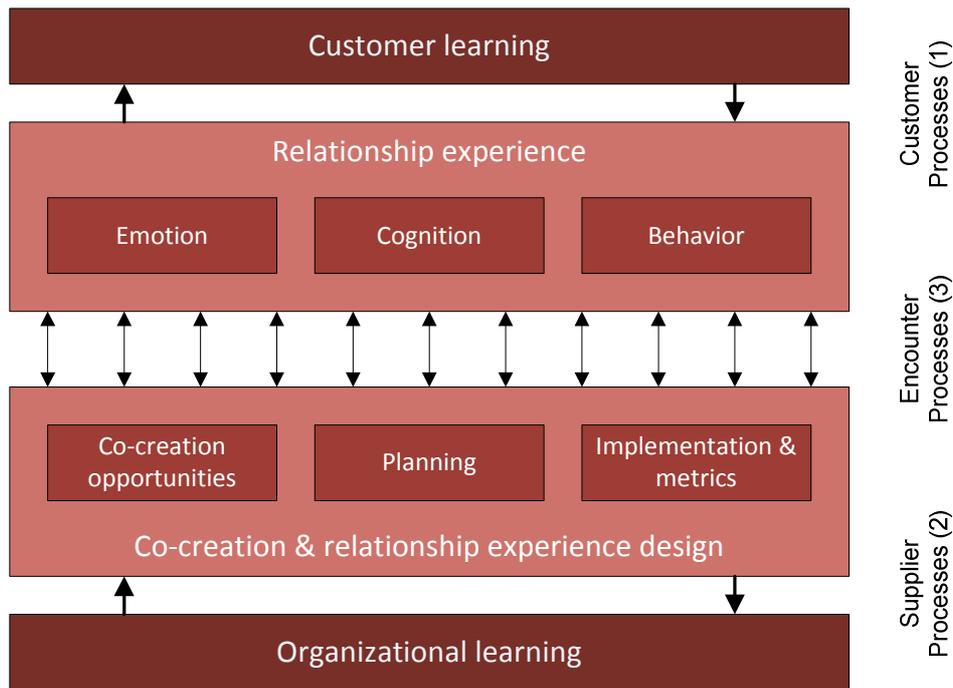
Figure 6, Conceptual framework for value co-creation, reproduced from Payne (2008, p. 86)

2.3.1 Flexibility and organizational learning

Complexity and service-science literature see organizations as bundles of micro-specialized skills which operate in a network and create value through interaction with others (Basole & Rouse, 2008). Payne et al. (2008) propose that an organization's goal is to learn from its encounters with its environment (see Figure 6). The main design goal here is to increase the organization's ability to use the interaction it has with its environment to further the organization itself. In their model, Payne et al. (2008, p. 86) propose three factors which define the organization's ability to redefine itself, i.e. its flexibility, namely: "(1) The ability to identify and shape potential co-creation opportunities; (2) The ability to integrate these opportunities by means of planning; and (3) The ability to implement and measure these opportunities" (Payne et al., 2008, p. 86). Organizational flexibility is seen as a requirement to become a continuously learning organization. This is in line with the assumption made in the intuitive analysis (Figure 5).

2.3.2 Good work in complex service

On an individual level, research on the fragmentation of time regimes and job crafting advocates balancing of subjective time regimes and self-definition of work. Good work here is seen as work that is high in intensity but still allows for an individual to engage in activities which are necessary for advancement of the organization, and of oneself (see theoretical background; Vranken, 2012a). Here, disruptive events should not overpower individuals in their long-term orientation.

2.4 Organizational parameters

In this section the organizational parameters for diagnosis and design are discussed. These are the observable and transformable parameters determining the three causes to resistance found by means of the intuitive analysis in chapter 1[8]. The three organizational parameters are defined on the basis of the cognitive framework developed in the literature study and are the following: (1) The organizational structure; (2) Individual work structures and routines; and (3) The role of IT systems. The next sections will further elaborate on these three parameters.

2.4.1 Organizational structure

Figure 7 depicts the framework of organizational structure diagnosis. This framework is based on the underlying theories and methodological foundations formulated in chapter 3. At the heart of the model lies value co-creation. The ties linking value co-creation to the entities in the organization represent the interplay between the entities involved and the process of creating value on an organizational level. In the context of the communication industry, value co-creation represents the dialogue between the customer and the communication agency in steering and finalizing design efforts.
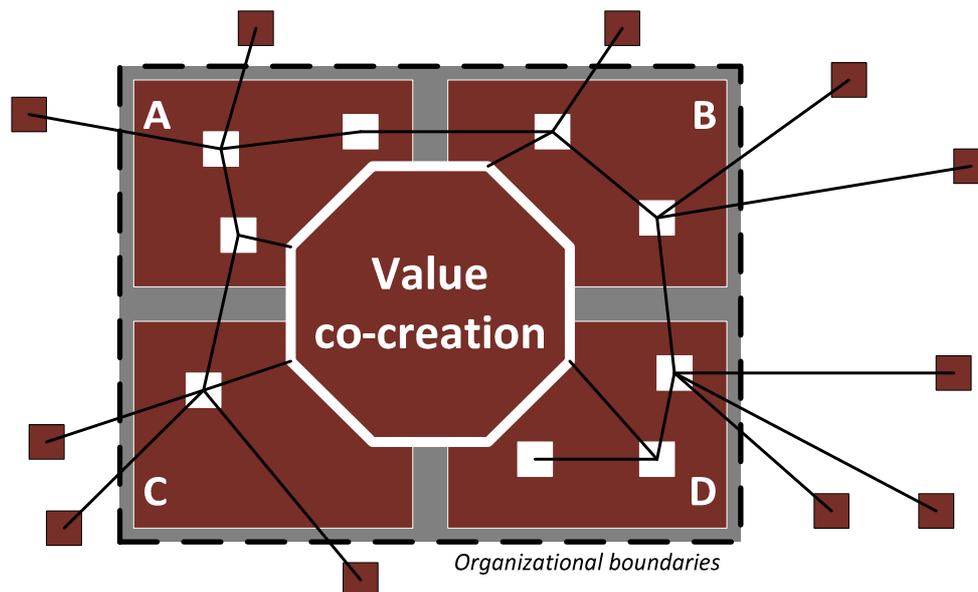
Figure 7, Framework of complex service systems, reproduced from Vranken (2012b)

Different intra-organizational disciplines[9] are involved in the value co-creation process. These disciplines represent different intra-organizational micro-specializations. These disciplines are interconnected with each other as well with extra-organizational entities and the value co-creation process. Within these disciplines, individuals work and perform certain functions. The

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[8] Organizational inertia, individual/group inertia, and system inertia (see Figure 5, p. 5).
[9] In the framework of Figure 7, these disciplines are represent by A to D.

interconnection between these individuals within a discipline defines the disciplinary function and its boundaries.

On the basis of this framework, the researcher proposes five parameters which define work on a structural level, namely: (1) The value proposition, which refers to the value the organization proposes to the parties involved. This value proposition is continuously shaped by both the organization and the parties involved in the value co-creation process at the heart of the organization (Lusch & Vargo, 2008; Vargo & Lusch, 2004; 2010); (2) The value connectivity, which refers to the connection between the internal processes and the value co-creation process (Alter, 2008; Payne et al., 2008). In its simplest form, it could be seen as the customer contact internal organizational members have; (3) The disciplinary functions, which are defined by the collection of skills bundled together. Within disciplines a collective mindset and relatively high levels of communication are present; (4) The interdisciplinary connectivity, which refers to the communication between disciplines. The need for communication between disciplines stems from the multi-disciplinary character of most value propositions (Cherbakov et al., 2005). Furthermore interconnected disciplines create a certain collective mindset on the organizational level; and (5) The interorganizational connectivity, which involves the communication between organizational entities and the environment in the process of seeking external skills to directly or indirectly further the value co-creation process (Cross et al., 2000).

2.4.2 Individual work structures and routines

On an individual level, the work content can be described in terms of work structures and routines. Individual work structures are the structures shaping the work content by means of the individual's position within the work process of the organization. The organizational control structure, i.e. the division of strategic, tactical, and operational control (see De Sitter, 1994) and the role of organizational guidelines act as boundaries in which individuals can shape their work. Within these boundaries individuals develop their own routines (Hvid et al., 2008). In their 2001 article, Wrzesniewski and Dutton challenged traditional literature in its assumption that the design of jobs will be static over time (Wrzesniewski & Dutton, 2001). Wrzesniewski and Dutton see job content as a dynamic interplay between the actual job content and a person's interpretation and identity. They refer to this process as Job Crafting (see theoretical background, chapter 3).

2.4.3 Role of IT systems

The third organizational parameter is the role of information technology systems in the organization. Following Markus and Robery (1988), the relationship between IT systems and the organization is

seen as an emergent process[10]. Here the interaction between the organization and information systems emerges from complex social interactions between technology and the organization. With respect to understanding the role of IT systems in organization, Markus and Robery state that "prediction in the emergent perspective requires detailed understanding of dynamic organizational processes in addition to knowledge about the intentions of actors and the features of information technology" (1988, p. 589). This implies that understanding of the role of IT systems in organizations requires multi-perspective and longitudinal data collection and analysis. The data collection and analysis methodologies, described in chapter 4, will take this into account in formulating the research methodology.

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[10] Markus and Robery (1988) differentiate between three causal agencies, namely: (1) The technological imperative, here "technology is viewed as an exogenous force which determines or strongly constrains the behavior of individuals and organizations" (1988, p. 585); (2) Organizational imperative, here the assumption is made that "human actors design information systems to satisfy organizational needs for information. Thus, information technology is the dependent variable in the organizational imperative, caused by the organization's information processing needs and managers choices about how to satisfy them" (1988, p. 587); and (3) The emergent perspective.

3 Theoretical background

This chapter will elaborate on the theoretical background of the project. Differentiation is made between three types of theories, namely: (1) Contextual, section 3.1; (2) The methodological lens, section 3.2; and (3) Normative directions, section 3.3. These theories are inherently linked to each other and will in combination guide the research project.

3.1 Contextual

The next sections will elaborate on developments in the field of service science (3.1.1) and work design (3.1.2). Service science refers to the newly founded discipline focusing on complex service. Work design refers to the stream of research describing the nature of work and how work should be designed so that both the organization as well as the individual benefits to the highest extent. Section 3.1.3 provide a summary of the contextual theories concerning service science and work design and elaborate on their implications for this project and work-design practices in general.

3.1.1 Service science

The relatively new field of service science has been steadily growing in size as well as in impact on the business environment. The field of service science sets out to further the understanding of service in light of the contemporary society (Maglio & Spohrer, 2008). Although service(s) have always existed, nowadays the environment which defines service and creates opportunities for new types of service provision has become increasingly complex. Advancements in the field of information technology created a new platform for service provisions. Furthermore, these advancements in information technology have redefined society as a whole.

Most research within the field of service science has its foundations in the idea of service dominant logic (SDL). The idea behind SDL is that not value in exchange, but value in use denotes the true value of something (Vargo & Lusch, 2004). In SDL products are viewed as delivery mechanisms for service. To illustrate this idea, consider the example of buying a car. The traditional view on the process of buying a car (often referred to as the good dominant logic, i.e. GDL) would see the sales price of the car as the value the consumer has acquired. SDL challenges this idea by suggesting that not the car itself has value but the usage of the car has value to the customer. The fact that the customer has the ability to drive a car contributes as much to the value of owing a car than the car itself does. The combination of the car and the customers driving ability makes the car have valuable. Thus according to the SDL, the value of products is mere the delivery of the true value, shifting the definition of value from value-in-exchange to value-in-use.

In service science, organizations are said to operate in a value creation network (Basole & Rouse, 2008). Here organizations exhibit a specific micro-specialization and co-create value by means of interaction with other entities in the network. Here the goal of the network is to learn. The ultimate goal of both 'customer' and 'producers' is to be more able to maximize co-created value in future encounters (Payne et al., 2008). Service science implies that openness of information channels and a 'core function focus' is key in achieving maximum value.

Furthermore, service science brings forward the idea of a changing working environment. Because work in service is dynamic, emergent, relational, and cognitive, traditional work design theories fail explain work processes. In the next section I will elaborate on promising contemporary ideas in the field work design.

3.1.2 Work design

The literature review preceding this project (Vranken, 2012a) reviewed the major theories in the field of work design. As the nature of work changed over time, work-design theory did as well. Contemporary approaches to work design advocate ideas of self-defined, emergent, and dynamic work. This section will elaborate on three contemporary theories of work design, namely; the boundaryless organization, fragmentation of time regimes, and job crafting. These three theories describe contemporary work design on three different levels. Although its implications on the individual level are profound, boundarylessness describes contemporary work design on a system's and meta-system's level. Work on conflicting fragmented time regimes describe the self-defining aspects of contemporary work on an individual level. Job crafting extents the pure focus on individual self-definition to the organization, and somewhat provides a link between theories.

3.1.2.1 The boundaryless organization

Advancements of information technology have made work no longer subjected to a fixed space and time. Literature on the boundaryless organization describes an organization which is no longer confined to traditional organizational boundaries. Not only is work no longer confined to space and time, organizations become more and more interconnected. For example, intensive partnership often entail integration of employees and functions. The ongoing focus on core competence is a good representation of this interconnected organizations. In co-development projects various functions often integrated to work towards a common goal. The main implication which boundarylessness has on work design is the shift from mechanistic boundaries as space and time to subjective boundaries such as authority, task division, organizational identity, and political structures.

3.1.2.2 Temporal regimes

Contemporary work in the field of work design brought forward the idea of subjective time. Whereas objective time, i.e. clock time, has been the regime in which traditional work design took place. Contemporary work is no longer purely defined by objective time (see Table 3, p. 19). Research on conflicting and fragmented time regimes brings forward the idea of different time regimes. These different time regimes all reflect a certain aspect of contemporary work and all exhibit different time horizons.

3.1.2.3 Job crafting

Job crafting challenges the idea that jobs can be designed by means of managerial input. Job crafting states that individuals continuously shape their work content in the interaction between work content and the work meaning/identity. The implication of this is that work can no longer be seen as static. All individuals within a work network shape their work continuously in an interactive process both on an individual level and on a interactive level.

3.1.3 Work design in complex service

Table 2 and Table 3 depict the work characteristics, work dimensions, and design principles brought forward by contemporary work in the field of service science and work design. Design of work within the area of complex[11] service provision should take in account the principles brought forward by these theories.

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[11] Complex refers here to the degree to which work exhibits the characteristics given in the Appendix (Vranken, 2012c, p. 3-4). Furthermore, this section will elaborate on the literature review conducted with regard to work design theories.

Table 2, Contributions to work design (1), reproduced from Vranken (2012a, p. 47)

		Contributions to the design of work design in service			
	Individual	*Organizational*	*Methodological*	*Work dimensions*	*Design parameters*
Value co-creation *(Vargo 2009; Vargo & Lusch, 2004; 2006; Vargo et al., 2008)*	Work becomes more circular and value is not a 'fixed' deliverable.	Organizations have to be more open to ensure the mutual satisfaction of needs.	A 'fixed' deliverable no longer exists, value is co-created at the time of interaction and by both producer and consumer.	A fixed deliverable does no longer exists, work become thus more iterative in nature en requires more focus on the relational aspect of value creation.	Organizations need to shift their focus in the delivery of value, rather than deliver a fixed value, value propositions need to be proposed which satisfy the underlying need.
Interconnectedness *(Basole & Rouse, 2008; Cherbakov et al., 2008; Lusch et al., 2010; Vargo & Lusch, 2010; Vargo et al., 2008)*	Individuals no longer operate as pure micro specialized work units, work becomes more communication oriented with the shift to a more multi disciplinary focus of value creation.	As with individual worker, organizations operate in a value creating ecosystem in which organizations develop mutually beneficial value propositions. Organizational learning can be seen as the entire network's adaptability.	Because entities are always interconnected by nature, analyzing an entity on its own no longer provides the foundation for valid conclusions.	Interconnectiveness of entities implies that they seek to achieve maximum utility on a collective level. Additional work, e.g. communication, becomes increasingly important and thus was is defined as core work changes.	Design parameters no longer can be seen as purely individual oriented, the collective aspect become increasingly important in the design of work.
Boundaryless organizations *(Cross et al., 2000; Gilmore et al., 1994)*	Work boundaries shift from being formal and 'physical' to cognitive ones. The competence required to deal with these boundaries therefore also changes.	'Physical' organizational boundaries become less of a limiting factor, organizational activities now span over a network of organizations.	Previously organizations where seen as (open) systems reacting to internal and external feedback loops. Organizations are embedded in an eco-system as thus require a different methodology.	Boundarylessness implies that entities are no longer bounded by traditional organizational boundaries and work no longer has a fixed time and place.	Dealing with cognitive boundaries becomes the dimension to be acted on. There cognitive boundaries have a different set of design implications than traditional boundaries.

Table 3, Contributions to work design (2), reproduced from Vranken (2012a, p. 48)

	Individual	Organizational	Methodological	Work dimensions	Design parameters
Contributions to the design of work design in service					
Fragmentation of time regimes *(Kamp et al., 2009; 2011)*	The fragmentation of time implies that individuals create their unique rhythms through defining their individual subjective time routines.	Organizational-wide collective rhythms emerge as a product of individual self-definition of work routines.	With the existents of disruptive time aspects routines are self emergent, which requires a complexity approach as methodological foundation.	The design of work is based on subjective time, work rhythms are self emerging and disruptive. Work intensity is the dimension to act upon because of the non-existence of limiting factors.	Formal work design cannot exist as such, the practice of work design should focus on supporting and limiting of behavior.
Job crafting *(Berg et al., 2007; Clegg & Spencer, 2007; Wresniewski & Dutton, 2001; Wresniewski et al., 2003)*	Individual's work content is based on an interactive relationship between an individual's work identity and the meaning of their work.	Top down design of fixed jobs is no longer appropriate, the role of management is to continuously guide and support the dynamics implied by job crafting.	Job crafting is interaction based and thus operates within the methodological foundations implied by complexity theory.	Work is continuously changing and the product of the individual's psychological experience of the work.	The dynamics of an individual's work content needs to be supported by its environment in order to achieve desired results.

3.2 Methodological lens

This section will go into detail about the methodological foundations guiding the research. This research will use complexity science as a methodological lens, i.e. a way of viewing the world[12][13]. "Complexity focuses on the behavior of systems in light of attractors which make the system instable and determine new steady states" (Vranken, 2012a, p. 42). Complexity science revolves around themes such as nonlinear models, discontinuous development, uncertainly, unpredictability, self-organization, coherence, and emergence (Van Eijnatten, 2004). These themes seem to fit with the new developments in service science and contemporary literature on work design (Vranken, 2012a) and are inherently linked with the management need to increase organizational flexibility. Three important streams within complexity science will be discussed in this chapter, namely: (1) Integral theory (section 3.2.1); (2) Panarchy (section 3.2.2); and (3) Chaordic systems thinking (section 3.2.3). Section 3.2.4 will explain the concept of flexibility with respect to the complexity lens.

3.2.1 Integral theory

In a quest to integrate what seemed as distinctive scientific fields, Wilber popularized integral thinking in his 1996 book, A Brief History of Everything. Based on his previous work, this book introduces the reader to integral thinking. Integral thinking is based on holarchic thinking. Holons are entities that are both an autonomous whole and a part of a bigger whole (Edwards, 2008). For example, atoms are themselves wholes, but also a part of a bigger whole, a molecule. A molecule again is a whole in itself, but can also be a part of a bigger whole, a cell for example. Holons can either transcend or dissolute. Transcending holons achieve higher levels of organizational complexity, while dissoluting holons fall apart. When a given holon falls apart, it also destroys all 'higher level' holons with its demise (Wilber, 1996). Higher level refers to holons transcended into higher levels of complexity, for example the cell is of a higher level of complexity than the molecule. Thus when destroying the molecule, the cell cannot exist. In contrast the atom, a 'lower level' holon can still exist without the possibility of a molecule to be formed. This holonic hierarchy is to be referred to as a holarchy.

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[12] Edwards (2008, p.2) describes an explanatory lens as "a rigorous conceptual system that is used to create a theoretical framework for exploring some domain of social life".

[13] Based on Van Raalte (2009, p. 21-25), Vranken (2012a) differentiated between three types of methodological lenses, namely: (1) Variable based, "the variable based methodological paradigm seeks to find the causal effect which one variable has on the fluctuation of another one. The goal with this approach is to create a controlled environment in which specific relations can be studied in detail" (Vranken 2012a, p. 42); (2) System-based, "A system consists of elements, which have a set of attributes, that have process-like internal relationships to one other. The system's boundaries define its place within its environment. A system always has a goal it strive to achieve, i.e. its steady state. When studying systems, the system as a whole is the unit of study, not the object, attributes, and relations operating within the system" (Vranken, 2012a, p. 42); and (3) Complexity-based.

When applied to organizations, the concept of holons and holarchies can be used as an explanatory concept in transformation processes. For example, the transition between single, double, and triple loop learning, can easily be described as an holarchy (see Figure 8). Transcending holons include lower level holons (Wilber, 1996). Holonic transcendence from single loop (N) to double loop (N+1) learning does not mean that the principles of single loop learning are rendered obsolete, rather a new holon is formed that is more able to explain the world.
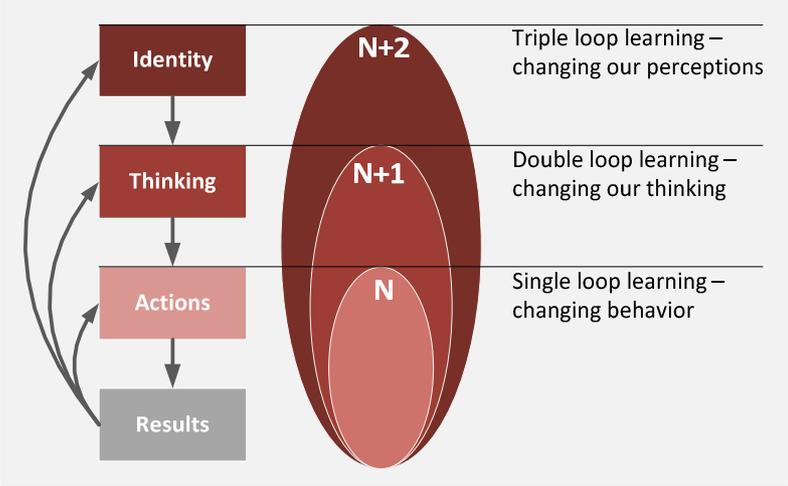
Figure 8, Example of an holarchy (Left panel: Triple Loop Consulting, 2012)

Wilber distinguishes between four quadrants. Shown in Figure 9, these four quadrants are (1) I, interior individual; (2) IT, exterior individual; (3) WE, interior collective; and (4) ITS, exterior collective.
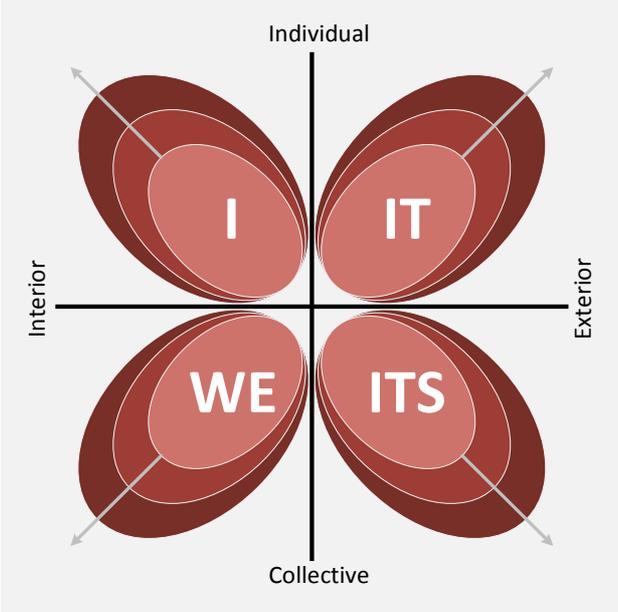
Figure 9, Wilber's quadrants (Wilber, 1996)

Individual and collective refer to the holon's ability to be both a whole and a part of a bigger whole. Both are needed for a holon to exist. Failure to a part of the collective results in the dissolution of the higher level holons and failure to be an individual itself leads to dissolution in all higher level holons. For example, failure in the single learning loop (N) renders the existence of double (N+1) and triple (N+2) learning impossible. The interior vs. exterior represents the holon interpretive vs. empirical characteristics. The combination of the interpretative and empirical allows a holon to apprehend an experience to the fullest. Both are fundamentally distinctive, but are both necessary. Integral thinking therefore concludes that for an holon to develop to higher levels of complexity it should develop on all four quadrants.

3.2.2 Panarchy

Panarchy is an ecosystem based view which describes four stages in which system elements cycle through, namely: "entrepreneurial exploitation (r), organizational consolidation (K), creative destruction (Ω), and re- or destructuring (α)" (Holling, 2004, p. 13), see Figure 10. Each phase can be described on the basis of its potential, connectedness, and resilience. Table 4 shows the description and the course of the values throughout the panarchy cycle.
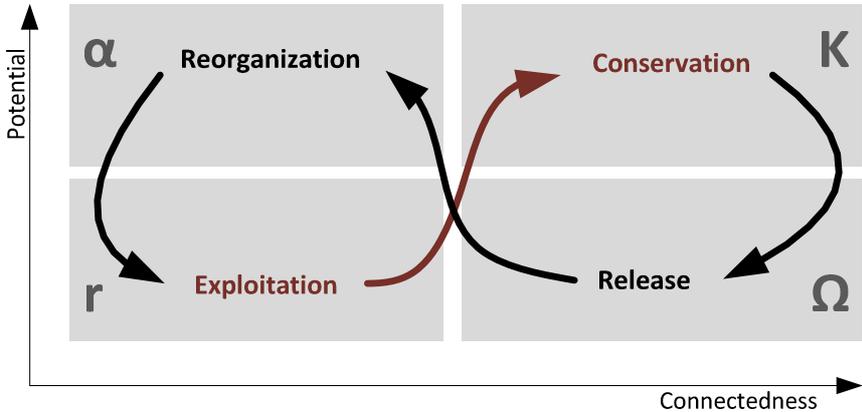
Figure 10, Panarchic flow and functions, reproduced from Holling (2004, p. 13)

Table 4, Potential, connectedness, and resilience (Gall, 2010)

	Description	r	K	Ω	α
Potential	The value extracted from the system's environment	Low	High	Low	High
Connectedness	The extent to which a system can control its path through internal control	Low	High	High	Low
Resilience	The extent to which a system in vulnerable when faced with external disruptions	High	Low	Low	High

The transition from a newly developed or restructured system to consolidation, i.e. the front loop, can be seen as a relatively slow and relatively predictable process of growth in which the system matures. During the front loop the system accumulates value and increases its connectedness (Gall, 2010; Gunderson & Holling, 2002). The system's vulnerability to disturbances, i.e. it's resilience decreases. The system enters the conservation phase when its ability to sustain innovation begins to reach a critical value. Resilience approaches its minimum and disturbances cause the system to fragment, i.e. release its accumulated potential. During reorganization, fragments of the former system form a new immature system, ready to exploit the environment's potential. The loop of release and reorganization is referred to as the back loop.

The system's lifecycle as discussed here does not happen in isolation (Gall, 2010; Gunderson & Holling, 2002; Holling, 2004). Across all scales, adaptive cycles interact and hierarchically affect each other. Higher order, i.e. larger scale and slower cycles affect smaller scale and faster cycles by a process called remembrance, see Figure 11. Remembrance refers to the 'memory' inflicted on the smaller cycle's reorganization (α) by the larger scale cycle's conservation (K). For example, reorganization of a subdivision in a company is guided by the organization's strategic guidelines and the systems in place.
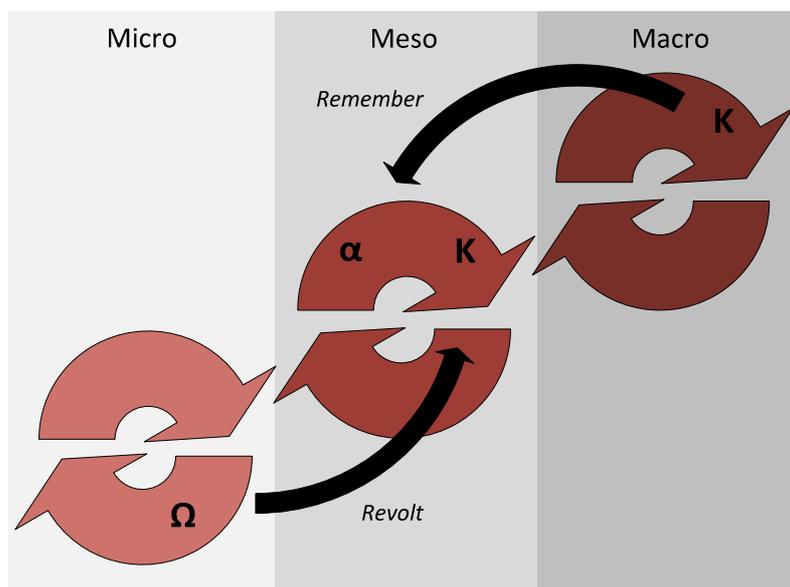
Figure 11, Revolt and remembrance in panarchy, reproduced from Gall (2010, p. 13)

Besides the hierarchical remembrance, smaller scale and fast cycles can during their release phase (Ω) topple a larger and slower cycle. This effect is referred to as revolt. Examples of the revolt effect are numerous. In innovation theory for example a newly emerged technology can have the power of

becoming the next dominant platform, thus destroying the dominant architecture in place[14]. In the project's context, panarchy will be used to describe the need for loosely structured organizations and creative deconstruction.

3.2.3 Chaordic systems thinking

Seen as an methodological lens, chaordic systems thinking operates on the edge of chaos and order (Van Eijnatten, 2004), resulting in behavior that is both orderly and unpredictable. Chaordic systems thinking (CST) is based on the notion of discontinuous holonic growth, i.e. transcendence. Holons as formulated by Edwards (2008, section 3.2.1), are seen as growing discontinuous in their level of complexity, see Figure 12.
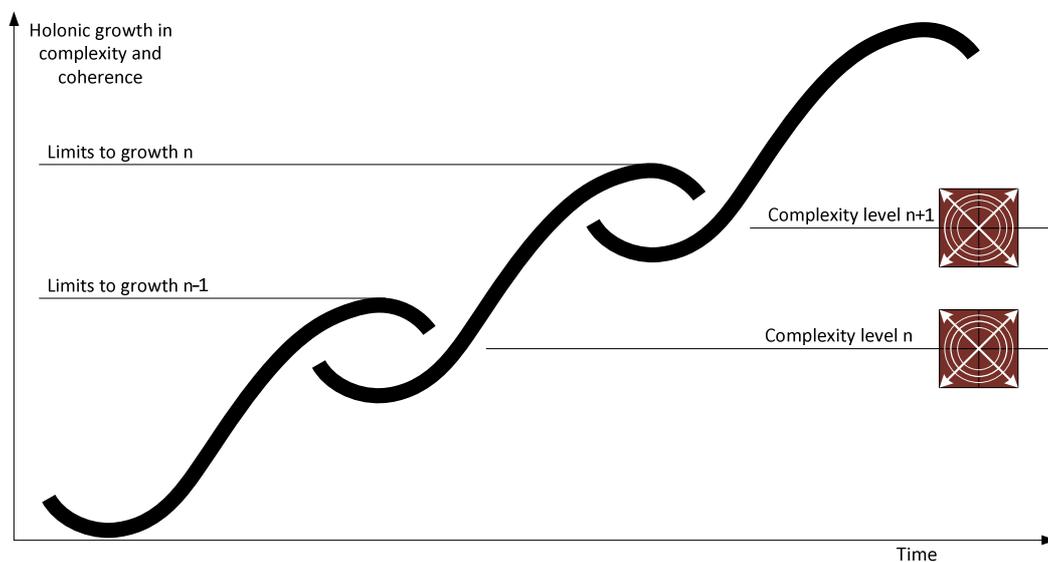
Figure 12, Discontinuous growth, reproduced from Van Eijnatten (2004, p. 434)

The behavior of an holon is determined by the attractor phase a holon is in. An attractor is a condition that forces the holon to behave within a given set of boundaries implied by the type of attractor (Van Eijnatten, 2001).

Changes in the level of complexity occur during unstable states in which the dominant system is defined by a certain attractor that makes the system unstable[15]. During this phase the system is prone to external influence that reconfigure the system, either resulting in a new level of complexity or a state of chaos. These influences have the ability to start a chain reaction possibly resulting in a reconfiguration of the system[16]. Before a dominant system has reached it limits to growth, the

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[14] For more information, see the concept of disruptive innovation, brought forward by Christenson & Bower (1996).
[15] A Lorenz or strange attractor (Van Eijnatten, 2001).
[16] In popular literature, these attractors are known as the butterfly effect.

system begins to show deficiencies in its current configuration. These deficiencies make the dominant system unstable and susceptive to change. In this phase the system is open to new 'ideas' and other possible reconfigurations of the system.
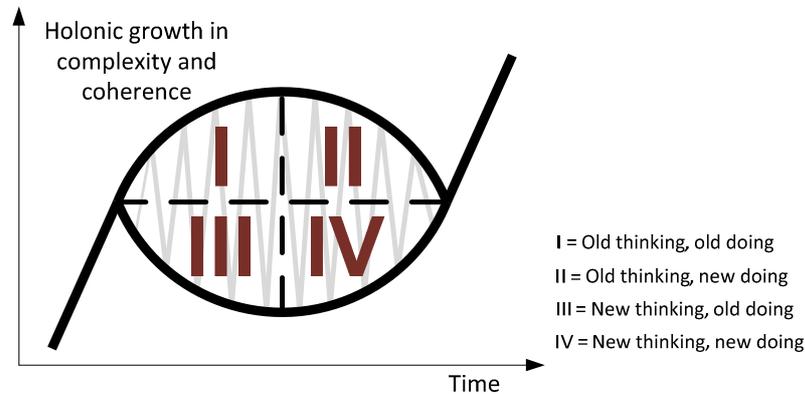
Figure 13, Cross in the chaos, reproduced from Van Eijnatten (2004, p. 436)

Whether an idea evocates the reconfiguration of the system depends on the transition process between the dominant configuration and the configuration proposed by the external influence. During this phase the holon fluctuates between levels of complexity (see Figure 13). Here the transition from cell I, old thinking, old doing, to cell IV, new thinking, new doing, is seen as a successful transformation i.e. a leap in complexity.

In line with integral theory and panarchy, chaordic reconfiguration exists on every scale. For example, Figure 12 seems to indicate linear growth between holonic reconfigurations, but chaordic change occurs on all levels.

3.2.4   Flexibility

In line with the project's goal (see section 2.3.1), this section will elaborate on organizational flexibility and its meaning given the methodological foundations of this project. Given the methodological lens of this project, the ultimate organizational goal is the stimulation of an organization's adaptive capacity by means of designing work to foster this. Adaptive systems are "able to re-configure themselves without significant declines in crucial functions" (Folke et al., 2002). Organizational resilience is the ability an organization has to reconstruct itself when faced with disruptions (Gal, 2011). In line with complexity science, flexibility is seen as the adaptive capacity an organization has to act efficiently when confronted with a discontinuity. Discontinuities exist in many shapes and forms. Because of the fact that value is co-created in service, discontinuities on a small scale are continuously present in relatively stable situations. An organization therefore has to be aware of its need to be flexible in the process of delivering value. Organizational structures should

foster self-organization and should not limit organizational reorganization by means of formal structures. Furthermore, chaordic systems thinking implies that organizations should facilitate weak signals to evolve and distribute through the organization. These weak signals have to power to lead the organization to new levels of complexity, i.e. creating an organization that is better able to self-organize when creating value.

3.3 Normative directions

This section will go into further detail with regard to normative statements concerning the goal of the research, i.e. facilitating organizational flexibility. These normative statements are inherently related with the project's contextual theories and methodological lens, but offer more concrete statements in terms of improving organizational flexibility. Section 3.3.1 will introduce dialogue as a means of stimulating the emergence of ideas which could possibly stimulate chaordic transcendence into a more efficient configuration. Section 3.3.2 further elaborates on work-crafting theories as a means of complimenting organizational flexibility.

3.3.1 Dialogue

Dialogue, as described by Bohm & Serge (1996), is the free flow of meaning in a group through conversation. Meaning flows free between the various point of views that people have. Dialogue sessions do not have a pre-defined focus or goal, but merely advocate the process of thinking together as a collective. The function of a dialogue session is to examine preconceptions as well as exploring more general movements of thought. Dialogue revolves around the idea of suspension of belief, opinions, impulses, and judgment. This notion of suspension is fundamental to dialogue because it does not focus thought processes into a certain outcomes, i.e. common ideas. Rather ideas that are in common are created, i.e. new ideas. As the conversation continuum depicted in Figure 14 shows, dialogue can be characterized as an holistic, emotional, and experimental process that leads to non-linear patterns of thinking. Here, non-linear refers to leaps of thought, which can be best described as leaps in complexity (based on the complexity-science lens discussed in the previous sections).
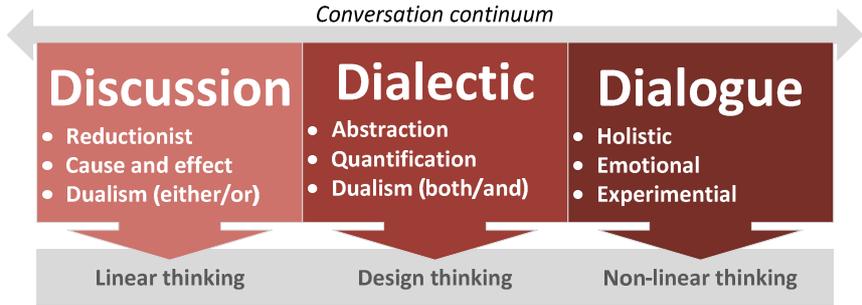
Figure 14, Conversation continuum, interpreted from Van Eijnatten (2004a)

In contrast to dialogue, discussion does have a specific purpose or goal. Discussion seeks to arrive at a certain decision making point (Bohm & Serge, 1996; Slotte, 2006; Van Eijnatten & Putnik, 2007). During discussion people defend and argue in favor of their fixed positions. Outcomes of a discussion are known in advance and are selected amongst the fixed propositions of the people involved in the discussion. Dialectic conversation is a method of reasoning in the search for truth through rational discussion. Table 5 depicts the difference between dialogue and debate as formulated by Merrill (2008).

Table 5, Dialogue vs. Discussion (debate), reproduced from Merrill (2008, p. 3).

Dialogue	Discussion (debate)
Dialogue is collaborative: the sides work together.	Debate is a type of fight: two sides oppose each other to prove each other wrong.
Dialogue builds a learning relationship between people.	Debate builds a competitive relationship between people.
Dialogue encourages the participants to identify questions and goals they could share.	Debate encourages each side to articulate its own questions and goals.
In a dialogue everyone contributes to solving a problem.	In a debate the goals is winning with your own ideas.
In a dialogue you believe that many solutions might exist, and that people have parts of the best solutions.	In a debate one person and viewpoint wins, the other is dismissed.
In a dialogue you are sensitive to each other's feelings, hopes, and ideas.	In a debate you believe that there is one solution, that you have it, and other solutions are not considered.
In a dialogue you contribute your best ideas to be improved on.	In a debate you contribute your ideas and defend them against challenges.
In a dialogue you listen to each other to understand and build agreement.	In a debate you listen to each other to find flaws and disagree.
In a dialogue you may consider new ideas and even change your mind completely.	In a debate you do not admit you are considering new ideas and you must not change your mind, or you lose.
Dialogue encourages you to evaluate yourself.	Debate encourages you to criticize others.
Dialogue promotes open-mindedness, including an openness to being wrong.	Debate creates a close-minded attitude, a determination to be right.
Dialogue encourages you to see all sides of an issue.	Debate encourages you to see only two different sides of an issue.
Dialogue invites keeping the topic open after discussion formally ends.	Debate, by creating a winner and a lose, discourages further discussion.

In line with the complexity science methodological lens, dialogue is a means of creating new ideas that lead to leaps in complexity and are a useful tool when people are seeking a common ground, rather than limiting themselves to their own opinions.

3.3.1.1 Dialogue and quadrants

In line with Wilber's integral theory (1996), in order for development to occur, all quadrants need to be developed (see Figure 15). Exterior development is relatively straight forward and mostly entails 'top down' techno-structural interventions. The interior part refers to the intentions and values of

both individuals and the organizational collective. In order for an organization to develop to a higher order of complexity, interior development has to match the exterior development. This often lacks in organizations and can be seen as the limited support for a techno-structural change. Engaging in dialogue leads to developments in terms of the individual and organizational mindset (Van Eijnatten & Van Gaalen, 2002).
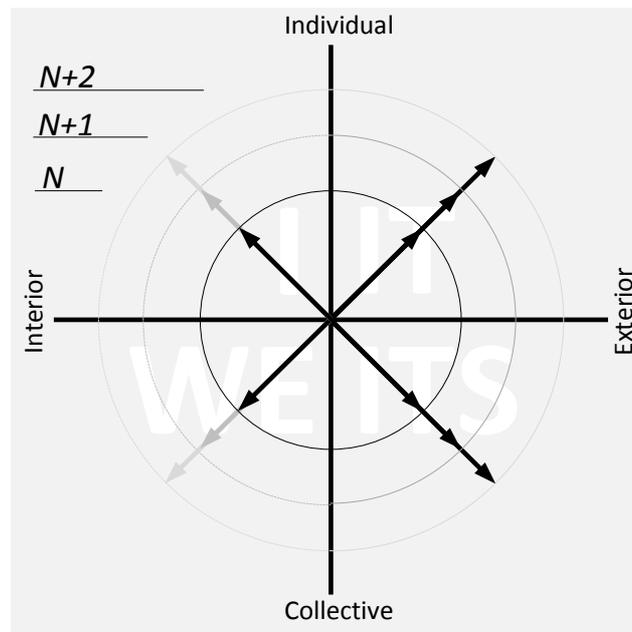
Figure 15, Dialogue in terms of Wilber's quadrants

3.3.1.2   Dialogue and panarchy

Dialogue is by nature an exploratory form of conversation and thus results in weak signals, eventually resulting in organizational renewal, i.e. the panarchy concept of revolt. As discussed in the panarchy section, a small-scale cycle have the power to push the larger-scale cycles into a renewal loop. Dialogue can therefore be used as a tool for continuous organizational development, i.e. a learning organization (Van Oosten, 2008).

3.3.1.3   Dialogue principles

Table 6 depicts the principles of dialogue as proposed by Bohm et al. (1991).

Table 6, Dialogue principles, reproduced from Bohm et al. (1991, p. 11-12)

	Principles
1	Dialogue is an enquiry into what leads us to think, feel, speak and act as we do.
2	A Dialogue Group involves 15 to 30 people meeting weekly for a year or more.
3	Participation is voluntary.
4	Diversity is helpful, with individuals from a range of different sub-cultural groupings. Participants are seated facing one another in a single circle and have one conversation.
5	There is no agenda or fixed topic of conversation, and there is no taught content.
6	No subject is prohibited from the conversation.
7	There is no objective, such as reaching consensus, a decision or agreed action.
8	Participants are peers and no particular individual is more important than any other.
9	Facilitators bring out the intention of Dialogue in the early stages, in a non-directive way, but aim to give up their special role quickly and become peer participants.
10	Everyone has the right to their own perspective, and the responsibility of listening to other speakers seriously, even when they do not agree with what they are saying.
11	It is not talk for talk's sake, but talk in order to engage and exchange here and now.
12	It is a forum of open communication which concentrates on listening and inclusion.
13	The encouragement is to recognize how it is and consider why it seems to be that way.
14	Attention is on the meaning of both the process and the content of the conversation.
11	It is an enquiry with others, rather than something which is done to others.

3.3.1.4   Dialogue concepts

This section discusses several dialogue concepts as described in Van Eijnatten & Van Galen (2002). These concepts should provide the reader with a more clear idea of the social routines present during dialogue.

<u>Carps, Sharks, and Dolphins</u>

Carps, sharks, and dolphins here refers to behavior patterns occurring in dialogue. Carp-like behavior refers to avoidance and compromise, while sharks are aggressive and avoid risk by attacking carps. Sharks and carps interact in a so called Bermuda drama triangle, i.e. "a situation that may occur when people are interacting without taking responsibility" (Van Eijnatten & Van Gaalen, 2002, p. 30). A Bermuda drama triangle consists of persecutors (sharks), rescuers (carps), and victims (carps). Rescuers assist people who do not need assistance, both victims and rescuers are powerful when issues want to be avoided. Given the nature of carps and sharks it should not come as a surprise that these roles reinforce each other. Dolphins on the other hand are flexible in their behavior and capable of both 'winning' and 'losing'. Dolphins actively contribute to the dialogue, but are not

stubborn when it comes to changing one's mindset. During dialogue a dolphin-like behavior is obviously preferred.

Undiscussables

Often called 'elephants', undiscussables are collective issues preferably avoided by the entire group. During dialogue a group is likely to avoid a certain subject by means of a defensive routine. The dialogue facilitator should stimulate conversation concerning the undiscussable.

Ladder of abstraction

The ladder of abstraction refers to the cognitive process by which individuals process information. Processing information occurs through four steps, namely: (1) Observation; (2) Interpretation; (3) Assumption; and (4) Conclusion. Because this process is dependent on the individual's background, individuals can come to a completely different understanding based on the same data pool. Dialogue should seek shared understanding and overcome the differences caused by individual backgrounds.

3.3.2 Sustainable work design

With its foundations in integral theory (see section 3.2.1), Kira et al. (2010, p. 616) describe sustainable work abilities as "long-term adaptive and proactive abilities to work". This ability depends on personal resources relating to both our human nature as individuals and as social beings with worlds both interior and exterior. Based on Wilber's quadrant (1996, p. 21, section 3.2.1, Figure 9), Kira et al. apply integral theory to their explanation of dynamic development of personal resources. They distinguish between two types of process related to development of personal resources, namely: (1) learning, i.e. transcendence, see section 3.3.2.1 and (2) translation of resources, see section 3.3.2.2. Work on sustainable work design will be used both as a descriptive mechanism and as a normative statement in guiding the design efforts.
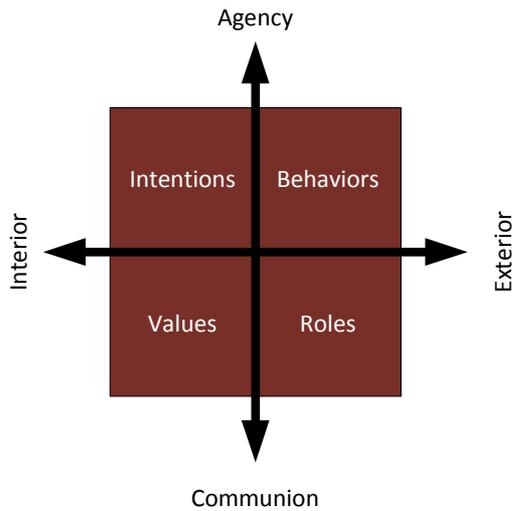
Figure 16, Wilber's quadrants, reproduced from Edwards (2008); Kira et al. (2010, p. 621)
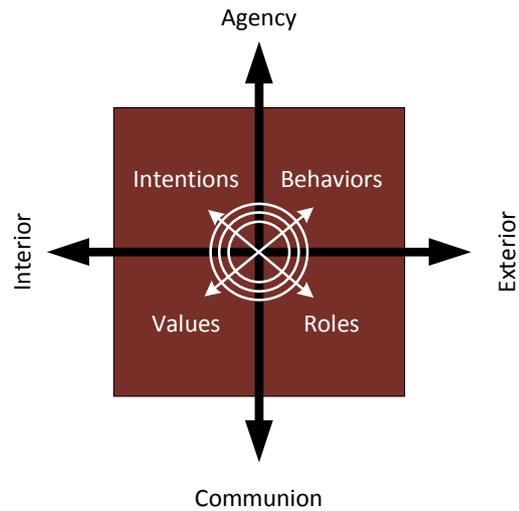
Figure 17, Transcendence, reproduced from Kira et al. (2010, p. 621); Holloway et al. (2011, P. 20)
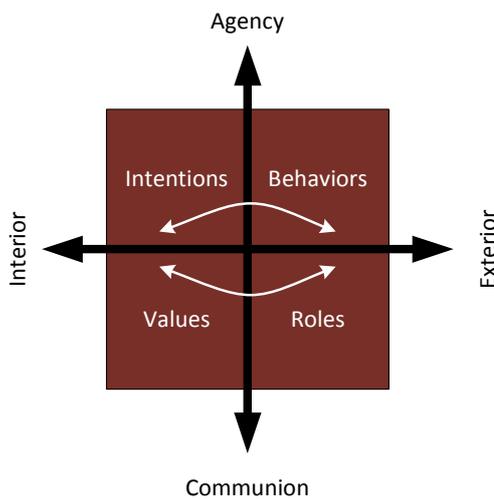
Figure 18, Translation, reproduced from Kira et al. (2010, P. 621); Holloway et al. (2011, P. 20)
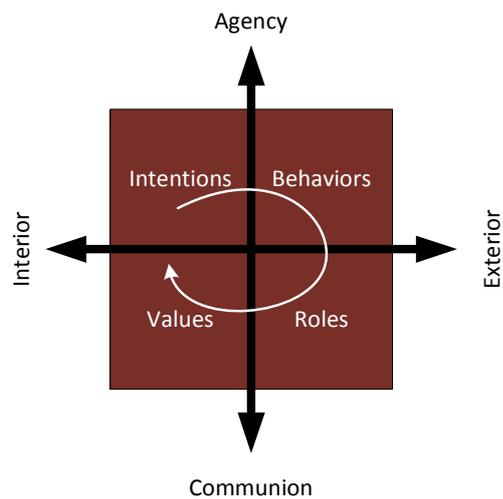
Figure 19, Process of value crafting, reproduced from Holloway et al. (2011, P. 23)

3.3.2.1 Learning

Learning or transcendence refers to discontinuous growth into higher levels of complexity (Van Eijnatten, 2004). Figure 17 depicts learning as the development of personal resources by means of achieving higher levels of complexity (depicted as circles). As discussed in section 3.2.3 , learning or transcendence is seen as a discontinuous process involving leaps in development. For the method of design, the nature of individual, group, and organizational learning behavior implies that design efforts should be focused on increasing the level of complexity in all quadrants in order for personal development to be sustainable. Work design efforts should be directed at not only stimulating exterior behaviors but also should focus on development of the interior. This is to be facilitated by

means of participative design, i.e. crafting. Involvement and participation in the researcher's design efforts should lead a design that is reflective of both the organization's interior and exterior.

3.3.2.2 Translation

Translation can be seen as the horizontal flow between different quadrants and ultimately should lead to sustainable development on all quadrants (Holloway et al., 2011; Kira et al. 2010), see Figure 18. The process of crafting aims at translation of personal resources in order to come to an sustainable design on individual, group, and organizational level. Implications for the design of this is to embrace participant's as social being and allow them to voice their opinion. Acting as 'change ambassadors', participants should facilitate the social embeddedness of the design within the group and ultimately the organization.

Depicted in Figure 19, value crafting suggest a methodology of embedding organizational values within daily routines (Holloway et al., 2011). Based on the process of transcendence and translation, they propose four steps when crafting organizational value, namely: (1) "Selecting company value"; (2) "Set goals & change behavior"; (3) "Reflect on performance"; and (4) "Adopt the company value" (Holloway et al., 2011, p. 30).

3.4 Conclusions and implications

The theoretical background chapter highlights the research's perspective on work design, development, and organizational change. This research will be grounded in complexity science. This implies that change behavior is seen as emergent and subject to crafting. Crafting refers to actively shaping one's environment. In line with the notion of non-linear development and environmental volatility, this project does not aim at solving problem, but rather focuses on increasing the organization's *problem-solving ability*. This approach is inherently linked with the characteristics of complex service environments[17].

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[17] (1) Value co-creation; (2) Interconnectedness; and (3) Boundarylessness, see Table 2, p. 28.

4 Method

This chapter will describe the methodological decisions made prior to the start of the diagnosis (4.1), design (4.2), intervention (4.3), and evaluation (4.4).

4.1 Diagnosis

As mentioned earlier, the goal of the diagnosis stage of the research is to gain a deepened understanding of the context and nature of the management problem (Van Aken, et al. 2007). In this section the method of diagnosis will be discussed in terms of data collection (4.1.1) and data analysis (4.1.2).

4.1.1 Method of data collection

During diagnosis the main source of data will be collected by means of semi-structured interviews. In this section I will discuss the methodological decisions to be made with regard to data collection. These decisions involve sampling (4.1.1.1), privacy statements (section 4.1.1.2), and interview method (section 4.1.1.3).

4.1.1.1 Sampling

In order to achieve an organizational-wide diagnosis stratification will be applied. Stratification ensures the sample's adherence to the distribution in the population (Hair et al., 2009). Stratification will be done on the basis of job titles and job descriptions.

As discussed in section 1.2, Van Zandbeek is organized as an organizational collective of different micro-specializations. These micro-specializations are either represented by internal disciplines or semi-integrated sub-organizations. During the process of diagnosis only the internal micro-specializations were included. The semi-integrated sub-organizations adhere to different routines and activities and are said to have a different culture. Although the sub-organizations are not included in the diagnosis, this does not imply that they will be excluded in the design.

4.1.1.2 Privacy restrictions

As an organization, Van Zandbeek can be considered as small to medium in size. This implies that organizational functions are often easily traced back to individuals. As a result of this, anonymous data handling cannot be guaranteed. The researcher can guarantee that individual statements will not be made explicitly and external reporting will be done on the basis of intersubjectivity. To ensure this, individual statements should be handled only by the researcher and are not be communicated outside of the research team. These privacy restrictions are to be communicated before interviews are held. In addition to this, the process of data collection and analysis should be transparent, provided that privacy of the other participants is respected.

4.1.1.3 Method of interviews

Because of the problem-solving and design- oriented nature of the project, interviews should foster an environment in which the participant has the freedom to think freely about the subject, but still adheres to the problem setting. Interviews should revolve around the three organizational parameters[18]. Appendix (Vranken, 2012c, p.5-7) shows the interview scheme guiding the interviews. First an introduction should be given about the researcher, the goal of the research, and the privacy restrictions the research adheres to. Next the informed content is to be communicated to the participant. Communication of the informed consent ensures that the participant is knowledgeable about his/her rights. The actual interview will consist of an introduction question, three general themes based on the organizational parameters formulated in the intuitive analysis of the problem statement, and a final question concerning Van Zandbeek's efforts in change management.

The introduction question will ask the participant to elaborate on his/her function at Van Zandbeek. This question will give the researcher the ability to guide the interview as concrete as possible and to become more knowledgeable about the specific function of the interviewee.

Data collection with regard to the organizational parameters is operationalized as interview themes. Each theme consists of an open question, a checklist, and more closed questions which could be asked when necessary. The open question introduces the participant to the theme and asks the participant to openly discuss the theme in light of daily work routines. General probes should be used to ensure the continuity of the interview. During this open question, the checklist will guide the researcher and ensures that all sub-topics are covered. When necessary the more closed sub-questions can be used to zoom in on specific sub-topics.

The final question invites the participant to elaborate on his/her mindset towards Van Zandbeek's change efforts. Because flexibility was one part of the management problem symptoms (see section 2.1, Figure 5, p. 9), getting an informed perspective on the organization's mindset towards change will be highly informative.

4.1.1.4 Supporting data

Supporting data represents the organizational data used by the researcher to make sense of the information extracted during data analysis in light of organizational practicalities. This supporting data ensures the proper translation of general outcomes to practical situations. As stated in the preceding research proposal (Vranken, 2012b), four sources of information are used during data collection as a part of the organizational diagnosis, namely: (1) Interviews; (2) Documentation; (3)

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[18] After the organizational parameters as defined by Vranken: (1) organizational structure, (2) individual work structures and routines, and (3) role of IT systems (2012b, p. 14-16), also see section 2.4.

Databases; and (4) Project outcomes. Data extracted from the semi-structured interviews will be the main source of information. The remaining sources of information are to be used to form a cognitive framework which is needed for the researcher to make sense of the general outcome of the diagnosis. These sources of supporting data possibly involve statements concerning responsibilities, work flows, performance indicators, IT specifications, financial data, and job content.

4.1.2 Method of data analysis

During diagnosis the work of Porras (1987) was used as the methodology for analyzing data. The next sections will discuss the method of data extraction (4.1.2.1), consensus analysis (4.1.2.2), and stream analysis (4.1.2.3).

4.1.2.1 Data extraction

Data extraction here refers to the process of making interview data, collected during the semi-structured interviews, explicit. Data extraction involves reporting organizational bottlenecks, which later will be used in the data analysis. Organizational bottlenecks are components, resources, or processes occurring in the organization that limit the organizational function (Porras, 1987). In order to extract bottlenecks form interview data, bottleneck characteristics are used as a guideline (see Table 7).

Table 7, Bottleneck characteristics guiding the data extraction process

	Characteristic
Always	Bottlenecks should limit the organization's function
Always	Bottlenecks should adhere the research framework
Always	Bottlenecks should be generalizable
	Bottlenecks are formulated in terms of 'too high', 'too low', 'too much' etc.
Or	Bottlenecks are formulated as problems
Or	Bottlenecks are formulated so that the researcher is convinced of the limiting effect of a certain component, resource, or process

The characteristics differentiate between a set of characteristics that should always be adhered to and a set of characteristics for which one should be present. Adhering to this set of characteristics should maximize objectivity in the data extraction process.

4.1.2.2 Consensus analysis

The objective of the consensus analysis is twofold, namely: combining individual bottlenecks to more general unique bottlenecks and selecting bottlenecks that represent an intersubjective organizational view.

Combining individual bottlenecks

In order to be able to analyze the management problem and arrive at a causal structure that represents the management problem, individual bottlenecks are to be combined so that unique bottlenecks emerge which represent an intersubjective point of view. Combining bottlenecks is a subjective process, which requires the researcher to be able to identify the general characteristics in individual statements. No formal methodology is to be used in combining bottlenecks, but it is important that the process of combining bottlenecks is traceable so that participants are able to reflect on the researchers actions.

Majority criteria

In order to ensure that the final causal structure of the management problem is a representation of the organization as a whole, a majority criteria is applied to the set of unique bottlenecks. The majority criteria implies that the majority of participants should mention a bottleneck before it is seen as a valid organizational bottleneck. The majority criteria is applied to arrive at a state of intersubjectivity. Here intersubjectivity refers to the a state of (partially) shared divergence of meaning.

4.1.2.3   Stream analysis

On the basis of the unique bottlenecks, thus adhering to the majority criteria in the consensus analysis, a stream analysis is made (Porras, 1987). A stream analysis involves the process of making an intuitive cause and effect analysis, mapping a causal structure, and classifying bottlenecks. An intuitive cause and effect analysis is based on the ability of the researcher to intuitively link bottlenecks to each other in terms of causality. Bottlenecks can be seen as independent or dependent. Based on these cause effect relationships, a causal structure will be mapped. On the basis of the causal relationships a bottleneck has in the causal structure, a classification can be made. Table 8 shows the classification of bottlenecks following their place within the causal structure of the management problem.

Table 8, Classification of bottlenecks following Porras (1987)

Type	Description	Operationalization
Root cause	Underlying cause resulting in the formation of the causal structure	Only outgoing causal relationships
Mediating bottleneck	Causal structure emerged from the presence of root causes	Outgoing and incoming causal relations
Symptom	Observable symptom of the bottleneck causal structure	Only incoming causal relationships
Context	Bottleneck coexisting, but not integrated with the causal structure	No causal relationship
Exogenous bottleneck	Root cause or mediating bottle lying outside of the company's scope of influence	Beyond scope of influence

Note that bottlenecks interacting with each other will be combined, because otherwise the causal structure would become too complex.

Scope of influence

Besides differentiation between symptoms, bottlenecks, and root causes, bottlenecks can occur outside of the scope of influence. The scope of influence denotes the boundaries imposed on the researcher, i.e. the researcher's restrictions either imposed by management or because of a limited control over certain bottlenecks. Implications of the scope of influence is the differentiation between bottlenecks and root causes. Because a system cannot be seen as apart from its environment, root causes are never 'pure' or uninfluenced (Porras, 1987). In cause-effect analyses, the notation of "root cause" is limited to bottlenecks endogenous to the system. Here the term system is used for the causal structure under the influence of the researcher.

Scope of design

Besides the scope of influence, the scope of design limits the researcher's design efforts. In contrast to the scope of influence, the scope of design is self-defined by the research team. By defining the scope of design the research team makes an informed choice on the root causes to include in the design efforts. The scope of design is defined by the number of root causes included in the design efforts. Following the causal structure imposed by these root causes the scope of design is defined.

4.1.2.4 Refection on initial results

Because of the subjective nature of this type of analysis, it is important that results are reflected upon. Participants will be invited to participate in this process to ensure proper translating of their statements and expressions. Because of the privacy restrictions communicated before the start of the data collection, participant will be given the choice to either reflect on the results as an individual or participate in a group meeting.

4.2 Design

As mentioned earlier, during the design stage the goal is to redesign aspects of the organization so that organizational flexibility is increased. In this section the method of design will be discussed in terms of data collection (4.2.1), data analysis (4.2.2), and design (4.2.3).

4.2.1 Method of data collection

Similar to the diagnosis stage, data will be collected during the design stage. Data collection is here used divergently collect possible design interventions in light of the researchers theoretical background and define strategic, contextual, and user requirements. The data collected should ensure a design that is theoretically justified and adheres to the contextual characteristics of Van Zandbeek.

Types of data to be collected stem from literature and participants. Literature will provide a list of tools including their proposed function and requirements. Data collection of literature will include scientific papers and best practices. Based on the project theoretical background, the researcher will search and select possible tools for design. No formal methodology will be used.

Participant data collection will occur individually and will be used for ensuring a design that adheres to the organization's strategic, contextual, and user requirements. Participants will be asked to individually voice their opinion on the user requirements the design should adhere to. Strategic and contextual requirements will be defined on the basis of internal documents referring to Van Zandbeek's strategy and interview(s) with the appropriate manager(s).

4.2.2 Method of data analysis

Data analysis during the design stage involves selecting tools for design interventions according to the requirements defined on the basis of the participant data and the organizational requirements. The process of classifying tools on the requirements will be done as an expert. This decision is based on the expert's ability to objectively look at the organization and the ability to predict the outcome of an intervention on the basis of his theoretical framework. Table 9 depicts the classifications which assess the appropriateness of design tools given a certain requirements.

Table 9, Classification of adherence to requirements/mutual occurrence

Classification	Operational definition	Symbol	Scoring
Highly appropriate	The design intervention highly contributes to either a requirement or another design intervention.	+ +	2
Appropriate	The design intervention positively contributes to either a requirement or another design intervention.	+	1
Neutral	The design intervention does not have an effect on either a requirement or another design intervention.	N	0
Conflicting	The design intervention conflicts with a requirement or another design intervention. Conflicting here refers to as having a negative effect on the implications of a requirement or workings of another design intervention.	-	- 1
Highly conflicting	The design intervention is highly conflicting with a requirement or another design intervention. Conflicting here refers to as having a negative effect on the implications of a requirement or workings of another design intervention.	- -	- 2

Given the possibility of selecting multiple tools in the final design, possible design tools will also be classified in respect to their relation with each other. Here the same classifications as with the adherence to requirements is used to denote the possibility of mutual occurrence (see Table 9).

4.2.3 Method of design

On the basis of the selection process, design tools will be selected, combined, or the researcher will self-define the intervention. Selection is to be used when a single design tool meets all the requirements for design and thus represents a pre-determined solution for the problem at hand. Combining design tools is appropriate when a combination of design tools meets the requirements and the design tools are usable is combination with each other. In the case that no appropriate design tool or combination of tools is found, the researcher will self-define a design tool given the requirements.

4.3 Intervention

Because of the limited time frame of the project, the intervention will be a trail-based test to ensure the design is suitable for the problem at hand. Based on the design, an appropriate set of design propositions will be included in the trial. Project participants will be asked to join this session. When necessary, others will be asked to get involved to ensure that all levels and disciplines of the organization are represented.

4.4 Evaluation

Following the trail phase, the evaluation phase will evaluate the intervention. Results here refer to the degree to which the outcomes that emerged are in line with the outcomes that were expected[19]. Because of the project's time restrictions, full implementation is not possible. This implies that evaluation is also restricted to the scope of the implementation. The following section will describe the method of data collection (4.4.1) and the method of data analysis (4.4.2) of the evaluation

4.4.1 Method of data collection

During data collection participants that were involved during the trial intervention will be given a questionnaire which reflects on the behaviors that are expected to emerge from the design intervention. Rating will be done on a 7 point Likert scale. The Likert scale format is chosen because of its common application in assessing a level of agreement with a certain statement, in this case emergence of a certain behavior.

4.4.2 Method of data analysis

Questionnaire data will be analyzed by means of a frequency plots. These means of evaluation should give a rough indication of the participant's perception with respect to the trial intervention. Data analysis should reveal to what extent the expected behaviors emerged during the trail.

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[19] Theoretical justification of results will be based on a chaordic link between interventions and effects (Van Eijnatten, 2004b).

5 Results

This chapter will describe the decisions, actions, and results of the project.

5.1 Diagnosis

This section discusses the results related to the organizational diagnosis.

5.1.1 Results of data collection

This section will describe the results of the data collection. The goal of this section is to reflect on the method of data collection discussed in section 4.1.1 and to elaborate on the data collection in terms of results.

5.1.1.1 Sampling

As discussed in the methodology chapter, sampling occurred in a stratified manner. Functions and employees were listed[20]. Before selection, several function and employees were deemed unsuitable for inclusion in the sample. Excluded functions were: (1) General director; (2) Financial director; (3) Administrator; (4) Receptionist; and (5) Personnel administrator. The reason these functions were excluded is because of their supporting role in the organization. Besides the exclusion of functions, a few individual employees were deemed unsuitable for participation. The reasons for individual exclusion were: (1) Close ties to the research project; and (2) Less than a half year employed.

Based on the remaining list, unique functions were grouped and an initial selection was made randomly within each functional group. This initial selection was later slightly adjusted to ensure the involvement of innovative and equal minded people. The final selection consisted of ten interview candidates which were invited to participate. Ten out of ten were willing to participate in the research project. In the Appendix the functional description of the ten participants can be found (Vranken, 2012c, p. 8).

5.1.1.2 Interviews

The interviews were organized on location, in a conference room which was shielded from the normal work environment. The general introduction preceded the interview (see section 4.1.1.3 and Vranken, 2012c, p. 5). During this general introduction the privacy restrictions and the method of analysis were communicated. Furthermore the goal of the research was stated. During this introduction, participants were expected to make an informed decisions whether they were willing to participate in the project. Ten out of ten participants agreed to the research implications and made the decision to participate.

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[20] Based on the employment file as of 1-4-'12

During the interviews, the researcher did not engage in data extraction activities, rather the interview was taped and analyzed afterwards. This allowed the researcher to focus on the interview and use the appropriate probing techniques to ensure thorough data collection. The checklist was used as a guideline, to ensure all topics were sufficiently covered. The participants were relatively open with regard to their daily work routines. Participants became noticeably more critical towards the organization throughout the interview. When being critical about the organization, several participants noted that they were not afraid of voicing their opinion.

Interviews on average took 47 minutes, with the longest interview lasting 66 minutes and the shortest interview lasting 36 minutes (see Appendix, Vranken, 2012c, p. 8).

At the end of each interview, participants were asked to further participate in the project by means of reflecting on results and participate in the design process, all participants agreed. Furthermore participants were invited to participate in reflection meetings. Participants were given the choice to reflect as an individual or as a group on the initial results, all favored the group meeting.

5.1.1.3   Supporting data

Supporting data gathered consisted of financial and HR related performance statements[21]. Project based financial statements represent project outcomes in terms of financial goals. HR related performance statements refer to productivity as a of measurement of value adding work hours. Performance indicators are compared to a pre-defined norm. As noted in section 1.2.3, individual performance is measured in terms of client related value adding hours and new business related hours. The distribution of direct, indirect, and new business hours differs per function.

5.1.2   Results of data analysis

This section will describe the results of the data analysis. The goal of this section is to reflect on the method of data analysis as discussed in section 4.1.2 and to elaborate on the data analysis in terms of results.

5.1.2.1   Data extraction

During data extraction, 170 individual bottlenecks were identified, see Appendix (Vranken, 2012c, p. 9-15). On average 17 bottlenecks were extracted, with a minimum of 9 and a maximum of 26 per participant. During data extraction, the interview time per bottleneck was reported in order to give the researcher the ability to trance back statements during reflection. Classification of bottlenecks was done on the basis of the characteristics described in section Table 7 (section 4.1.2.1, p. 35).

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[21] Because of company policy, explicit content of these statements will not be reported.

Adherence to these bottleneck characteristics was not explicitly reported, but rather served as a cognitive guideline in maximizing objectivity during data extraction.

5.1.2.2 *Consensus analysis*

The individual bottlenecks presented in the previous section were combined and 34 organizational wide parameters were formed, see Appendix (Vranken, 2012c, p. 16). The process of combining bottlenecks occurred by means of an iterative process of adding and combining bottlenecks. Starting with the first participant, unique bottlenecks were listed. Individual statements that were similar to existing unique statements were added to the cluster of individual statements that the unique statement represents. This process was repeated for every participants, see Appendix (Vranken, 2012c, p. 17). During the process of combining bottlenecks, the phrasing of the unique bottlenecks was continuously reflected on and rephrased when considered necessary by the researcher. Important to note is that the researchers explicitly did not retrace the recording of the participants already processed in order to maximize the occurrence of bottlenecks. This was to ensure that the researcher's objectivity was maximized during the consensus analysis.

During the consensus analysis the majority criteria discussed in section 4.1.2.2, p. 35 was applied. The goal of the majority criteria is ensuring the diagnosis outcome adheres to the concept of intersubjectivity. For an unique bottleneck to adhere to the majority criteria meant that 6 out of 10 participants should at least have added one individual bottleneck to the unique bottleneck under analysis. Table 10[22] shows the set of unique bottlenecks adhering to the majority criteria. A full overview of the consensus scores can be found in the Appendix (Vranken, 2012c, p. 17).

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[22] The unique bottlenecks shown in Table 3 were rephrased so that they were more easily communicated.

Table 10, Unique bottlenecks adhering to the majority criteria

	Unique bottleneck	Consensus score
1	Customer dependence	100%
2	Fragmentation of work	70%
3	Market dependence	80%
4	High levels of planning variation	80%
5	Short-term mindset	70%
6	Lack of continuous work	80%
7	Change goals are too vague[23]	80%
8	Lack of customer trust[24]	90%
9	Information loss	80%
10	Lack of knowledge sharing	80%
11	Ambiguous roles	80%

This set of unique bottlenecks are intersubjective organizational bottlenecks which will be used in the stream analyses, for which the results are shown in the next section.

5.1.2.3 Stream analysis

As described in section 4.1.2.3, stream analysis is a technique designed to construct a causal structure based on organizational bottlenecks (Porras, 1987). First an intuitive causal structure is constructed on the basis of intuitively defining relationships between organizational bottlenecks. This cause-and-effect analysis was made by indicating relationships between bottlenecks in a cause-effect matrix, see Appendix (Vranken, 2012c, p. 18).

Based on the bottleneck's causal structure, a classification is made on the basis of Table 8 (section 4.1.2.3, p. 36). Three root causes and two symptoms were identified. Cause-and-effect analyses did not find interactions between bottlenecks, so there is no need to combine bottlenecks. Based on Table 8, the stream analysis chart depicted in Figure 20 is constructed.

Initially three root causes were identified, namely: (1) Customer dependence, i.e. bottleneck 1; (2) Market dependence, i.e. bottleneck 3; and (3) Lack of knowledge sharing, i.e. bottleneck 10. Bottlenecks concerning the customer and market dependence were seen as beyond the researchers scope of influence and thus not included in the researchers design efforts. Although the reaction to the customer/market demands is one defined by a company's internal structure, customer/market

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[23] Was initially phrased as "change is communicated with too much urgency", but was rephrased during participant reflection. This did not imply a conceptual change.
[24] Was initially phrased as "Perception as low involved", but was rephrased during participant reflection. This did not imply a conceptual change.

dependence is inherently linked to commercial enterprises, especially in complex service environments. Change goals are too vaguely communicated (bottleneck 7) was identified as the only contextual bottleneck. High levels of planning variation (4) and Lack of customer trust (8) are indicated as symptoms, and are thus the observable indicators of the bottlenecks the organization is coping with. The remaining bottlenecks thus have mediating characteristics.

As depicted in the diagram, the contextual bottleneck referring to the internal communication regarding strategy will not be included in the design. The reason for this is the long term organizational focus and commitment towards strategic change. At the time of the interviews organizational change efforts were just beginning to emerge in the daily working routines[25].
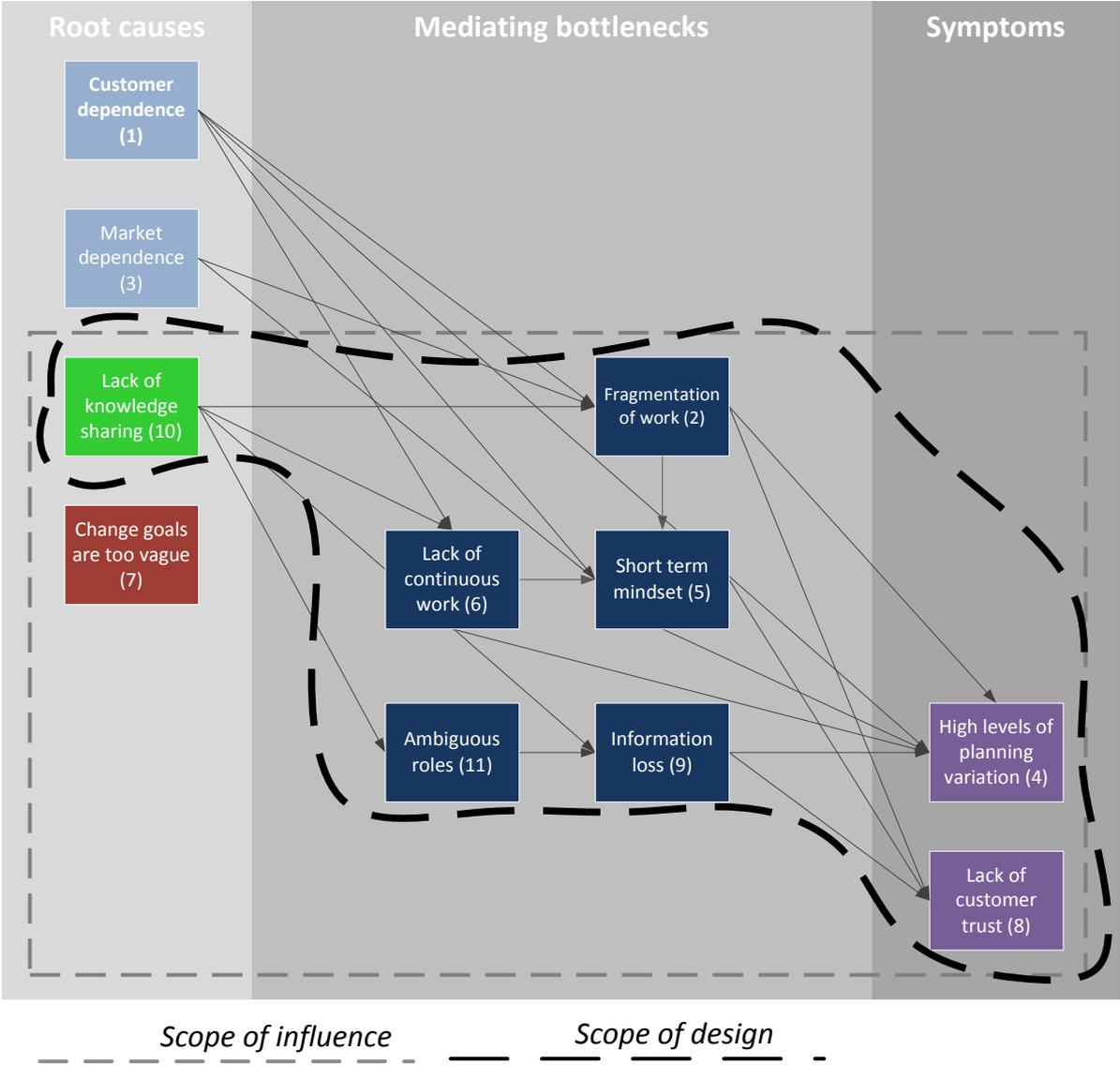
Figure 20, Stream analysis

5.1.3 Supporting data

As discussed in section 4.1.1.4, supporting data is used as additional conformation of the results derived from analysis of the interview data, i.e. the main source of information in the diagnosis stage of the project. Project based financial outcomes confirm the high levels of planning variation, i.e. variation in financial performance. HR performance statements contribute to the understanding of ambiguous roles. The pressure to adhere to the performance norms seems to be causing individuals to focus on achieving their level of value adding hours, rather than maximizing work flow efficiency.

5.1.4 Conclusion and implications for design

Diagnosis has identified lack of knowledge sharing as the root cause of organizational inefficiency. Inefficiency is here used as the non-maximized ability of an organization in its value-creation process. High levels of planning variation and a lack of customer trust were identified as organizational symptoms of inefficiency. Increasing knowledge sharing within the organization should allow the organization to be more able in self-organizing itself around a customer need and therefore should increase organizational efficiency.

As indicated in section (4.2), the design stage of this project will build upon the information brought forward by the diagnosis and will redesign aspects of the organization so that efficiency is increased. Given the results of the diagnosis, design efforts should be aimed at increasing knowledge sharing. Based on the stream analysis, increasing knowledge sharing should partially improve the high levels of planning variation and the lack of customer trust. Because of the customer and market dependence, redesign of the organization's knowledge-sharing ability only as a partial effect on the mediating bottlenecks and symptoms, with the exception of ambiguous roles (bottleneck 11). Conform the stream analysis, role ambiguity is purely dependent on knowledge sharing and therefore is fully solvable by increasing knowledge sharing.

Given the project's background in chaos and complexity science, detailed knowledge sharing practices will not be the subject of study. The design efforts will be aimed at creating an organization that is more able to solve problem themselves. As discussed in the theoretical background (dialogue, section 3.3.1), creating a situation in which people talk about their work and foster solutions to improve work practices should increase the organization's problem-solving capacity. The design section will be aimed at collecting and analyzing possible design interventions to achieve this.

5.2 Design

This section discusses the results related to the organizational design.

5.2.1 Results of data collection

As mentioned in the method chapter, data collection in the design phase is twofold. Data is to be collected in terms of requirements and possible design tools. Requirements were collected by means of individual brainstorms with participants. These participants have been involved during the entire project and should therefore be knowledgeable about the project's goals and should have built a relationship based on trust with the researcher.

Ten out of ten participant were willing to cooperate and expressed a high degree of openness. The invitation and a short summary of the brainstorm sessions can be found in the Appendix (Vranken, 2012c, p. 19-25). From these brainstorm sessions, the levels of design were defined (see section 5.2.1.1) and the user requirements concerning the design (see section 5.2.1.2). Strategic/contextual requirements represent the organization's goal which the design has to adhere to and were collected by means of informal management meetings.

Section 5.2.3.2 discusses the possible design tools that were found during data collection. Data collection occurred through internet research, consulting of an expert, and information related to internal projects.

5.2.1.1 Levels of design

The level of design indicates the information/action loop in terms of its organizational impact. Following De Sitter (1994), levels are defined in terms of operational, tactical, and strategical. These levels were defined by the researcher on the basis of De Sitter (1994) and confirmed by the individual brainstorms concerning the design.

Individual level

The individual level refers to the individual's work experience. This short-term and action based level refers to De Sitter's operational level (1994). Following the guidelines in what entails good work in complex post-industrial work (Vranken, 2012a; theoretical background section 3.1.3) and the ideas of sustainable work crafting, design interventions on an individual level should foster the development of employees at work.

Tactical level

The tactical level refers to the design of work within a project, e.g. team composition, data sharing activities, flow of work/information. Following De Sitter (1994) this level can be interpreted as the

organization of a system, with the operational level representing the individual system entities and the strategic level the goal of the system (see Figure 21).

Strategic level

The strategic level of decision making refers to the vision and long-term strategy of the company defined by management. Especially for improvement projects and design interventions it is important that interventions make sense in a strategic context. Because of the fact that Van Zandbeek is currently operationalizing its strategy throughout the organization, it is important that design interventions give an indication of the progression of the strategy deployment on all organizational levels. Unlike the other levels, this level was brought forward by management and the researcher (see Figure 21).
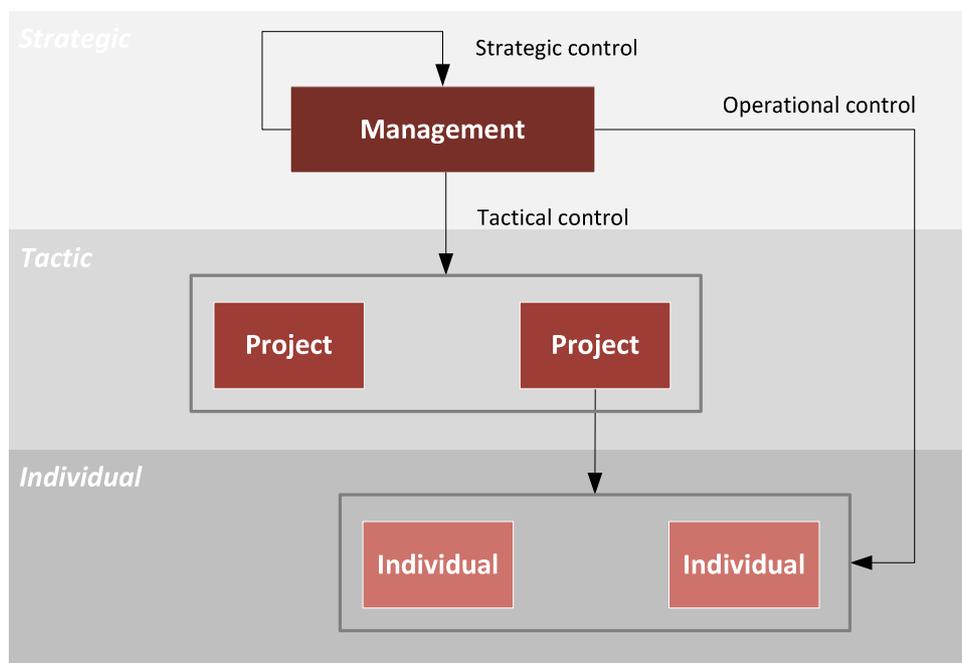
Figure 21, Levels of design

5.2.1.2 Requirements for design

Table 11 depicts the design requirements as brought forward by participants and management. As mentioned earlier, user requirements are based on individual brainstorm sessions with the participants (Vranken, 2012c, p. 20-23) and strategic/contextual requirements discussed with management during a feedback meeting on 19/06/12. As described in the method section, these requirements will be used in selecting (a set of) design tools.

Table 11, Design requirements

	User requirements		Strategic/contextual requirements
A1	Ability to voice opinion	B1	Should foster sustainable organizational values
A2	Should foster confidence	B2	Should increase long-term organizational efficiency
A3	Should limit overpowering by others	B3	Should be in line with 'engagement' strategy
A4	Should both be carried by management and other job holders	B4	Continuous integration in work practices
A5	Should not become a means to complain		
A6	Should foster new insights		
A7	Communication should be clear		
A8	Should foster dialogue on all levels		
A9	Should allow for better communication between management		
A10	Should foster management feedback		
A11	Should give a representation of project content		
A12	Should allow individuals to voice their specialism		

5.2.1.3 Design tools

Depicted in Table 12 and Table 13, possible design tools can be grouped on the bases of their foundations, namely: (1) Communication; (2) Value crafting; and (3) Social intranet. The following sections will elaborate on the possible design tools and their methods of data collection.

Communication based

Communication-based design interventions are design tools that in general aim at clarifying and improving internal communication. Based on the theoretical background, several forms of dialogue sessions were added as possible design tools (1, 1.1, 1.2, 1.3, & 2). In addition to dialogue related design interventions, Plain English as an intervention was also found by means of internet based research (3). Plain English focuses on eliminating jargon in internal and external communication.

Value crafting

Also based on the theoretical background of integral theory and sustainable work design, value crafting (4) is a technique developed by the Eindhoven University of Technology, used to integrate organizational values in the daily work activities of job holders. Data collected on this possible design tool was driven by the theoretical background.

Table 12, Potential design tools (1)

No.	Tool	Description	Reference
1	Bohmian dialogue	As discussed in section 3.3.1, dialogue is seen as a divergent process in which ideas, thoughts, solutions, and so on are shared in order to find common ground. No to be confused with discussion. In contrast to dialogue, discussion is a convergent process in which the goal is to narrow information down to a suitable solution. As mentioned in the theoretical background, Bohmian dialogue emphasizes the process rather than the content of the dialogue. Emphasis on the process entails guiding the dialogue session so that the four key practices of dialogue are respected, namely: (1) listening, (2)respecting, (3) suspending, and (4) voicing (Jones, 2007).	Bohm & Serge (1996); Van Eijnatten & Putnik (2010); Jones (2007); Slotte (2006)
1.1	Dialogue variation: (1) Popcorn meeting	During a popcorn meeting an object is used as a way of indicating when somebody is speaking. This ensures that no interruptions can occur. The sequence whoever is speaking can be set in advance or can be spontaneous. In addition, rules can be set to ensure that nobody dominates the dialogue. Example of this are restrictions on sequence or number of times one speaks.	Co-Intelligence Institute (2008)
1.2	Dialogue variation: (2) Chime and stone	Another variation of an open dialogue is the chime and stone technique. During this technique each participant has the ability to initiate a moment of silence. During this moment of silence none are allowed to talk and everyone is expected to return to the heart, i.e. the fundamental subject, of the dialogue.	Co-Intelligence Institute (2008)
1.3	Dialogue variation: (3) A penny for your thoughts	During this variation all participants are given a set of tokens. These tokens represent a predetermined time frame in which a person is allowed to speak. Tokens can be freely passed on to others, giving them to opportunity to speak on your behalf.	Co-Intelligence Institute (2008)
2	Multi-logue	Multi-logue is a technique in which a relatively large number of participants engage in a series of dialogues to foster strategic development and organizational transformation (Van Eijnatten & Hoogerwerf, 1999).	Van Eijnatten & Hoogerwerf (1999)
3	Plain English	Plain English refers to a tool developed to minimize the use of jargon or overly complicated communications. Plain English advocates the use of simple language in order to better understand each other. Plain English is often implemented as a list of words banned from internal and external communications.	DETYA (2012); Plain English Campaign (2012); Local government Improvement and Development (2012)
4	Value crafting	Holloway et al. propose four steps for crafting organizational values, namely: (1) "selecting a company value, (2) "set goals & change behavior", (3) "reflect on performance", and (4) "adopt the company value" (2011, p. 30).	Holloway et al. (2011)
5	Chaos and complexity workshop	A chaos and complexity workshop is used by Van Oosten (2009) as a means of preparing an organization or group for a dialogue session. It explain the concepts of chaos and complexity to give background information on why dialogue and flexibility is important for organizations.	Van Oosten (2009)

Table 13, Potential design tools (2)

No.	Tool	Description	Reference
6	Social intranet	A social intranet is a contemporary inter organizational approach to knowledge sharing. It mimics social internet functions and is said to create an environment of employee engagement (Thought Farermer, 2012). On the basis of the need to increase knowledge sharing, Sondag (2012) did a benchmark analysis of the social intranets available, Thought Farmer is said to be the most promising.	ThoughtFarmer (2012); Sondag (2012)
6.1	Social-intranet feature: (1) Micro blogging	Similar to Twitter, micro blogs are short digital posts, which are assessible to everybody. Users can subscribe to micro blog users individually or to a certain group.	ThoughtFarmer (2012); Sondag (2012)
6.2	Social-intranet feature: (2) Social-media features	Similar to social-media platforms, social intranet offers users to functionality to share media and respond to others.	ThoughtFarmer (2012); Sondag (2012)
6.3	Social-intranet feature: (3) Knowledge directories	Social intranets also offer the functionality similar to traditional databases. To be used as a knowledge bank, knowledge directories offer the users the functionality of storing information.	ThoughtFarmer (2012); Sondag (2012)
6.4	Social-intranet feature: (4) Analytics	Thought Farmer also offers the functionality of monitoring digital communication.	ThoughtFarmer (2012); Sondag (2012)
6.5	Social-intranet feature: (5) User and group management	Similar to general social-media platforms, social internet offers the users the functionality of defining profiles and specifying groups.	ThoughtFarmer (2012); Sondag (2012)

Social intranet

Van Zandbeek recently decided that a social intranet is in line with its newly formed engagement strategy (see possible design tools 6, 6.1, 6.2, 6.3, 6.4, & 6.5). Although plans with regard to the implementation of a social intranet are relatively concrete, implementation is a long-term goal and should be done in accordance with the current affairs as described in this project. Social-intranet functions and features are viewed here individually, in order to not only differentiate between the individual functions but also arrive at a concrete implementation sequence.

5.2.2 Results of data analysis

Based on the scoring criteria described in the method section (see section 4.2.2), each design was scored on the requirements (see Appendix, Vranken, 2012c, p. 26). In order to balance user and strategic/contextual requirements a weighting factor of 3^{26} was used for the strategic requirements[27]. Figure 22 shows the results of the scoring analysis. Design intervention 1, 1.2, 1.2, 1.3, 4, and 6.5 seem to be the most promising. Here design intervention 1 is an overarching tool of 1.1, 1.2, and 1.3. Furthermore the scoring analysis shows that a combination of these interventions should lead to results on all the levels indicated in this section.
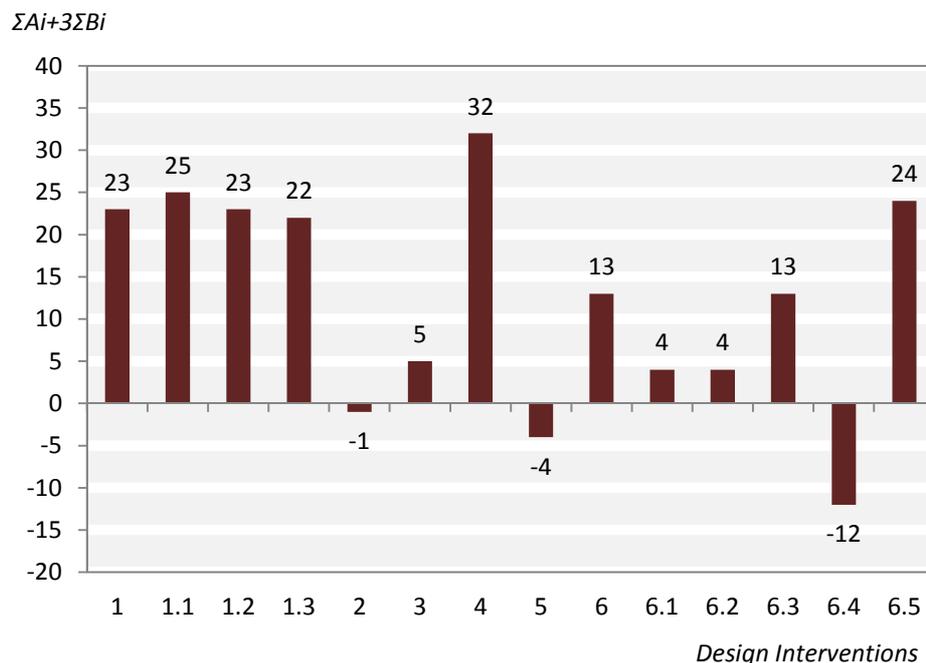

Figure 22, Scoring graph design tools

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[26] Number of user requirements = weighting factor * strategic/contextual factors, 12 = weighting factor * 4, Weighting factor = 3.
[27] Total score per design intervention = $\Sigma Ai+3\Sigma Bi$, with A user requirement scores and B representing strategic/contextual requirement scores.

Table 14 (next page) was constructed to assess whether different design interventions can be used in combination with each other. Here the researcher intuitively assessed the design interventions' functions and goals and scored all combinations on their possibility to mutually occur. As shown in Table 14, social intranet functions highly contribute to each other's functionality. Dialogue and multilogue sessions seem to contribute or at least neutral to all other interventions except for social analytics (for dialogue) and knowledge directories (for multilogue). Social analytics conflict with dialogue because of its controlling nature and exterior orientation. Knowledge directories conflict with the goal and function of multilogue because they can easily be overwhelmed by the vast amount of information. Plain English seems to conflict with several social intranet functions because of its restriction on informal communication. As with dialogue, social analytics also conflicts with value crafting, again because of its exterior focus. A chaos & complexity work shop seems to have a positive effect on all possible design interventions.

Table 14, Mutual occurrence table possible combination of design tools[28]

	1	1.1	1.2	1.3	2	3	4	5	6	6.1	6.2	6.3	6.4	6.5
1		X	X	X	X	X	X	X	X	X	X	X	X	X
1.1	++		X	X	X	X	X	X	X	X	X	X	X	X
1.2	++	-		X	X	X	X	X	X	X	X	X	X	X
1.3	++	- -	- -		X	X	X	X	X	X	X	X	X	X
2	N	-	N	N		X	X	X	X	X	X	X	X	X
3	+	+	+	+	++		X	X	X	X	X	X	X	X
4	++	++	++	++	+	+		X	X	X	X	X	X	X
5	+	+	+	+	+	N	++		X	X	X	X	X	X
6	N	N	N	N	+	-	+	++		X	X	X	X	X
6.1	+	+	+	+	+	-	+	++	++		X	X	X	X
6.2	N	N	N	N	+	-	+	++	++	++		X	X	X
6.3	N	N	N	N	-	N	N	++	++	++	++		X	X
6.4	- -	- -	- -	- -	+	N	-	++	++	++	++	++		X
6.5	+	+	+	+	+	+	+	++	++	++	++	++	++	

On the basis of Table 14, it can be concluded that interventions based on the dialogue technique (1.1, 1.2, & 1.3) cannot occur in addition to each other, thus intervention 1.1 seems to be the most promising, although the difference is extremely small. Table 14 furthermore shows that intervention 1.1, 4, and 6.5 seem to strengthen each other (Highlighted in Table 14). On the basis of the

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[28] The notations used in Table 14 refer to the level of mutual appropriateness as based on

Table 9, ranging from highly appropriate (++) to highly conflicting (- -).

requirements and mutual occurrence analysis one must conclude that a combination of dialogue, value crafting, and knowledge networks should lead to a sustainable design intervention that is in line with both user and strategic/contextual requirements.

5.2.3 Results of design

This section will go into further detail concerning the design tools selected in the previous section. As mentioned in the method chapter, designing can be done in three different ways, namely: (1) Selecting a single design tool; (2) Combining multiple design tools; and (3) Designing a new tool. Based on the results of the data analysis, option 2 is chosen: three design tools were selected and will be combined. Interventions will be grounded in theory by means of the CIMO logic, which will be described in the following section.

5.2.3.1 *CIMO logic*

This section will discuss the concept of CIMO logic. CIMO logic is a framework in which design propositions are developed (Denyer et al., 2008). Grounded in the ideas brought forward by the emerging field of design-science research (see section 1.1.1), a design proposition is a proposition for an intervention based on analysis and explanation which should lead to a certain outcome in a given context. As mentioned earlier, the CIMO logic is a framework in defining design propositions. Denyer et al. formulate the CIMO-logic as follows: "in this class of problematic Context (C), use this Intervention type (I) to invoke these generative Mechanisms (M) to deliver these Outcome(s) (O)" (2008, p. 395-396), see Table 15. The following sections will discuss the components which make up the CIMO-logic framework, and state their role in the design stage of the project.

Table 15, Components of CIMO-logic, reproduced from Denyer et al., 2008, p. 397

Component	Description
Context (C)	The surrounding (external and internal environment) factors and the nature of the human actors that influence behavioral change.
Interventions (I)	The interventions managers have at their disposal to influence behavior
Mechanisms (M)	The mechanism that in a certain context is triggered by the intervention.
Outcome (O)	The outcome of the intervention in its various aspects.

Context

As mentioned in section 1.3, Van Zandbeek recently engaged in a corporate repositioning project and formulated their vision in terms of their market proposition[29] and organizational values[30]. The

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[29] Engagement, see section 1.3.1.1, p. 14.
[30] These core values are: (1) open, (2) motivated, (3) commercial, (4) pragmatic, and (5) enthusiastic, see section 1.3.1.2, p. 15.

context of the design proposition can thus be stated as an organization involved in an organizational redesign project in order to further the business and achieve their desired market position, see Figure 23.

<u>Interventions</u>

Interventions involve knowledge-based specific actions which in a given context should trigger mechanisms and lead to a certain desired outcome. During this project interventions will be based on the outcomes of the data analysis phase of the design to ensure the most promising design direction is taken. Interventions should be designed so that given the context, they will improve the situation at hand by improving the organizational bottleneck found in the diagnosis stage. This chapter will elaborate on the interventions per level (see section 5.2.3.2) and propose an implementation process (see section 5.2.3.3), see Figure 23.

<u>Mechanism</u>

Following complexity as a framework for organizational change, the generative mechanism involved will be a combination of transcendence and translation. As discussed in section 3.3.2, transcendence and translation are the mechanisms through which organizational change occurs, see Figure 23.

<u>Outcome</u>

As stated in the introduction, the project goal is to increase Van Zandbeek's flexibility in terms of: "(1) the ability to identify and shape potential co-creation opportunities, (2) the ability to integrate these opportunities by means of planning, and (3) the ability to implement and measure these opportunities" (Payne et al., 2008, p. 86). In the specific case of Van Zandbeek, flexibility refers to the efficiency of self-organization around a specific customer need, see Figure 23.

5.2.3.2   Design interventions

The following sections will go into detail concerning the design interventions on each level identified in the data-collection stage of the design. Three design tools were identified as potential interventions for increasing organizational knowledge sharing and flexibility, namely: (1) Dialogue; (2) Value crafting; and (3) Knowledge networks. As indicated earlier, these design tools reinforce each other and work on all levels. Because of the project's foundation in complexity science, Wilber's quadrants will be used in guiding the design efforts. Higher levels of complexity are only reached when interventions work to improve performance in all four quadrants.
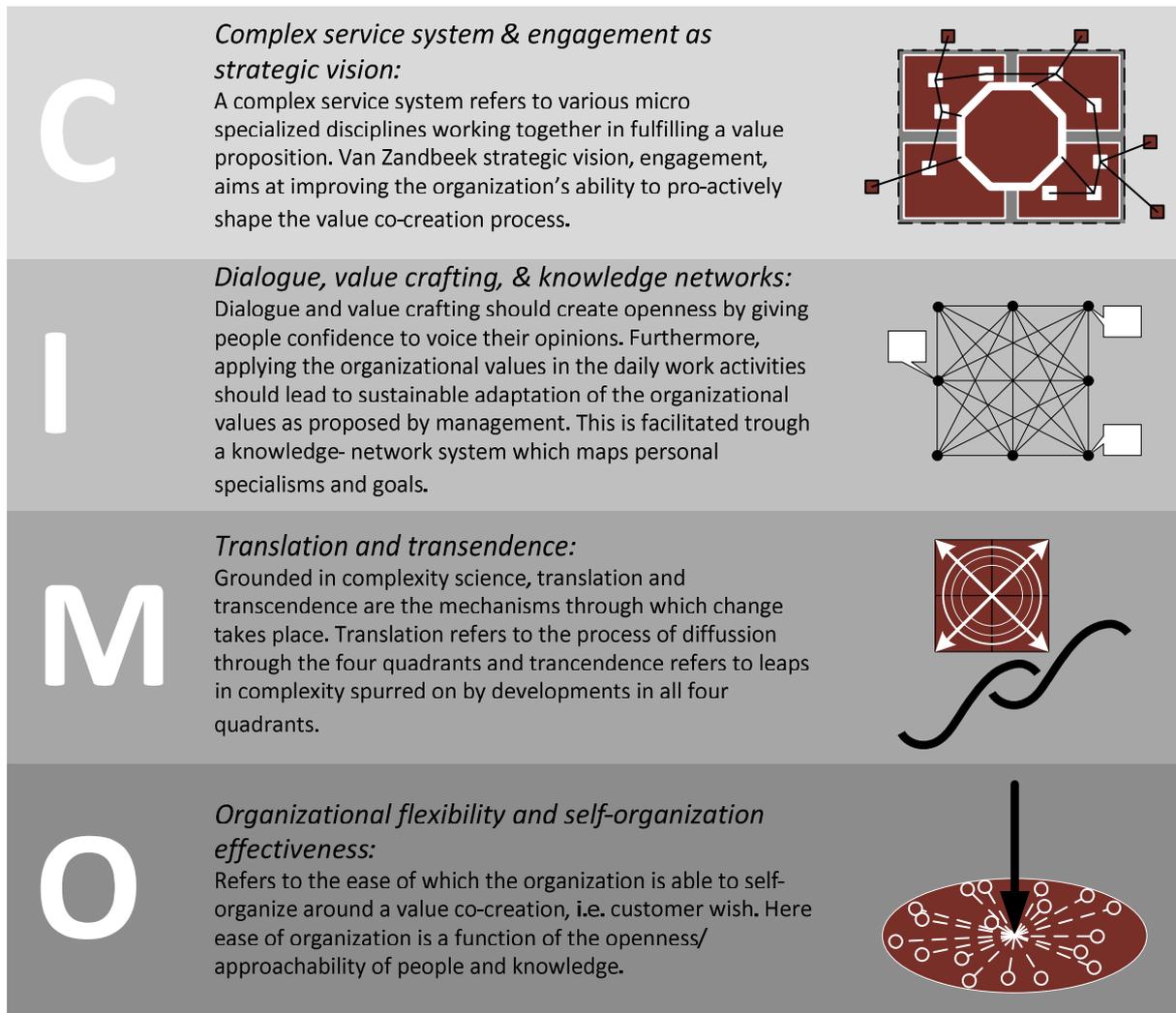
	Complex service system & engagement as strategic vision:	
C	A complex service system refers to various micro specialized disciplines working together in fulfilling a value proposition. Van Zandbeek strategic vision, engagement, aims at improving the organization's ability to pro-actively shape the value co-creation process.	
I	**Dialogue, value crafting, & knowledge networks:** Dialogue and value crafting should create openness by giving people confidence to voice their opinions. Furthermore, applying the organizational values in the daily work activities should lead to sustainable adaptation of the organizational values as proposed by management. This is facilitated trough a knowledge- network system which maps personal specialisms and goals.	
M	**Translation and transendence:** Grounded in complexity science, translation and transcendence are the mechanisms through which change takes place. Translation refers to the process of diffussion through the four quadrants and trancendence refers to leaps in complexity spurred on by developments in all four quadrants.	
O	**Organizational flexibility and self-organization effectiveness:** Refers to the ease of which the organization is able to self-organize around a value co-creation, i.e. customer wish. Here ease of organization is a function of the openness/ approachability of people and knowledge.	

Figure 23, CIMO-logic

Table 16 specifies the mechanisms through which the intervention should result in a desired outcome. As depicted in Figure 23, these mechanisms are translation and transcendence.

Table 16, Mechanisms of design interventions

Design intervention		Translation		Transcendence (see Figure 27)
Value Crafting	1A	Integrate (Figure 24)	1B	Contextualize
Dialogue	2A	Emerge (Figure 25)	2B	Transcend
Knowledge network	3A	Make explicit (Figure 26)	3B	Dilemma

The function of value crafting is to integrate organizational values in the daily work routines (1A, Figure 24), resulting in a strategic context (1B, Figure 27) in which ideas emerge by means of dialogue (2A, see Figure 25). These ideas possibly result in an improved situation, thus transcend their previous level of complexity (2B, Figure 27) depending on the idea's outcome of the organizational

dilemma between old and new (3B, Figure 27). Organizational assessment is facilitated by the knowledge-network system as means of making ideas explicit (3A, Figure 26).
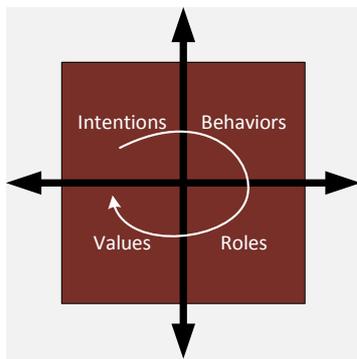

Figure 24, Integrate (1A)

Shared meaning
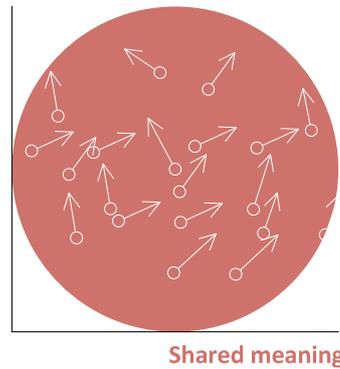
Figure 25, Emerge (2A)

● = Organizational entity
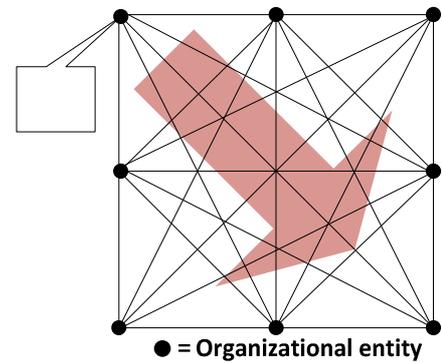
Figure 26, Make explicit (3A)

Organizational improvements advocated by the design interventions adhere to the four-quadrant criteria. Based on organizational values (Values) ideas are generated by individuals (intentions). Those ideas are put in practice by the individuals advocating the change (behaviors) and diffused throughout the organization (roles). Similar to value crafting improvements are translated between all four quadrants leading to a jump in organizational complexity.

Figure 27, Transcendence

The next sections will discuss the impact the design has on each level.

Individual-level design

On an individual level, dialogue, value crafting, and knowledge networks all play a role in the design. This level represents the flow of knowledge and the self-organizing effectiveness of single indi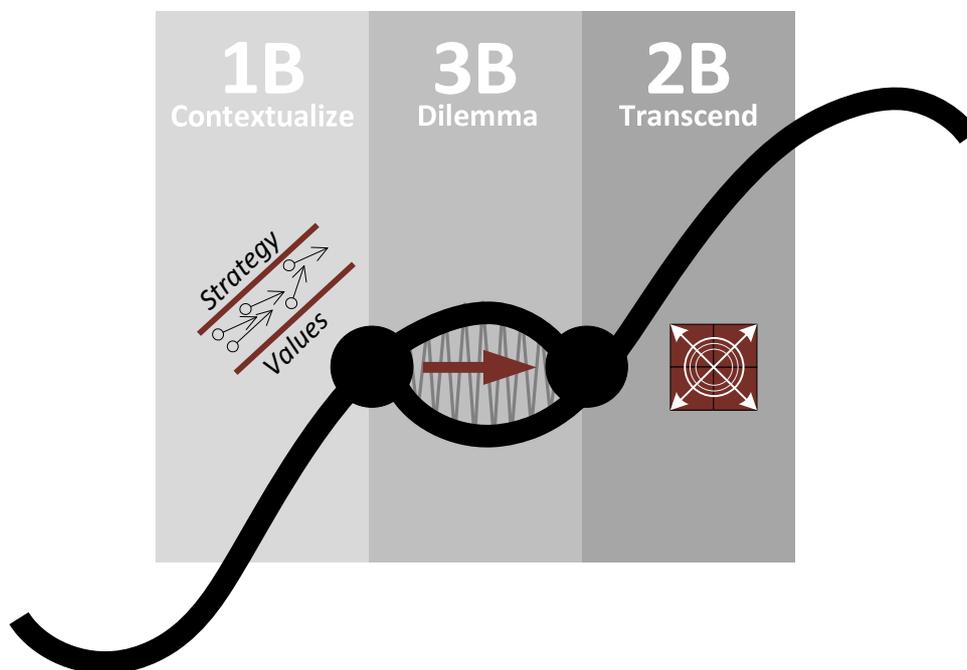viduals. As discussed earlier, former organizational change projects formulated a new strategy based on 'engagement' and five organizational values. Value crafting will be used to give meaning to these values in light of concrete work responsibilities and tasks. During dialogue sessions people share their meanings regarding these organizational values in a random group. During these dialogue sessions the organizational values should become more concrete and should invite job holders to actively shape their own environments by proposing directions for improvement on the basis of the organizational values. This openness/proactive approach is enforced by implementing a system mapping the organization's knowledge network. This network comprises of individual 'profiles' which voice their specialism, experience, and future goals. This process of opening up an individual's goals and ambitions should increase individual confidence with respect to knowledge sharing and should make people more approachable. Furthermore, voicing unknown interests and specialisms should lead to new ideas and a more effective self-organization.

Tactical-level design

On a tactical level, the organization benefits from the design interventions due to the fact that the interventions are aimed at improving the organization's ability to effectively self-organize itself around the value-creation process, thus the organization of a project. By voicing their opinions and proposing improvements, the project team's organizing capacity is expected to improve. Opinions and suggestions of others may continuously reshape the way projects are being organized. Simply said, organizational dialogue improves the project members' problem-solving ability, i.e. the ability to identify and act upon improvements of the current situation.

Involvement of management during dialogue sessions is essential for achieving cross-project improvements. During dialogue, managers hear suggestions for improvement and may act upon these in order to further optimize organizational processes. Suspension of judgment during dialogue sessions is key in developing to higher levels of development. As stated in the theoretical background, dialogue explores new solutions by arriving at shared meanings. Dialogue sessions are therefore a powerful tool for managers to explore and operationalize possible improvements for the organization, coming from within the organization.

The knowledge-network system improves the organization of projects by means of facilitating cooperation between individuals that normally do not work together. Working and interacting with

people who are normally not considered a source of value in a specific project, should lead to learning and new value propositions.

<u>Strategic-level design</u>

As given in the context section of the CIMO logic, Van Zandbeek recently underwent a strategic repositioning and decided upon a set of organizational values that represent the organization's strategic position. Value crafting is a technique developed for integrating organizational values in daily work activities and therefore ensures that not only strategic goals are translated, but actually integrated in daily work routines.

5.2.3.3   Implementation/continuation process

This section will discuss the implementation/continuation process which should ensure the design interventions to be consolidated and embedded in the organization's routines.

<u>Dialogue/value crafting</u>

One of the organization's design requirements was that the design had to be embedded in the organization's routines and daily working life. Episodic design interventions like value crafting and dialogue are difficult to integrate. Their episodic nature often causes the design intervention to be limited by the person responsible for the initial project, in this case an internship. To overcome this problem, proposed by the management, a person will be given responsibility of organizing dialogue meetings on a monthly basis. This person will be introduced to the ideas behind dialogue/value crafting and will work according to a framework developed in this thesis (see Appendix[31], Vranken, 2012c, p. 27). It is important that dialogue meetings are held frequently and participants alternate every meeting. The person given the responsibility of organizing the dialogue sessions is preferably enthusiastic about organizational change, and has a fresh perspective on organizational processes.

<u>Knowledge network</u>

Knowledge-network implementation has the pitfall of being seen as a ready made, copy/paste solution. A knowledge-network system should be used as a facilitator in the organization's goal to create a learning organization, i.e. to develop a proactive mindset concerning organizational improvements. A knowledge-network system should give confidence to the user and foster approachability. Hasty implementation might make the system an 'elite toy', i.e. a system only used by people already having a proactive mindset. The problem here is that the majority sees the system as not applicable to them. It is important to keep in mind that the knowledge systems should be a means to facilitate organizational dialogue, not an end. It is therefore advised that the

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[31] Justification of the framework based on its contribution to the design requirements can also be found in the Appendix (Vranken, 2012c, p. 28).

implementation of the system *follows* the implementation of dialogue sessions, enforcing the dialogue rather than implemented in parallel.

Throughout the implementation process of the system, translation in terms of Wilber's quadrants (1996) should be an important guideline[32]. As with the process leading up to the dialogue trial, organizational ambassadors should be identified. These ambassadors should not be experienced with the system, but should be informed by the implementation's initiator. This ensures that the system is implemented bottom up, rather than 'thrown' at the users. These ambassadors should be representatives of the system and its implementation. The project initiator should guide the change, but should not be overly present.

In order to link the knowledge-network system with the dialogue sessions, i.e. the value-crafting process, it is advisable to link certain system functions to an organizational value, thus embedding the system in the organizational values and change initiatives already in place.

5.3 Intervention

As described in the method of intervention (see section 4.3, p. 39), during this project an intervention is meant as a test both for academic and organizational purposes. A test will highlight the strength and weaknesses of a certain intervention so that adjustments can be made in order to make the intervention more effective in the future (organizational purpose). Furthermore, a test can be used to assess whether the behavior patterns that were expected to emerge, did emerge (academic purpose).

The trial session involved the value-crafting and dialogue aspects of the design. Due to the limited time frame of the project and the proposed sequence of implementation, it was not possible to integrate the knowledge-network system in the trial. The dialogue-tool framework proposed by the researcher guided the trial session, see Appendix (Vranken, 2012c, p. 27).

The trial session was held on 09-08-2012 and eight participants attended the session. Of these eight participants, five participated during the entire project. As mentioned earlier, to ensure the sustainability of the intervention, ownership of the intervention was designated to a job holder within Van Zandbeek. This intended owner of the intervention was present and participated in the session.

Unfortunately, members of upper management did not attend the session because of unforeseen circumstances. This made the session limited in its organizational impact and rather served as a

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[32] As discussed in the theoretical background, organizational development projects tend to focus on the exterior, rather than the interior (see Figure 15, p. 37). This leads to an underutilized change initiative.

showcase to the intended owner of the intervention. After the session, people noted that in the presence of management the conversation dynamics were probably quite different. Based on this, one can conclude that the organization struggles with a cognitive authority barrier between upper management, team leaders and consultants, and more operational job holders[33].

5.4 Evaluation

During evaluation the trail-dialogue session was evaluated by means of a questionnaire and analyzed by means of a frequency plot.

5.4.1 Results of data collection

As discussed in the methodology section, evaluation will assess the extent to which the effects that were expected to emerge, emerged during the trail session. Table 17 depicts the questionnaire questions distributed following the trail session. The full questionnaire and the request to fill it out are depicted in the Appendix (Vranken, 2012c, p. 29).

Table 17, Evaluation questionaire

	Question	Effect expected to emerge
Q1	During the session I was free to voice my opinion	Dialogue sessions as a platform for open communication on all levels (Bohm et al., 1991).
Q2	During the session I developed a clearer picture of the organizational values	Giving meaning to organizational values (Holloway et al., 2011)
Q3	The dialogue session forwarded my understanding of the daily work of others	Finding shared meaning (Bohm et al., 1991).
Q4	The dialogue session evoked a mindset change in my idea of internal communication	Increasing organizational knowledge sharing (found as main organizational bottleneck, see section 5.1).
Q5	The dialogue session to me highlighted areas of improvement	Dialogue as a means of creating a learning organization (Eijnatten & Galen, 2007).
Q6	The dialogue session was a pleasurable experience	Integration in daily work routines (Strategic/contextual requirement, B4, Table 11, p. 49)

Seven out of eight participants handed in the questionnaire. The Appendix (Vranken, 2012c, p. 30) depicts the data collected by means of questionnaires. Average scores ranged between 3.4 and 6.6 with an overall average of 4.6, see Figure 28.

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[33] Gillmore et al. (1994) identified four cognitive boundaries present in boundaryless organization, namely: (1) Authority boundary; (2) Political boundary; (3) Task boundary; and (4) Identity boundary.
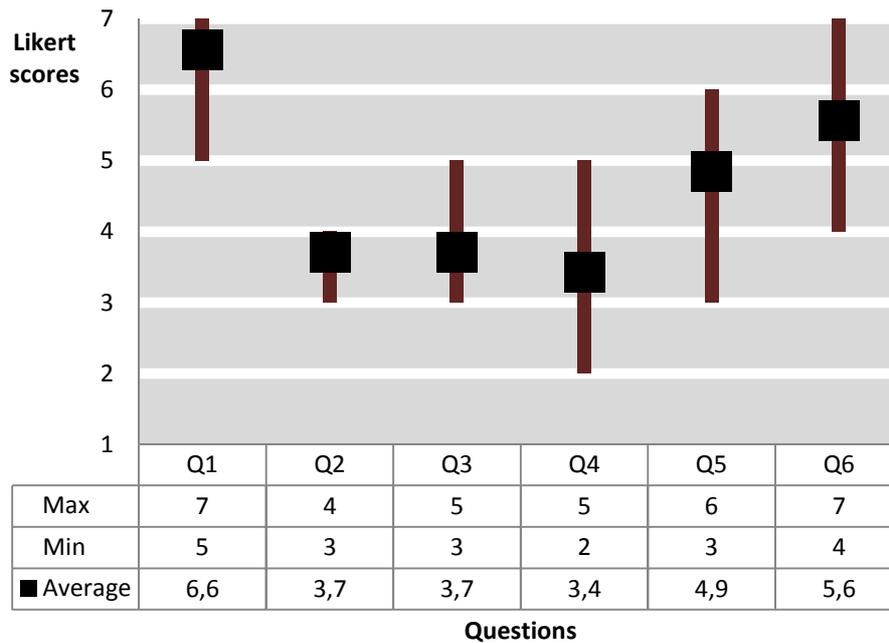
	Q1	Q2	Q3	Q4	Q5	Q6
Max	7	4	5	5	6	7
Min	5	3	3	2	3	4
■ Average	6,6	3,7	3,7	3,4	4,9	5,6

Questions

Figure 28, Results of questionnaire data collection

In addition to the questionnaire data, the intended owner was asked to reflect on the session and its possibilities in the future. Two concrete remarks were made, namely: (1) Having the organizational values as the topic of dialogue seems rather vague; and (2) Without the presence of upper management the session's outcome has no impact on the organization.

The next section will go into detail concerning the data analysis and will link the comments of the intended owner with the behaviors that emerged.

5.4.2   Results of data analysis

As mentioned in the method section, no strict/formal methodology will be used in analyzing the evaluation data, rather the researcher will make sense of the data by means of the questionnaire frequency plots, see Appendix (Vranken, 2012c, p. 31-32). The goal of the questionnaire was to assess whether the behaviors that were expected, emerged. As discussed in the method section, theoretical justification of results will be based on a chaordic link between interventions and effects (Van Eijnatten, 2004b). This implies that behaviors emerge chaordically, thus resulting from leaps in complexity. In addition to this, because of the nature of the intervention, behaviors can also emerge with a certain time lag. Dialogue/value crafting seeks to create an environment in which ideas are shared and common ground is sought, the emergence of behaviors is therefore time and interaction dependent. During participant interaction outside of the session, behaviors can emerge because participants see each other differently.

As discussed in the method section, the Likert scale indicated the extent to which participants agree with a statement referring to a certain behavior predicted to occur[34]. On the basis of the data summary (Vranken, 2012c, p. 30) and the frequency plots (Vranken, 2012c, p. 31-32), the researcher concludes that the freedom to voice one's opinion (represented by Q1) definitely emerged as all scores are above the neutral score (4). The behaviors represented by Q5 (highlighting areas of improvement) and Q6 (the session as a pleasurable experience) possibly emerged. Given the two peak shape of the Q5 frequency plot (see Figure 29), one must conclude that the behavior implied by Q5 partially emerged.
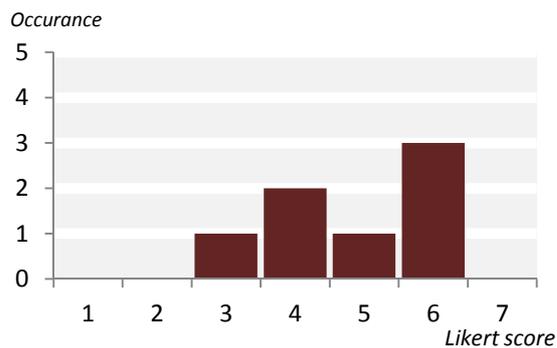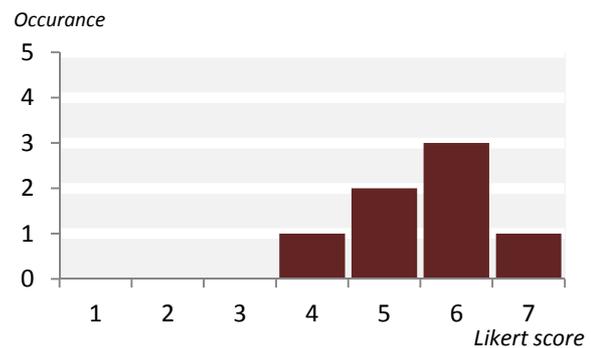

Figure 29, frequency plot Q5

Figure 30, Frequency plot Q6

The Q6 frequency plot shows that 6 out of 7 participants scored question 6 above the neutral score of 4 (see Figure 30), concluding that the behavior implied by question 6 almost fully emerged.

Behaviors relating to clarity on organizational values, improved understanding of the daily work of others, and a mindset change with respect to internal communication, did not emerge during the trial session. The comments made by the intended owner of the intervention confirmed these results. As mentioned earlier, behaviors emerge chaordically and with time laps. The intended owner of the intervention noted that during the days following the trial session, participants started to talk about the organizational value discussed in the trail session. The behaviors represented by Q2, Q3, and Q4 are thus expected to emerge chaordically over time. Continuation of the dialogue/value crafting sessions should allow these behaviors to emerge. In addition to this, the presence of upper management seems to be a prerequisite for the intervention to have an impact on all levels of the organization.

5.4.3   Conclusion of evaluation

On the basis of the three behaviors that emerged and the comments by the intended owner, one must conclude that the emergence of all the expected behaviors is highly dependent on the presence

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[34] Likert scores were used as follows: (1) Highly disagree; (2) Strongly disagree; (3) Disagree; (4) Neutral; (5) Agree; (6) Strongly agree; (7) Highly agree.

of upper management and the continuation of the sessions. Although it is expected that within the presence of upper management, openness is limited, on the long run these sessions will break down the cognitive authority boundary present between upper management and other job holders. Breaking down the authority boundary is one of the prerequisites of the improvement function of the sessions. Because of the one-speaker format of the intervention, the dialogue sessions should be highly successful in breaking down the authority boundary. Furthermore, the intended owner noted that having the organizational values as dialogue topics seemed rather vague. This was supported by the questionnaire data. The value-crafting aspect of the intervention seeks to make the organizational values concrete by giving them meaning in daily work routines. More sessions are needed to give meaning to the organizational values and allow for emergence of all the predicted behaviors.

6 Conclusions

Starting out as an design-based study based on contemporary work-design theory and the complexity methodological lens, this study covered the full regulative cycle[35], involving problem definition, diagnosis, design, intervention, and evaluation. The project's goal was to increase the organization's flexibility, i.e. its self-organizing effectiveness when confronted with a service value co-creation. Diagnosis revealed that the root organizational bottleneck is a lack of knowledge sharing. Being a knowledge-intensive business, Van Zandbeek therefore benefits from maximizing knowledge transfer and application throughout the organization. As described in the theoretical background, work in complex service environments is non-routine, dynamic, and emergent. Formal structures and procedures limit work effectiveness and provide standard solutions. Formal routines are thus limited in their applicability in complex service environments.

The ability for an organization to self-organize is inherently linked with the diffusion and transparency of knowledge. According to Wilber (1996) each entity, i.e. each holon or whole, consists of four quadrants, namely: (1) Interior, collective; (2) Interior, individual; (3) Exterior, individual; and (4) Exterior, collective. In order for development of the whole to occur, all quadrants must be developed. Thus in order to improve the organization's ability to share knowledge, all four quadrants need to be developed. With his four quadrants, Wilber (1996) combines the exterior and the interior. For management science the interior is often forgotten or more than once seen as an 'additional factor' for succes. For example, many management books talk about the interior as ownership of a technical solution, e.g. ERP systems, and organizational ownership. In this study, development on all quadrants was strived for.

During the design, data was collected and analyzed on possible interventions and organizational requirements. A combination of value crafting, dialogue, and a knowledge-network-system was found to be the most promising. This combination of design interventions should increase the organization's knowledge-sharing and problem-solving capacity, furthering their ability to self-organize. As discussed in the theoretical background (chapter 3), dialogue is often used as a means for developing the organization's interior. In this study, dialogue is linked with value crafting, giving the dialogue sessions sustainable meaning and embedding the organization's strategy in the daily work activities of individuals.

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[35] See Van Aken (1994).

On 09-08-2012 a trail dialogue/value-crafting session was held within the presence of the intended owner of the intervention. Because of unforeseen circumstances, no one from the management team was present. Participants expressed that the session needed either managerial presence or a feedback mechanism in order to make the session valuable. In addition to this, managerial presence helps break down the authority barrier experienced between management and other job holders.

Data collected by means of a questionnaire was analyzed in order to detect the emergence of predicted behaviors. Three behaviors emerged, namely: (1) Dialogue sessions as a platform for open communication; (2) Highlighted areas of improvement; and (3) The dialogue session was a pleasurable experience. These results indicate the importance of continuation. Continuation is needed to give meaning to the organizational values and break down the authority barrier, allowing improvements to spread throughout all levels of the organization.

As implied by the CIMO proposition, the mechanisms through which the intervention leads to a desired future state, translation and transcendence, imply that the behaviors expected to emerge from the intervention are subjected to interaction and chaordic leaps in complexity (transcendence). Often described as the drop that spilled the glass, seemingly insignificant events can lead to behavior emergence. Continuation of the dialogue/value crafting sessions is needed to make the organization conscious of the organizational values and spur on change initiatives compliant with these values. Translation denotes the process of diffusion through the four quadrants (Holloway et al., 2011). Dialogue/value crafting sessions should create common ground which should lead to individuals actively interacting with each other in order to allow for improvement initiatives to emerge and diffuse throughout the organization. Although the dialogue/value crafting trial session to some lacked focus, not being action directed is fundamental to the mechanisms behind the session. Action directed sessions seek to find the best solution given a predefined set of possibilities. Dialogue in contrary seeks common ground and allows for divergent thinking. Not being action directed therefore leads the emergence of new ideas, a prerequisite in order to become a continuously learning organization, i.e. an organization that is actively become more able in delivering value.

In general terms, within knowledge-intensive work environments, including complex service environments, self-organization ability, i.e. organizational flexibility, is the most important driver of work effectiveness. Because job holders are continuously confronted with non-routine, dynamic, and emergent work, they are the best judges in how a value-creation process should be organized. This self-organization capacity is something that should be maximized by, in this case, furthering internal communication. The ability to self-organize is a company-wide asset and a driver of success on all levels.

7 Discussion

This section will discuss the project's limitations, relevance for related literature fields, and I will give suggestions for further research.

7.1 Limitations

Because of the project's limited time frame, interventions were restricted to a trail dialogue session. Of course, this is an important first step, but will be limited in its results. In line with the complexity lens, changes occur chaordic and thus seem to just emerge, which makes it likely that initial results do not provide a clear picture about the effectiveness of the design. In addition to this, the thesis was limited by the relatively unclear initial problem statement. This has lead to a general diagnosis stage and therefore limited the thesis project's dept and thoroughness. This said, the diagnosis was considered extremely valuable in terms of organizational insights and the design proposed was embraced by the organization for further implementation.

7.2 Relevance for research

As mentioned in the introductory chapter, this research contributes to three research fields, namely: (1) Work-design theory; (2) Service-science theory; and (3) Information-systems theory. The following sections will go into detail concerning the contribution of the research to the three relevant research fields.

7.2.1 Work design theory

As elaborated on in the theoretical background chapter, work-design theory is evolving towards loosely defined work and limited formalization. The organizational diagnosis revealed that themes familiar to contemporary work-design theory emerged. Fragmentation of work as described by Kamp et al. (2009; 2011) was found to be a significant bottleneck in the organizational diagnosis. Besides work fragmentation, lack of continuous work, and a short-term oriented mindset were also found as significant bottlenecks. Highly related to work fragmentation, these bottlenecks highlight the effect of a service orientation on individual and collective work routines. Lack of information sharing was found as one of the root causes for organizational inflexibility. Job holders in more operational tasks found it difficult to exert control over their daily work activities. In addition, employees seemed to be somewhat reluctant to share information. In line with the concept of ownership control (Hvid et al., 2008; 2010), interventions were proposed to foster organizational dialogue, i.e. talking about work routines and sharing possible improvements for organizational renewal. Being actively involved in the process of continuous organizational development, i.e. creating a learning organization, should allow people to be more engaged, thus able to exert some degree of ownership control. Ownership control also implies self-control over a person's subjective time regimes. Here self-control refers to

cognitively balancing subjective time-regimes. Because work in complex service environments tends to focus on the short-term benefits, it is important that job holders are given the opportunity to reflect on long-term goals and engage in learning behavior.

As proposed by Vranken (2012a), work design within complex service environments should allow for flexible work routines that stimulate self-organization and continuous improvement by means of dialogue. In line with boundaryless work-design theory, work in complex service environments should be performance oriented and thus should focus on responsibilities rather than hour counts.

7.2.2 Service-science theory

By nature, service providers are unable to deliver an exact pre-defined value to the customer. Because value is co-created, service outcomes are unpredictable and interaction specific. This was also found in the organizational diagnosis. Project outcomes varied widely in terms of their financial performance. No specific project-planning tools were applied during the project's lifecycle and the project's content was highly dependent on the situation and the person guiding the project. Information sharing was found to be vital in maximizing the organization's effectiveness of self-organizing itself around a customer need. Service-science theory has been advocating the application of network theory. Lusch et al. (2010) note that the goal of the network is to learn, i.e. to be better able to self-organize its value creation and propose more valuable value propositions in the future (Payne et al., 2008). This thesis project can contribute to service-science theory by means of advocating the use of complexity theory as a methodological lens, and organizational dialogue as a means for an organization to learn.

7.2.3 Information-systems theory

Information-systems research has mainly focused itself on technical aspects of for example knowledge sharing. As noted in this paper, both exterior and interior characteristics need to be developed in order for the intervention to lead to preferable results. A knowledge-network-type information system has been proposed for improving the organization's knowledge-sharing capacity. Examples of these systems include functions offered by social intranet software. This knowledge platform should allow for voicing one's specialism and sharing of improvement propositions. In contrast to traditional database oriented systems, the information shared by a knowledge-network system is timely and action directed. Complex service environments offer value that is emergent and interaction specific. As a result knowledge to be shared is often specific and cannot be made explicit for storage. In this research, the information system is to be implemented as a supporting function of organizational dialogue. Here, both interior and exterior parts of Wilber's quadrants (1996) are being developed simultaneously. Wilber's quadrants can be applied to information-systems research as a

means of assessing the organizational interior and exterior development to ensure that these developments are complementary.

7.3 Suggestions for further research

This section will elaborate on the possibilities for further research in terms of the organization and literature based goals.

7.3.1 Organization specific

Van Zandbeek sees its repositioning strategy as the start of a major organizational renewal process. This research project is therefore one small step in the process and several interventions are planned in order to develop towards a truly engaged organization. This project revealed that engagement, i.e. being proactively involved in (customer) business processes, is facilitated by means of organizational dialogue and matches in general very well with the complexity lens as applied to organizational science. In line with Van Oosten (2008, p. 45), Van Zandbeek's management notes that the transition from an hierarchical organization, to a matrix organization, to a network organization is the desired long-term development of an organization's structure, see Figure 31. Van Zandbeek sees development towards a network organization not only as beneficial to the organization's functioning, but a necessity in the fluent and changing market environment.
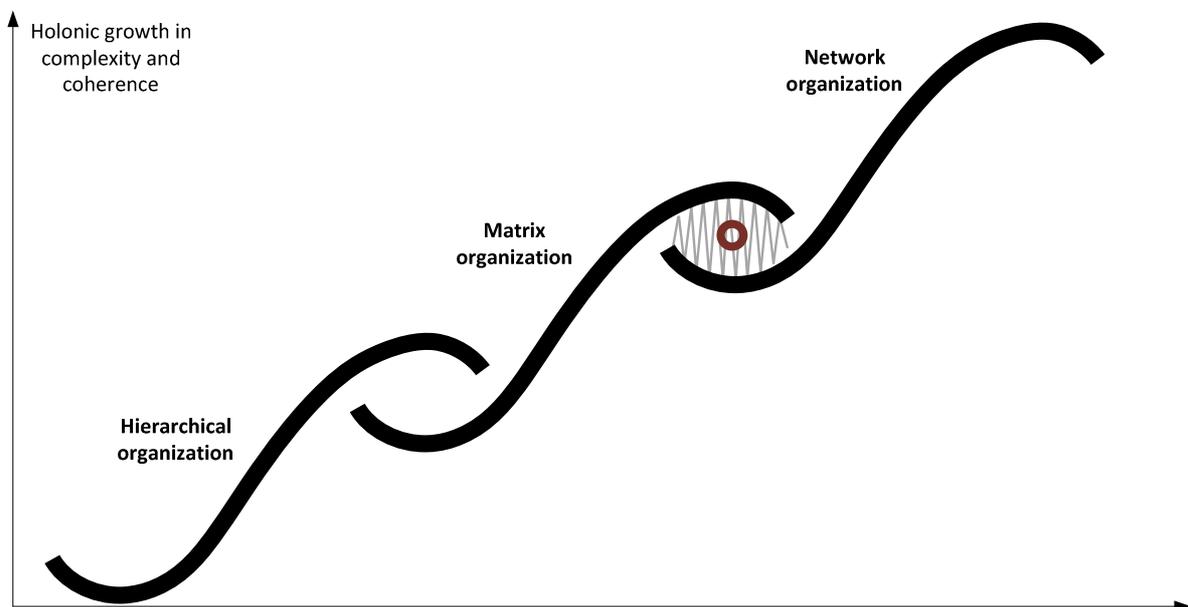

Figure 31, Van Zandbeek's strategic change process

This project can therefore be seen as one of the steps in Van Zandbeek quest to becoming a network organization. As is done in this project, follow up projects should focus on increasing Van Zandbeek's

capacity to self-organize, examples of themes related to this issues are: cognitive organizational boundaries, customer integration, flexible work units and so on.

7.3.2 Theory developing

This research project aimed to integrate three highly complementary fields, namely: work design, service science, and information technology. Each discipline individually has its own view on what an network organization should be or should become. Combining these three seemingly distinctive fields of study provides the researcher the opportunity to truly explore the concept of a network organization. All three research fields have developed relatively similar approaches to how work, value creation, and knowledge define a network organization. Integration of these fields, possible under the umbrella of the emerging research discipline of service science should yield significant results, both practical and theoretical. As happened with the development of computer science (Chesbrough & Spohrer, 2006), uniting relevant disciplines should lead to less fragmentation and should yield a thorough understanding of the hyper connected, service driven, networked society evolving today.

8   Reflection

To me reflection, the art of looking back on actions, pitfalls, and achievements, here seems as inappropriate as it seems appropriate. Endings and beginnings differ only in terms of one's perspective. The ending of my master thesis project denotes the beginning of my working life. Although my studies formally ended, my acquired knowledge and experiences, will shape my action in all challenges to come.

My research project took shape as problem directed and design based, which meant that the organization first was diagnosed and on the basis of this diagnose a design was made. Looking back, engaging in a design based research project to me was both stressful and rewarding. Stressful in terms of continuously being involved in data collection and analysis. Where 'traditional' research seeks to prove or disprove a hypothesis, design based research is continuously occupied with providing the best solution in a given context. Although stressful, I would not have wanted otherwise. For me action and design oriented research is the only way organizational academics truly provide value for companies. In my opinion organization's should not be bear the burden of translating vague variables into real life applications.

With this thesis being the final deliverable of my time at the Eindhoven University of Technology, I must conclude that not only did I learn a lot academically, but maybe even more personally. Having started my studied on an university of applied science, I felt liberated of vague guidelines and enlightened by the true story behind the story that the university offered me. Although it has let me to numerous frustrations over the course of three years, having experienced the university mindset enriched me as a person.

I think innovation management fitted well with my outlook on things. Having experienced in dept technical design in my previous studies, innovation management satisfied my need of conceptualizing the environment technology operates in. Innovation management and university life in general learned me to look one step beyond the current state of affairs. *Mens agitat molem*, 'The mind brings matter into motion'.

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