

TOWARDS A SPATIAL THEORY OF ORGANIZATIONS

Principles and practices of modern organizational design

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Nyenrode Business Universiteit

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Principles and practices of modern organizational design

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Preface/acknowledgements

Since this thesis has been in the works for almost thirteen years, many people and organizations have played a key role in my personal journey into organizational space. Traveling through ‘life space’ (i.e., the totality of facts which determine the behavior of an individual at a certain moment [Lewin, 1936]) has been an exciting, challenging, and rewarding track. My mission into organizational space started in 2000 during the process of writing a book with René Tissen entitled *Zero Space*. Moving beyond organizational limits (Lekanne Deprez & Tissen, 2002). Of all those acknowledged below, René Tissen has delivered the most profound influence on the origin of a spatial theory of organizations. Since 1987, René Tissen and I have been on many—often bumpy—roads together, jointly authored many articles and books, conducting many dialogue and open debate sessions—pushing one another towards places and spaces ‘less traveled’. Therefore a great measure of debt is owed to René Tissen.

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(ZeroSpace Advies BV) and during the same period I became associated with Nyenrode Business University. From 2002-2010, I was a part-time Professor Knowledge Organizations and Knowledge Management at Zuyd University of Applied Sciences, managing a team of seven members within our the Center of Excellence (CoE) on Knowledge Organizations and Knowledge Management. Striving to make progress on both subject areas, I have benefited greatly from the support of Wim Gijselaers, Robert de Hoog, Hans Koolmees, Henk Smeijsters, Jos Willems, and all the members of the Center of Excellence.

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In 2007 an international conference entitled “An Introduction to Spatial Organization Theory” was organized by Nyenrode Business University in Breukelen, the Netherlands (Tissen & Lekanne Deprez, 2007). During the conference, the input from the participants—especially from Bill ‘Indiana’ Starbuck (Abrahamson and Freedman, 2006, p. 42) and Raghu Garud—was confronting, challenging, and helpful. Another participant of the conference was Frank Halmans of Statistics Netherlands (often abbreviated to CBS). He teamed up with the Nyenrode Business University—with the collaborative research team: Nyenrode and CBS—to conduct a collaborative management

research effort within an ‘outlier’ unit of Statistics Netherlands: Data Collection (DC). Frank Halmans, Hank Hermans (both managers at Statistics Netherlands) and Gosse van der Veen (former director-general at Statistics Netherlands) were fascinated by the hidden potential of the concept of spatial organizing. Statistical Netherlands ‘tested the waters’ by applying this concept within the unit Data Collection. Nyenrode was extremely fortunate to have Frank Halmans ‘on board’ as an ‘insider-researcher’, supporting the concept of spatial organizations through its long ‘incubation’.

Special thanks go to the members of the thesis reading committee—Herman van den Bosch, Hans Doorewaard, Bob de Wit, and Danielle Zandee—for their feedback and time.

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In memory of my father Joop (†1986) and my mother An († 2013).

0 Introduction

The industrial economy was propelled towards large-scale productivity by means of the rise of professionally managed organizations, which after World War I became as prominent in the daily lives of people as they are today (Chandler, 1962; Chandler, 1990; Micklethwait & Wooldridge, 2003). Since then many different forms of industrial organizations came into existence (e.g., functional, divisional, matrix, hierarchical, bureaucratic, and ‘pyramidal’ organizations). All these ‘organizational forms’ centered around one core principle, namely that organizing from an industrial perspective essentially involved the *place-bound* concentration of labor, capital, and raw materials in which manufacturers own, hold, make and, sell tangible stuff (Stanford, 2007; Lekanne Deprez & Tissen, 2011).

Due to two important legal frameworks of the 19th century—the joint stock company¹ and the limited liability company (Micklethwait & Wooldridge, 2003)—it became possible to make a distinction between the ownership of an entity (“shareholders”) and the control of that entity by managers. In 1976, two academics, Michael Jensen and William Meckling, rightfully argued that “managers effectively were the agents of shareholders and should work for them. In the midst of all this, people forgot (or never realised) that shareholders do not actually own the company; they own only its stock” (Handy, 2012, p. 36, *italics added*).

In later years, even post-industrial organizations remained centered around managers through what was called “the art of management” which directed itself towards achieving predetermined levels of performance (Tissen & Lekanne Deprez, 2006; Birkinshaw, 2010; Kiechel, 2012; Mintzberg, 2013; Birkinshaw, 2015). Management became a discipline. Managers and organizations turned out to be so closely intertwined that it was commonly believed and understood—even academically—that organizations were

¹ The first joint stock company was the Muscovy Company that was given its charter as early as 1555. These chartered companies drew on two ideas that date back from the Middle Ages. The first was the idea of shares that could be sold on the open market. This idea goes back to the 13th century. “The other idea was that of limited liability. Colonization—by the English and the Dutch—was considered to be so risky that the only way to raise large sums of money from investors was to legally shield them from this risk” (Micklethwait & Wooldridge, 2003, p.18).

more likely to succeed if they acquired good managers and adopted good management practices (Bloom, Genakos, Sadun & Van Rheezenen, 2012), than if they did not. As managers were recognizing the complexity of organizations as place-bound ways of concentrating the efforts of managers and workers, the idea was fuelled that managers—both together as well as by themselves—could be successful in creating excellent (Peters & Waterman, 1982) or good to great companies (Collins, 2001; Cohen & Prusak, 2001). However, most managers proved over the years to be good at many things, but great at nothing (Birkinshaw, 2010; Davenport & Harding, 2010). During the latter part of the 20th century and the early years of the new era, many celebrated companies lost their sparkle of excellence in a fast way (Rosenzweig, 2007; Stewart, 2009). Some even went from good to great to gone (Wurtzel, 2012).

0.1 The relationships between knowledge, people, technology, organizations, and space

From a practice point of view (Barney, 2002), the particular mix of resources (people, capital, raw materials) gave rise to what is generally known as the resource-based view of the firm and subsequently to the resource-based theory of the firm (Barney, Ketchen & Wright, 2011). In this thesis it is argued that an alternative view on organizations is gradually maturing, namely the knowledge-based view of the firm. It is also argued that the body of knowledge constituting this view is in the early stages of evolving into a new theory of organizational design and management, called Spatial Organization Theory. This theory covers in essence the socio-economic value transition that is taking place from managing tangible products and services into different ‘outputs’, to ‘orchestrating’ and organizing intangible assets and resources into different ‘outcomes’. From a top management point of view, this shift will probably pave the way for a new member of the C-suite: the chief resources officer (CRO) who is responsible for all nonfinancial—tangible and intangible—resources (Favaro, Karlsson & Neilson, 2014).

The knowledge-based economy basically covers every aspect of the economy where knowledge is at the core of products, processes, and services, provided this knowledge has proven or potential—hidden and overt—value. Although traditional physical goods and products continue to be tangible, they increasingly are ‘wrapped’ in data and information. This economy derives its

origin from the effective utilization of intangible assets such as intellectual capital, human capital, research and development, big data, information, communication, and social media technology (Dolfsma & Soete, 2006; Lekanne Deprez & Tissen, 2009; Athreye, Huang & Soete, 2010; Arthur, 2011; Käpylä, Kujansivu & Lönnqvist, 2012; Leydesdorff, 2012; Mayer-Schönberger & Cukier, 2013). As Susskind and Susskind (2015) argue, economists have shown that the ways people create, share, and use and capture value from knowledge is very different form the way people create, share, and use physical goods. These differences originate from four special characteristics of knowledge:

- 1 Most goods are **rival**; if they are consumed, then there is less left for others. Knowledge is **non-rival**. Knowledge doesn't run out, or get worn down each time it is used: "A journalist does not become worse at analysing and communicating the more articles he/she writes" (Susskins & Susskind, 2015, p. 190);
- 2 Most goods are **excludable**; it is easy to prevent people from consuming them unless they pay. Knowledge has a tendency for being **non-excludable** meaning that it can be difficult to prevent non-payers from using it;
- 3 Unlike physical goods, using and reusing knowledge to create solutions or solve problems often makes it **more valuable** not less. The (re)use of existing knowledge—or a combination of existing and new knowledge—often leads to the creation, production of something new and/or innovative; and
- 4 Knowledge is often captured into digital form and therefore is easy to transfer and exchange.

The industrial economy of the 19th century was also intensively knowledge-based.

Mokyr (2005) states the following:

The short answer as to why the West is so much richer today than it was two centuries ago is that collectively, these societies 'know' more. This does not necessarily mean that each individual on average knows more than his or her great-great grandparent (although that is almost certainly the case given the increased investment in human capital), but that the social knowledge, defined as the *union of all pieces of individual knowledge*, has expanded. Greater specialization, professionalization, and 'expertization' have meant that the total

amount of knowledge that society controls is vastly larger than ever before. The effective deployment of that knowledge, scientific, or otherwise, in the service of production is the primary—if not the only—cause for the rapid growth of Western economies in the past centuries. (p. 287, *italics added*)

Although still a fuzzy notion to many, the knowledge-based economy is generally accepted as a meaningful and even leading economic concept of and for the 21st century, one worthwhile pursuing because of the unfulfilled ‘richness’ such an economy implies and even promises. This economy has however yet to become a “proven successor to both the industrial and service-based economies” (Lekanne Deprez & Tissen, 2009, p. 11), particularly because of the lack of established models and mechanisms for economic performance, which function in their results and effects similarly to the ones common in the industrial economy. In this thesis it is argued that the adoption and use of new organizational and managerial ways of working can act as a catalyst in bringing the knowledge-based economy to a level of maturity it is currently in need of.

From an organizational point of view, the rise of the knowledge economy is increasingly seen as a fundamental shift in the perspective of managers from organizations as the *place-bound* concentration of labor, capital, and raw material towards the *space-bound* (digital) interaction between knowledge, people, and technology. A *place-bound* organization produces tangible products and services—one has to own them, hold them, make them, and sell them within a restricted time frame—, whereas the *space-bound* organization produces intangible knowledge flows—one has to access them, mind them, form them, and share them with an open mind—mobilizing mind power².

² Mind power is the—often—intangible output and outcomes of organizational members (adapted from Bryan & Joyce, 2007).

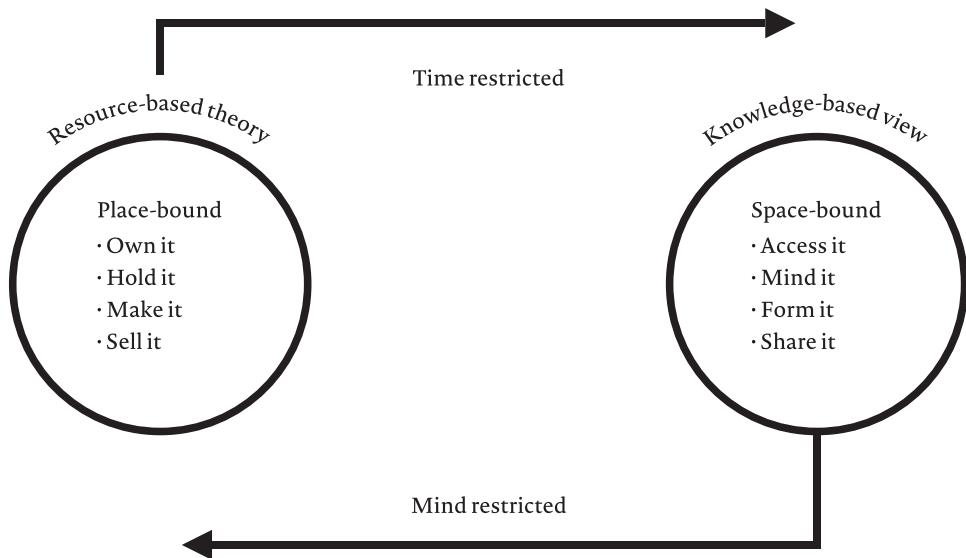


Figure 0.1. Organizing place-bound versus space-bound.

Modern management implies letting go of the idea that company-wide knowledge is a finite asset that can be confined in a container (Tapscoff, 2013) and managed as a stock. On the contrary, modern management recognizes knowledge as being distinctly ‘spatial’ and managed as a ‘flow’ while at the same time in search of ‘good organizing’ principles in order to become valuable. Tapscoff (2013) asserts that “knowledge is an infinite resource. The most important knowledge is not inside the boundaries of a company. You don’t achieve it through containerization, you achieve it through collaboration” (p. 2).

Under the space-bound view of the firm, knowledge is not seen as boundaryless, nor as impermeably embedded, but as a spatial construct. A spatial construct is an enabling mechanism in which diverse forms of organizational arrangements turn different types of knowledge into distinctive types of performance and productivity. Spatial constructs are directional mechanisms as they serve to guide and focus processes of knowledge production within people as well as between people, with the aim to enrich “like-minded” outcomes. More specifically, spatial constructs are intentional mechanisms in which knowledge creation takes place through knowledge collaboration, whereby knowledge collaboration is broadly defined as the sharing, transfer, accumulation, transformation, co-design, and co-creation of knowledge (Faraj, Jarvenpaa & Majchrzak, 2011).

From an organizational point of view, a spatial construct allows for the matching of the demand for knowledge to the availability of knowledge at the right moment in time, but not in a free-for-all—randomized—manner. In this thesis it is argued that knowledge can justifiably—and thus should—be distinguished into three mainstream categories of performance which can be put into an organizational context by means of so-called ‘spatial arrangements’. For example, one ‘spatial way’ of organizing ‘knowledge for demand’ is through Knowledge Services Combinations (KSCs), which are similar to the wellknown Product Market Combinations (PMCs) of the industrial economy.

Through their organizational form, spatial arrangements typify the best way to transform knowledge from an output (more knowledge, becoming knowledgeable) into an outcome (more value, becoming valuable). Spatial arrangements coincide with the overall trend in organizational design from developing ‘one-size-fits-all’ organizations to ‘one-size-fits-one’ organizations. Today’s organizations often do what they are designed to do. Most of them are built for efficiency, standardization, extracting value from people, and getting diminishing returns, enforced through hierarchy, control, and predictability. However, for newly founded companies it is nearly impossible to predict which ones will have staying power. Instead of a one-size-fits-all perspective, this thesis focuses on a one-size-fits-one approach, where organizations offer their organizational members degrees of choice regarding how to arrange their work processes and their physical, virtual, and mental workspaces to create distinctive capabilities.

The spatial arrangements in this thesis aim to provide a balance between the fluidity and flow requirements of a knowledge creation processes on the one hand and the need for people to create knowledge in a way that suits and augments them individually on the other. This is done through allocation of knowledge: attributing mainstream types of knowledge to matching temporary organizational arrangements with the purpose to optimize value creation and capture.

Since the 1990s, the knowledge-intensive organization (KIO) has emerged as an appropriate organizational form for organizing the fluidity of modern organizational life (Starbuck, 1992; Alvesson, 2004; Alvesson, 2011). Labelling an organization as knowledge-intensive indicates that knowledge is of more

importance for its performance and success than other resources. They exist to detect, develop, and concentrate the minds of individuals so they can exploit and explore content (e.g., minding concepts, scripts, constructs, and ideas) and turn knowledge into value by creating ‘moments of value’ (Tissen Andriessen & Lekanne Deprez, 1998; Amabile & Kramer, 2011; Lekanne Deprez & Tissen, 2011).

The producing power of knowledge-intensive organizations has in recent years been propelled by (digital) technology. The wide-ranging adoption of technology is fundamentally extending the organizational space of workers; many web-enabled, internet-based technologies have created shared spaces that are now becoming global collaborative workspaces. It takes, however, shared space to create shared understanding in order to co-create new products and services. (Schrage, 1995). Brynjolfsson and McAfee (2012) assert that:

In the past few years, progress in information technology—in computer hardware, software, and networks—has been so rapidly and so surprising that many present-day organizations, institutions, policies, and mindsets are not keeping up. We used to be pretty confident that we knew the relative strengths and weaknesses of computers vis-à-vis humans. But computers have started making inroads in some unexpected areas—and this has significant implications for managers and organizations. (p. 53)

Successful shared spaces develop an aura of co-presence and co-creation; they make people feel like they are together even if they are not physical present. The virtual dismantling of geographical boundaries creates groups, teams, and communities working together—‘in the cloud’—to create new challenges and realize new ambitions way beyond what they could achieve on their own, provided that the organizational form actually allows for the mental alignment of people within the broader framework of the purpose, strategy, and operations of an organization.

Space really makes sense in the presence of boundaries (Hernes, 2004). People create and maintain boundaries. In doing so people experience the freedom to ‘open up’ space instead of closing it. Often space restricts and structures the minds of workers in the form of “mental fences” (Ashforth, Kreiner & Fugate, 2000, p. 474). These fences are only real in the sense that the individual

perceives them as such and can act as though they are real.

In this thesis it is argued that within the development of a spatial theory of organizations new technologies are currently at the stage that they can become exponentially more effective and productive once fully aligned with new organizational models and forms. This thesis will illustrate that technology can and indeed does have the additional capability to direct the minds of workers towards the right kinds of knowledge flows at the right moments in time. In this regard technology connects the ‘inner world’ of workers (their minds) to the ‘outer world’ of knowledge production, based on the premise that *when attention goes one place, it cannot go another* (Davenport & Beck, 2001, p. 11). In the attention-based view of the firm (Ocasio, 2011), organizations prevent the rise of overwhelmed employees and managers by framing the attention of workers through decision-making and online communication channels focusing on how attention in organizations makes organizational life more simple (not simplistic) by streamlining the current complex processes and programs and reimagining the service and product delivery to customers and clients (Crabbe, 2015; Davenport & Kirby, 2015; Zack, 2015; Newport, 2016).

0.2 Changing views

The resource-based view of the firm explains the differences in performance between and among firms depending on the number, quality, and uniqueness of the resources they possess. These resources may be physical, human, or organizational and tangible or intangible. Sustainable competitive advantage is achieved when an organization possesses a certain ‘blend’ of long term performing assets. This way of looking at organizations implies their ability to deal with so-called VRIO requirements (e.g., resources that are valuable, rare, inimitable and organization supported [Barney, 2002]) which by themselves are often difficult to mix in the right way and are less to not manageable. The resource-based view sees this mixing of resources as the main mechanism for

what can be defined as rents³ creation. The concept of Ricardian rents explains the heterogeneity of firms and their competitiveness, as resources are used differently. The notion of heterogeneity together with Barney's characteristics of strategically usable resources (Barney, 2002), provides the basis for sustained competitive advantage.

Recently, Barney, Ketchen and Wright (2011) showed that there are strong indications that scholars are increasingly using the term resource-based theory instead of resource-based view. According to the Barney, Ketchen and Wright (2011):

This reflects the fact that resource-based research has reached a level of precision and sophistication such that it more closely resembles a theory than a view. Second, resource-based theory has given rise to prominent spin-off perspectives, most notably the knowledge-based view (KBV), the natural-resource-based view (NRBV), and dynamic capabilities (p. 1303).

Within the resource-based theory, knowledge is considered as a generic resource, which to some extent can provide a competitive advantage, but is as such too undetermined to be managed to result in a controlled fashion.

The knowledge-based view traditionally considers knowledge to be the most strategic resource of the organization. The increasing awareness of knowledge as a valuable asset is generally being referred to as a paradigm shift away from the resource-based view (Schendel, 1996; Grant, 1996). Together with a number of other authors (Kaplan, Schenkel, Von Krogh & Weber, 2001; Krogh & Grand, 2002; Nonaka, Krogh & Voelpel, 2006; Kapoor & Lim, 2007) the knowledge-based view focuses on knowledge as a dominant and even the only source of competitive advantage (Grant, 1996; Foss, 1996; Foss, 1996b; Grandori, 2001; Spender, 2003; Nickerson & Zenger, 2004; Nonaka, von Krogh & Voelpel,

³ Curado and Bontis (2006) state that: The nature of rents generated in the perspective of the RBV is Ricardian. This means that the choice of the resources is the main mechanism influencing the generation of the economic rent (Makadok, 2001). The Ricardian logic explains the heterogeneity of firm performance as a consequence of organizations owning resources with different productivities. In this sense one should be led to ask: How do organizations acquire resources with heterogeneous productivities? Barney (Makadok, 2001) answers that question this way: the organization should apply a superior capacity to choose resources at the resource markets. (p. 369)

2006; Curado & Bontis, 2006; Felin & Hesterly, 2007; Mbhalati, 2012, Foss, Pedersen, Pyndt & Schultz, 2012; Ihrig & MacMillan, 2015). During recent years the knowledge-based view arose from the potential for development and ‘competitive’ growth inherently associated with the knowledge-based economy. The knowledge-based view suggests that, “if knowledge is the preeminent productive resource, and most knowledge is created by and stored within individuals, then employees are the primary stakeholders” (Grant, 1997, p. 462).

Both approaches highlight the importance of matching any external opportunities with internal resources (being non-specific to the organization and therefore tradable) and capabilities (that are valid exclusively to the organization). It is argued that due to the actual rise of the knowledge economy, the overall managerial perspective has turned away from the resource-based theory—characterized by asset management—towards the knowledge-based view of the firm. This is characterised by an approach in which a mix of knowledge, people, and technology (Lekanne Deprez, 2003, p. 20) is focused on exploring, extracting, and exploiting ‘newness’ and ‘richness’ from tangible and intangible resources that exist at a particular point in time (see figure below).

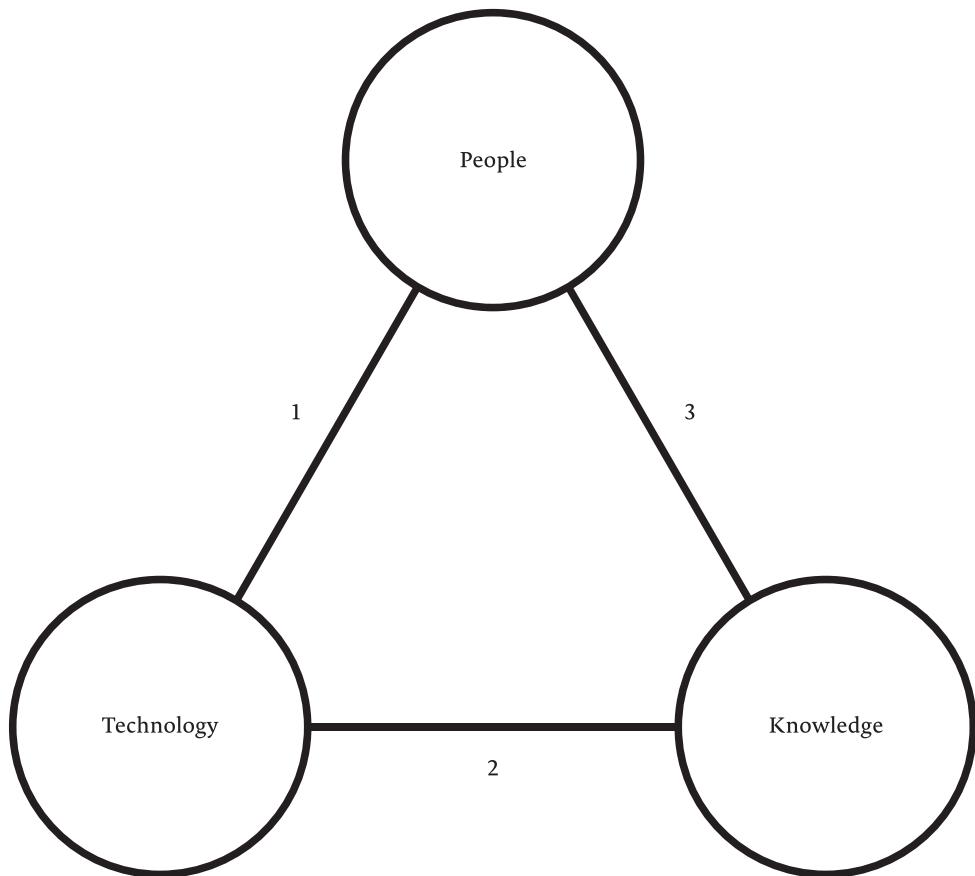


Figure 0.2. The People–Technology–Knowledge Triangle.

1) People–Technology

Since the 17th century humanity has been engaged in serious debates about where humans stand relative to innovative developments within technology (e.g., machines, software, artificial intelligence, and so on). Nowadays, technology is so much a part of our everyday lives that it is considered to be ubiquitous. It is simply something to use, is taken for granted, and requires less and less attention—it is here and everywhere. Brynjolfsson & McAfee (2015) believe that:

Digital technologies are doing for human brainpower what the steam engine and related technologies did for human muscle power during the Industrial Revolution. They're allowing us to overcome many limitations rapidly and to open up new frontiers with unprecedented speed. (p. 68)

2) Technology-Knowledge

Machines, it seems, can do almost anything human beings are capable of. Machines appear to take over not only low-skilled abilities but also high-skilled ones. According to Brynjolfsson and McAfee, (2015) digitation is creating new types of disruption:

In part, this reflects the fact that as computers get more powerful, companies have less need for some kinds of workers. Even as it races ahead, technological progress may leave some people— perhaps even a lot—behind. For other people, however, the outlook is bright. There's never been a better time to be a worker with special technological skills or education. Those people can create and capture value. However, it's *not a great time to have only ordinary skills.* (pp. 68-69, *italics added*)

Nowadays, routine parts of the highest valued knowledge work—such as that of doctors, lawyers, and accountants—are automated. Both Malone, Lauberger and Johns (2011) and Susskind and Susskind (2015) show that once knowledge work is atomized (i.e., decomposed into micro roles and tasks) it is vulnerable for being outsourced to non-professional occupations and/or increasingly capable technology and intelligent machines giving rise to new ways of turning knowledge into value. Within many organizations, jobs performed by humans are ‘carved up’ and broken down into multiple, discrete tasks—especially routine cognitive and physical work activities—that will be ‘taskified’. This allows more people to globally compete for smaller ‘work activities’ (Foresight Alliance LLC, 2016).

Knowledge-People

In knowledge-enabled organizations, the interaction between ‘knowledge-people’ encourages a continuous flow of data, information, and knowledge. Because most people have—or even ‘own’—a high degree of expertise, capabilities, and knowledge, their activities involve the creation and sharing of valuable knowledge. Knowledge becomes valuable when it is accessible, actionable, understood, remembered, and when it changes something; it changes people’s mindset and people’s mental state, their behavior, their values, and their performance. How an organization conceptualizes knowledge greatly impacts its reason for being, its collective ambition, its

value proposition to clients, its organization shape, and its engagement of staff in creating value.

The emerging mentalization of work.

Phenomena are ‘mental’ when they are the kinds of things that are experienced or could potentially be experienced. This generally involves “a claim about intentionality or ‘aboutness’ of mental states and thus is related to meaning” (Islam, 2015, p. 465). According to Foss and Stea (2013), recent developments in evolutionary anthropology, cognitive neuroscience, neuro-economics, and social psychology highlight the importance of one individual’s understanding of another individual’s intentions, knowledge, and beliefs. This process is particularly important for individuals’ interactions with others (Premack and Woodruff, 1978). Premack and Woodruff (1978) were the first to use the ‘theory of mind’ terminology to capture the general ability to read mental states: “It allows an individual to anticipate the behavior and reactions of others” (Stea, Linder & Foss, 2015, p. 280). As mental states are not directly observable, “they can only be inferred from observable aspects of a person and that person’s situational context” (Stea, Linder & Foss, 2015, p. 292).

Within the knowledge-based view the focus is on creating and capturing value at all times through a more fluid interaction between resources. Whereas the key managerial paradigm derived from the resource-based theory is ‘to manage first and organize later’ (Lekanne Deprez & Tissen, 2011, p. 26), the opposite is true in the knowledge-based economy. In this view it is expected that organizing (resources) better will have a more profound effect on organizational performance than managing (resources) better. By organizing itself more effectively, the maturity of the knowledge-based economy can be reached more directly rather than over time. In such an economy where knowledge has become the resource, new organizational forms emerge—through a more or less natural evolutionary growth process—increasingly reconfiguring themselves to be prepared for the unexpected and unpredictable.

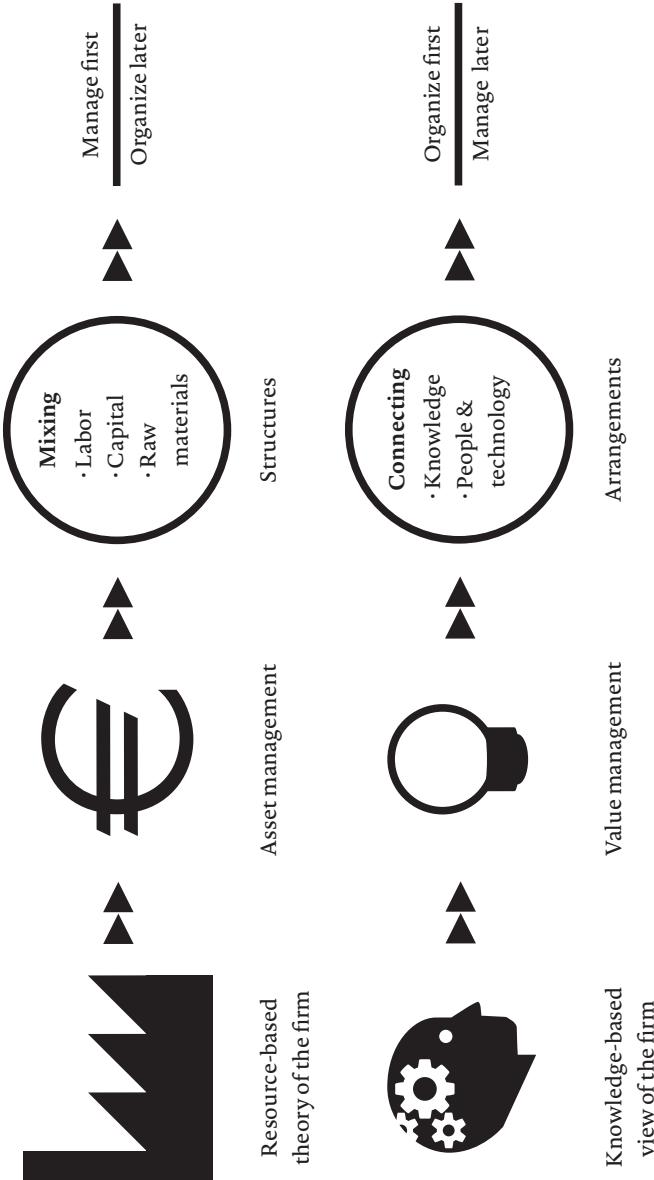


Figure 0.3.: From the resource-based theory of the organization to the knowledge-based view of the organization.

Designing the organizational landscape of the knowledge economy with industrial ‘lenses’ brings a certain risk with it, namely of fitting the old into the new. Trying to replicate what worked yesterday, even in a reimagined fashion, tends to leave organizations vulnerable and less prone to survival and success. During the post-industrial era of the late 20th century, a plethora of new organizational forms came into existence (Lekanne Deprez & Tissen, 2011). Despite their variance in shapes and forms, the concept of ‘new organizational forms’ is often used as if it has a commonly understood meaning (Palmer, Benveniste & Dunford, 2007) notwithstanding a cacophony of—more or less—appealing terms and metaphors.

These ‘new forms’ sometimes create the impression that the more exotically they are named, the more ‘avantgardist’ management is. Practice, however, often shows the abstract nature of new organizational forms. Due to a lack of empirical studies, more is known about how organizations should be designed than what they are actually like—right here, right now. Recasting the structure of organizations—‘downstructuring’—is often the first step towards new forms. For example, Shirky (2008) has focused on the power of organizing without organizations, creating a working environment where there are no centers and no headquarters. He shows that people can easily (dis) organize themselves through downstructuring into ‘shapeless organizations’ (Ciborra, 1997 p. 268)—that is, informal groups, tribes, communities, self managed networks, platforms, and so on. Within this context, a mindset is required that encourages the practice of boundary busting and reducing rules, regulations, and procedures by using space as the next frontier for gaining competitive advantage. In essence these network (Contractor, Wasserman & Faust, 2006; Kleindorfer & Wind, 2009; Cross, Gray, Cunningham, Showers, Thomas, 2010; Ahuja, Soda, Zaheer, 2012) and platform (Yonatany, 2013; Thomas, Autio & Gann, 2014) types of organizations continually try out new combinations of sources—people, technology, and knowledge.

0.3 Modern organizational design

From the history of the industrial economy, it is known that new organizational models did not appear in practice until this economy was quite mature. For example, Sloan’s decentralized Multi-divisional form or

M-form only came along during the twilight of the era (Davis & Davidson, 1991). In this thesis a number of arguments will be presented, along with specific organizational models and forms, which aim to reinforce the link between the maturity of an economy and the organizations it brings forward. There is an emergent ‘iconic structure’ (i.e., form) that allows for the same kind of performance that ‘pyramid-shaped’ organizational structures used to have in relation to the industrial economy. These were commonly regarded as two sides of the same coin. This thesis intends to show that a specific knowledge-based organizational form—the spatial organization—has this similar iconic potential. It can be designed and constructed to stand out of the crowd and can serve as a leading model towards maturing the knowledge-based economy.

It is commonly known that at some point in time boards of directors, managers, and employees of organizations inevitably reach the conclusion that the way their organizations are designed stands in the way of their further sustainable growth and success. It is even recognized that modern organizational design “*is not for life or even for very long*” (Stanford, 2005, p. 2). At the same time organizational design is seen not only as a messy and complex process, but also as a recurring job everybody can fix ‘if only they put in the time’.

Do organizations need to be designed in the knowledge economy? In this thesis it is argued that in order to construct an iconic organizational form for the knowledge-based economy, equal attention needs to be given to the design process of modern organizations. In short, no ‘model organization’ can exist without a design approach that allows for a degree of predictability of outcome and/or organizational performance. Preventing hazardous design flaws caused by an organizational design that has simply outlived its usefulness requires a particular style of thinking—design thinking and design doing—characterized by keeping organizations in fluid states instead of in crystallized conditions, thus fixed. Modern emerging knowledge-based organizational forms are often:

- future proof (Rohrbeck & Bade, 2012);
- fluid (Schreyögg & Sydow, 2010);
- incomplete (Alexander, 2002; Garud, Jain & Tuertscher, 2008);
- living (de Geus, 1997);
- agile (Dyer & Erickson, 2009; Worley & Lawler, 2010; Alberts, 2012, Weber & Tarba, 2014, McKinsey & Company, 2015; Birkinshaw &

Ridderstråle, 2015);

- liquid (Collopy, Boland & VanPatter, 2005; Bauman, 2014); and
- unfinished (Alexander, 2002b).

Jelinek, Romme & Boland (2008) believe that implementing a successful design of organizations is “necessarily messy, dynamic, iterative and responsive to circumstances, so any particular organizational arrangement is temporary, to be redone sooner or later as the undesired effects of our efforts are revealed, new needs arise, or better methods emerge” (Jelinek, Romme & Boland, 2008, pp. 321–322, *italics added*).

In changing environments, organizations need to be capable of reinventing and reshaping their organizational forms to fit the future. In a broad sense, the term organizational form refers to “the characteristics of an organization, or a set of organizing activities, that define it as a distinct entity and also identifies it as a member of a group of similar organizations” (Romanelli, 1991, pp. 81–82). The overall challenge is to develop the ability to proactively “identify and interpret changes in the environment and trigger adequate responses” (Rohrbeck & Bade, 2012, p. 15) to ensure sustainable organizational success. Developing an organizational capability for design requires that all members of an organization know the purpose and mission of the organization, how to do and act well, and how to get things done that lead to accomplishment (Ulrich & Smallwood, 2003). In order to benefit from such a capability an organization’s design approach must be well-prepared (i.e., designed) for the unexpected and still be capable of delivery in a more or less predictable fashion.

Organization design is the outcome of shaping and aligning the constituent components of an organization towards the achievement of an agreed mission (Stanford, 2007) co-created by individuals to realize the joint pursuit of mutually agreed upon goals. Such an outcome implies that certain ‘designed-in qualities exist that keep an organization adaptable to its operating context (Stanford, 2007, p.4)’. It has long been recognized that no single organizational approach works well under all circumstances.

Design principles (or construction principles) are defined as any coherent set of imperative propositions, grounded in the state-of-the-art of organization science, for producing new organizational designs and forms and

redeveloping existing ones. They should be regarded as an extract from the body of organization science that will be applied in the specific design at hand (Mulinski, 2012). Organizational design rules constitute a high-level draft of the design that defines how an organization works, what it does, and how it is built. These design rules are used to allocate functions to components, identify operating principles central to each component, and set interfaces among components. Here, organization structure is often used synonymously—and incorrectly—to mean ‘organization design’ (Galbraith, Downey & Kates, 2002). A restructuring or reorganization that almost solely focuses on structural aspects is not organization design (Stanford, 2007). Within emergent organizational design efforts, design rules increasingly allocate roles (Laloux, 2014; Robertson, 2015) to components (e.g., activities, tasks) where the management activities and tasks are no longer concentrated in dedicated management roles, but are being distributed among the members of an organization.

Selecting the right elements, the right model (Mintzberg, 1983) or configuration (Burton, Obel & DeSanctis, 2011) for organizational design is one part of the design process. Another important step is to choose the right approach (i.e., the methodology for initiating and designing outputs and outcomes and the way in which the design will be developed and implemented). The traditional linear process phases of assess, design, implement, embed, and review are often accompanied—or even replaced—by a widespread stakeholder and co-creation approach: ‘imagine it, prototype it, do it, test it, improve it, reimagine it’ (Martin, 2004; Martin, 2009; Ries, 2011, Robertson, 2015) using research methods like surveys, action research, focus groups, and so on. Many approaches—e.g., world café, appreciative inquiry, storytelling, brain writing, future search (Stanford, 2007, pp. 25–30)—are available. Managers, scientists, and organizational designers do not possess a complete set of data, information, and knowledge when they start developing and doing design activities. Therefore, a design approach must include an exploration of multiple alternatives. The results of design efforts depend not only on relations among components, but also on the processes used to arrange components, the motivations of the people who are participating, and how these design efforts evolve over time.

Dunbar and Starbuck (2006) believe that designing must be iterative, that

design efforts must be persistent, and that designing and taking actions are intimately bound up with one another. But in the process of designing organizations, designers and members of an organization nearly always misunderstand the goals and scope of such a design effort. Therefore they should view their efforts as experiments that might not turn out to be predicted, and they should pay careful attention to the outcomes of these ‘experiments’. Some outcomes accord with expectations and others do not. As Brunsson (1982) stated, “when an organization is specifically designed to deal efficiently with one set of objectives, tasks and situations, problems may easily arise when it has to handle other objectives, tasks and situations” (p. 4).

Designers, organizational members, and observers of design efforts often have trouble extracting implications from unique cases, particularly as the bases that people usually use for generalizing (e.g., statistics) are absent. Useful generalizations can emerge from describing the processes they use to accurately map and take account of the uniqueness they deal with in specific cases. Conversely, some designers start with generalized theories and hypotheses that prevent them from seeing, assessing, and exploiting unique elements in their settings (Dunbar & Starbuck, 2006). Designing organizations is an ongoing, emergent, and iterative process rather than a ‘one time, one-off experience’. Therefore new forms of organizations often are incomplete, agile, and fluid. Few designs last forever (Starbuck & Nystrom, 1981; Foster & Kaplan, 2001; Stubbart & Knight, 2006; Daapp, Hamilton, West & Bettencourt, 2015; Reeves, Levin & Ueda, 2016).

In this thesis, however, it is argued that an ‘iconic’ knowledge-based organizational form can indeed be designed and implemented. This form is derived from a spatial theory of organizations and based on spatial arrangements. According to Lekanne Deprez & Tissen, (2011) a spatial arrangement is:

An intelligent combination of like-minded people, shared knowledge, and dedicated technology brought to value by means of distinctly separate but connected organizational forms. These forms—arrangements—direct, guide, and support the focus, attention, and concentration of organizational members towards the optimal use of their minds with regard to performance improvement creating standard, structured, and

shared moments of value. (p. 4)

It is further argued that for such a new organizational form to be effectively designed, a new approach for design is needed.

Evolving forms of organizing: place versus space.

When an organization evolves, its accomplishments and failures serve as a foundation for further development. Organizational design has a “fundamental framing effect on people’s expectations and perceptions” (Bate, Kahn & Pye, 2000, p. 200) that sets “the context for the organizing activity” (Bate, Kahn & Pye, 2000, p. 200) for its success and progress within both 20th century industrial organizations and 21st century knowledge-based organizations.

In traditional, industrial organizations, hierarchy and functions dominated the field of organization design represented by organizational charts and pyramid shaped organizational structures. Within these *place-bound* organizations, the output of an organization was generated through segmented organizations in which functions—such as marketing, finance, human resources, and ICT—and business units often showed a natural tendency to become isolated (creating so-called organizational silos). These organizational silos created a silo mentality (Stanford, 2007): a compartmentalized view of organizing creating departments that work independently of each other, reluctant to share information, work together, or collaborate.

On the other hand, knowledge-based organizations require multiparty collaboration (Fjeldstad, Snow, Miles, Lettl , 2012) and organizational capabilities that are *cross-functional* (Leinwand & Mainardi, 2013). These *space-bound* organizations are characterized by the breakdown of ‘siloed’ functional organizations (Tett, 2015) and the rise of spatial organizations working collaboratively across functions and boundaries creating continuous connectivity with relevant stakeholders by co-designing and co-creating products, processes, and services. Supported by organization-wide formats, frameworks, recipes, and concepts, the outcome is generated through arrangements rather than structures. Each spatial arrangement is able to act in a different ways depending upon how it is ‘shaped’. These arrangements are combinations of connected people, shared knowledge, and collaborative platform

(cloud) technology. The organization design challenge of knowledge based organizations is to “keep things liquid as long as possible” (Collopy, Boland & VanPatter, 2005, p. 5, *italics added*).

This approach has been applied through a multi-year ‘single-case’ study which was conducted at the Dutch Government Statistics Office CBS, supported by a design-based collaborative management research methodology.

0.4 Problem statements and research questions

On theory:

- 1 To what extent does the notion of space in its organizational context develops into a spatial theory of organizations? (see chapter 1.1 and beyond).

On design:

- 2 How does the use of a spatial theory of organizations supports the understanding of the complexity of contemporary organizational designs? (see chapter 4.4 and beyond).
- 3 How can we design a spatial organization in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational challenges; unlock latent value, and ultimately lead to create the intended moments of value? (see chapter 5.3 and beyond).

On practice:

- 4 How can the study of spatial organizations in practice be the source of advancing the spatial theory of organizations? (see Chapter 6 + Conclusion 2).
- 5 The collaborative (Statistics Netherlands and Nyenrode Business University) management research challenge/problem: how can we design a knowledge-intensive organization⁴ in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational opportunities and unlock latent value that ultimately leads to create the intended moments of value? (see chapter

⁴ At the start of this research project we used the concept ‘knowledge-intensive organization’ instead of spatial organization.

6.4 and beyond).

0.5 Outline

In this thesis, the material is organized into five parts (I–V) and nine chapters (0–8).

0. Introduction

PART I ON THEORY

1. Toward a spatial theory of organizations

2. Organizations as spaces

PART II ON RESEARCH

3. Researching spatial organizations

PART III ON DESIGN

4. Spatial organization design

5. From theory to spatial organization design

PART IV ON PRACTICE

6. Applying spatial theory of organizations at Statistics Netherlands:
Designing spatial organizations

PART V CONCLUDING REMARKS, LIMITATIONS, AND ORGANIZING BEYOND THE FOURTH DISCONTINUITY

7. Conclusions and limitations and the next organizational space

8. Spatial organizing beyond the fourth discontinuity

Outline of the thesis.

In the Introduction the shift from industrial economy to knowledge-based economy and the shift from ‘place-bound organizations’ to ‘space-bound organizations’ are presented. In particular the relationship between knowledge, technology, people, space, and organization within the context of modern organizational design is explained. Furthermore the problem statements and research questions are presented.

PART I ON THEORY

Within the first chapter an attempt has been made to develop a spatial theory of organizations. Such a theory will be ‘framed’ within the intersection of knowledge, people, technology, organizations, and space. This organization theory focuses on integrating several perspectives of space—physical (‘outer’), virtual (‘connective’), and mental (‘inner’)—as pre-dominant organizational design criterion in order to create ‘best performing’ organizational forms. Such a spatial theory of organizations is adding a lens of space that allows a researcher and practitioner to develop a new view on organizations that motivates the shaping of new organizational designs. By adopting a future orientation, a spatial theory of organizations will involve co-creating and testing ‘prototypes’ of new organizational forms. Those ‘spatial’ organizational forms are adaptive, fluid, and, incomplete to keep pace with the increasing speed, agility, and complexity that mirrors the modern, global, organizational landscape.

The second chapter shows that organizations are being invaded by increasing flows of data, information, and knowledge. Organizing for space addresses how knowledge flows create and capture value by connecting knowledge, people, and technology within and between organizations in an organizational space.

PART II ON RESEARCH

The third chapter investigates how the spatial theory of organizations within modern complex organizations (‘spatial organizations’) supports rather than

impedes practice. Until recently, use of space was regarded as no more than an idea with ideological appeal and little practical relevance. The notion of ‘space’ was locked into the industrial tradition (e.g., Ford Motor Company’s assembly line) and practice of ‘place’. Within the context of the current state-of-the-practice of organization theory, this thesis addresses the following research question: “To what extent does the notion of space in its organizational context develop into a spatial theory of organizations?” Miller, Greenwood, and Prakash (2009) have stated that an important reason for the decline in significance of organization theory within organization science is “that [organization theory] has drifted from some of the early core domains and questions” (Miller, Greenwood & Prakash, 2009, p. 273). In particular the Organization and Management Theory division (OMT) of the Academy of Management in the United States of America has lost one of its central contributions, namely the “appreciation of organizational design”⁵ (Miller, Greenwood & Prakash, 2009, p. 273).

A spatial theory of organizations will support organizational practice by reconsidering organizational design. Spatial organization design lies at the heart of modern organizations, creating the internal strength and organizational capabilities to adapt, change, and transform themselves in order to be ‘future proof’.

Within this thesis, theory—no matter how rigorous and vigorous—will not ‘hold’ unless there is a collaborative relationship between researcher and practitioner (client, customer, manager, professional, employee, etc.); nor will theories be sufficiently robust without the practitioner’s contribution. Thus practice and theory are indivisible. A design-based collaborative management research methodology is used to bridge the theory-practice gap. This research approach is characterised by searching for the available design alternatives for the best components co-creating the optimal design for the solution or challenge. The design-based collaborative management research approach has adopted two distinctive but interwoven streams of inquiry from the design-based research approach, namely the knowledge stream and the practice stream contributing simultaneously to theory and practice:

- The objective of the knowledge stream is to develop generalizable knowledge that can help create desired situations, preferably in a way that contributes to theory; and

⁵ The Journal of Organization Design has made a contribution to to fill this gap: see for example Obel and Snow (2012), Alberts (2012) and Burton (2013).

- The objective of the practice stream is to contribute to the practical concerns of people in problematic or challenging situations, by solving particular problems or realizing opportunities in specific circumstances and creating healthy organizations.

Advocates of such a design-based approach claim that this can contribute to the development of organizational theory while at the same time enhancing professional practice. (Romme, 2003; Van Aken & Romme, 2009, Van Aken, 2013).

PART III ON DESIGN

Starbuck and Nystrom (1981) proclaimed in their seminal publication “Why the World Needs Organizational Design” that “all organizations are temporary arrangements, and the great majority of organizations last just a few years” (p. 7). Within this context, the fourth chapter shows that the overall ability to design organizations to meet various degrees of unpredictability—and even chaos—has become an important capability for survival, as well as a means to create inherent sustainability. Increasingly, organizations need to be capable of continually reinventing and reshaping their organizational forms to become ‘future proof’. After an overview of traditional and alternative organizational forms, the concept of emergent design is introduced. Iterative organization development tools are ‘agile’ (i.e., to be able to generate results under varying internal and external conditions [Worley, Williams & Lawler, 2014]. They interactively ‘loop’ around the stages of development proving rewarding experiences for its stakeholders which consequently result in creating—shared— value. Choose for each option (e.g., format, framework, recipe, or concept) the right combination of people, technology, and knowledge and a new organizational form will emerge in organizational space (i.e., outer, connected, or inner) to develop and design space-bound organizations. Traditionally organization design has been focused on creating relatively ‘fixed’ mechanistic organizational structures in stable environments, while modern organization design requires more ‘fluid’, organic organizational arrangements in complex environments. Research conducted by Tissen, Lekanne Deprez, Burgers, and Halmans (2008); and Lekanne Deprez and Tissen (2011) has produced a theoretical framework—the DOF (Dimensioning,

Orientating, and Formatting) framework—for developing and designing spatial organizations leading to different spatial organization arrangements. Each spatial arrangement delivers a specific moment of value.

In the fifth chapter the DOF framework has been embedded within the design-based collaborative management research approach. The phases of DOF are both iterative and recursive. They are iterative because in practice each phase is often repeated during the process of an organizational design effort. Each iteration is recursive because it represents changes learned from reflecting on the output and outcome of the previous iteration. The number of iterations needed to create a specific spatial arrangement will depend on the complexity of combinations of the smallest building blocks—knowledge areas/domains. This opens up unprecedented possibilities for co-creating sessions to build on each other’s ideas, to co-create valuable knowledge, and to design and deliver new products and services. Figure 5.1 provides a complete framework for spatial organization design efforts.

PART IV ON PRACTICE

After introducing the results of the pre-research and early research conducted between 2000 and 2008 within the unit Data Collection of Statistics Netherlands, the sixth chapter shows the results of the research efforts conducted during the period from 2008 to 2012. In order to generate results that are relevant for theory as well as practice and that have the potential of making a real impact, researchers and practitioners have adopted a collaborative approach to understand the fundamental challenges and problems of Statistics Netherland. Different stakeholders—researchers, designers, managers, employees, customers, clients, partners, and so on—are participating in the design activities and contributing to the knowledge stream and the practice stream. It is a dynamic and collaborative process where participant’s understanding of a problem or challenge shifts during the design process. Following a non-linear, organic, iterative design process, the three stages of design-based collaborative management research (designing the concept (steps 1–3), testing the concept (steps 4–8), and developing design knowledge (steps 9–10) are combined (Andriessen, 2007, 2007b; Goldkuhl, 2013).

In 2009 the pilot Data Collection 1 (PDC1) was started. In 2011 the pilot Data Collection 2 (PDC2) was executed. The overall research question for both pilots was:

“How can we design a knowledge-intensive organization⁶ in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational opportunities and unlock latent value that ultimately leads to create moments of value?”

The results of both pilot projects are extensively reported within this chapter.

PART V CONCLUDING REMARKS, LIMITATIONS, AND ORGANIZING BEYOND THE FOURTH DISCONTINUITY

In the seventh chapter five conclusions and three limitations are revealed. Although it is almost impossible to foresee what the future will bring, the eighth chapter offers a view on understanding the *near future*. How will spatial organizations work and look like beyond the fourth discontinuity when there is no absolute divide between humans and machines anymore? How do they get along with each other, work together, and put—in a co-creative way—knowledge into value. Overcoming this fourth discontinuity (Mazlish, 1993) between man-machine has profound implications for the spatial theory of organizations and spatial organization design efforts. Effective organizational design provides an inspirational context where physical ('outer') space, virtual ('connective') space, and mental ('inner') space offer an 'unlimited reality' that attracts people to connect and interact their ideas and opportunities and act upon them. The so-called 'mentalization' of work' indicates a shift from knowledge as something that humans and machines have towards 'knowledge in action'—something that makes people connect, interact and do—creating personal and organizational value.

⁶ At the start of this research project we used the concept 'knowledge-intensive organization' instead of spatial organization.

PART I
ON THEORY

1. Towards a spatial theory of organizations

1.1 Implicit reality

The use of space in organizational theory was until recently regarded as no more than an idea with ideological appeal and little practical relevance. The notion of ‘space’ was locked into the industrial tradition and practice of ‘place’ (i.e., as an extension to it and not as an explicit managerial mindset that opens the road towards better organizational design and performance in both a transformational and volatile global economic environment). Most organizations today experience the world they operate in as being in flux, which would ideally give rise and substance to the notion of space as a design criterion for modern organizations: “In terms of more classical academic foundations, space has long been an implicit concern of organization theory” (Kornberger and Clegg, 2004, p. 1996).

Given the apparent ease in which space can be discarded as being inherently vague, intangible, and managerially unpractical, it would not be too difficult to metaphorize and even set aside space as just another way to categorize new organizational forms, without the need or stimulus for acting on them through deliberate design. Metaphors of organizational forms—such as ‘brains’ (Garud and Kotha 1994); ‘machines’ (Morgan 1986; Morgan 1998); ‘garbage cans’ (Cohen, March and Olson 1972); ‘jazz’ (Hatch 1999; Zack 2000; Bernstein & Barrett, 2011); ‘parallel’ (Hawk & Zand, 2014); ‘theatres’ (Schreyögg and Höpfl 2004); ‘sponges’ (Rodriguez, Ponti and Ayuso 2006); ‘museums’ (Nobel, 2011); ‘clouds’ (Koulopoulos, 2012); ‘fractals’ (Raye, 2014); ‘forcefields’ (Starbuck, 2014); ‘platforms’ (Ciborra 1996; Ciborra 1997; Baldwin and Woodard 2008, Thomas, Autio & Gann, 2014); and ‘holocratic’ (Robertson, 2015)—are useful as they can provide a cognitive bridge between otherwise separate worlds—worlds that may be distinctly different or only blurred, but not yet crossed or united (Tissen & Lekanne Deprez, 2008). They can even bridge such domains of the mind, which would normally not be interlinked (e.g., ‘space’ and ‘organization’). To move the notion of organizing for space outside the realm of metaphors and into the managerial mindset, a proper understanding is required of why, where, and how space should and can be defined, constructed, implemented, controlled, and optimized.

Although still somewhat alien to managerial practice, ‘space’—in its various

shapes and forms, at different levels, and as both dependent and independent variables—has become a construct in a broad range of research fields (Hernes, 2004; Dale & Burrell, 2008; Tissen & Lekanne Deprez, 2008; Van Marrewijk & Yanow, 2010; Lekanne Deprez & Tissen, 2011). From an epistemological standpoint, researchers have explored and discussed the philosophical foundations of space, its nature and scope, and its shape and function (e.g., Tuan, 1977; Foucault, 1986; Lefebvre, 1991).

Organizational epistemology.

Epistemology—episteme coming from the Greek for ‘knowledge understanding’—implies finding an explication of what it means to know something. In other words, by which processes do people come to know of the world (Krogh & Roos, 1995). Von Krogh, Roos, and Slocum (1994) have developed a theory of organizational knowledge: a corporate epistemology—a theory on how and why organizations know. Knowledge of the organization is shared knowledge among organizational members. Successfully organizing knowledge requires understanding the nature of knowledge. So, organizing knowledge becomes an epistemological issue. When considering organizing the emergent nature of organizational knowledge, several perspectives can be applied: those of Roos and Von Krogh (1996); Cook and Brown (1999); Kakihara and Sørensen (2002); Tsoukas (2005) and Seirafi (2013).

From an applied standpoint, researchers have built on this work to investigate not only the opportunities and possibilities that space offers in an organizational context, but also the restrictions of space and how these can be overcome (e.g., Alexander, 2002; Clegg & Kornberger, 2006; Taylor & Spicer, 2007; Van Marrewijk & Yanow, 2010; Lekanne Deprez & Tissen, 2011). It is increasingly common to examine space from the notion of a “three-tiered” segregation as well as from overlap: physical, virtual, and mental (Lefebvre, 1991; Soja, 1996; Kerckhove, 2001). In particular and how these ‘spaces’ can become the main building blocks for knowledge-intensive organizations (Tissen & Lekanne Deprez, 2008; Góra, 2010; Lekanne Deprez & Tissen, 2011; Kastelein, 2014; Kodden, 2014) in a knowledge-based economy (Dolfsma & Soete, 2006; Lekanne Deprez & Tissen, 2009; Athreye, Huang & Soete, 2010; Leydesdorff, 2012). Spaces are there to be embraced and used. Organizations

can even operate in more than one space, even multiple spaces, that—once connected and ‘fitted’—can lead to better performance. Clearly, there are similarities and differences between spatial approaches from both an epistemological and an applied perspective.

Van Marrewijk and Yanow (2010b) provide an overview of examples that show a “growing, explicit attention being given in organizational studies to the importance of engaging spatial settings” (Van Marrewijk & Yanow, 2010b, p. 1). The authors believe that their publication ‘Organizational Space’ joins the so-called ‘spatial turn’ that is taking place in a number of other fields (Van Marrewijk & Yanow, 2010b, p. 2). They state that “along with the other organizational studies and scholars (Hernes, 2004; Clegg & Kornberger, 2006; Dale & Burrell, 2008), we find spatial aspects in organizations of great academic and practical interest and think that they call for greater attention” (Van Marrewijk & Yanow, 2010b, p. 2). A spatial turn involves reflection and looking back on things previously studied while adding a lens that allows a researcher to develop a new view on organizations in completely new ways.

Think of space and even attempting to define and specify space in organizational theory and practice is relatively uncharted territory. The question is whether more than 25 years after Henri Lefebvre’s translation⁷ of his seminal work on the *Production of Space* (Lefebvre, 1974/1991) and the equally seminal publication of Michel Foucault (1972/1980) on the archeology of knowledge, the spatial view on organizations has gradually reached a level of precision and sophistication such that it more closely resembles a theory than a view.

This chapter discusses the research question: “To what extent does the notion of space in its organizational context develop into a spatial theory of organizations?” It must be noted that spatial views on organizations have implicitly been around for over 100 years. Early management theorists already understood the importance of space as a tool for the management of organizations. It was Frederick W. Taylor—introducing scientific management principles into the organizational environment—who suggested that the breaking up of large groups of workers should be distributed in space to ensure

⁷ This book was originally published in 1974: *La production de L'espace*, Paris: Anthorpos.

that each individual function would be performed and monitored in its own space or cell (Kornberger, 2008). Also, Henry Ford's assembly line was an early example of a spatially dispersed view on organizations.

Other views on theorizing space and organizations are:

- 1 Following a more functionalist paradigm, scholars such as Lekanne Deprez & Tissen, (2002), Becker and Kelley (2004), Tissen, Lekanne Deprez, Burgers and Halmans (2008), Góra (2010), and Kastelein (2014) have explored how space can be used as a strategic tool to increase performance of organizational members and to realize sustainable competitive advantage. Such approaches focus on the impact of how spatial 'configurations'—such as inner, connective, and outer space—affect productive organizational behavior.
- 2 Focusing on the way artifacts (de Vaujany & Mitev, 2013) and organizational culture alter space to fuel creative work and foster collaboration, both Strati (2008) and Wasserman and Frenkel (2010) show that certain types of organizational culture and organizational aesthetics produce productive workers and workspaces.
- 3 Other researchers have analyzed the relation between social organization and the spatial arrangement of an organization. Hillier (1996/2007) argued that space constitutes social relations and in turn social relations express a spatial organization. According to this line of inquiry, space shapes patterns of interaction by structuring people's movements in and through space. For example, if communication is necessary for performance, then the issue of how the connective and physical space is arranged matters a lot. Also, storytelling (Denning, 2011) is a powerful tool for knowledge transfer in and between organizational spaces.

1.1.2. Beauty is in the eye of the beholder

A spatial theory of organizations, rather than a view on organizations, focuses on integrating several perspectives on space as a pre-dominant organizational design criterion in order to create 'best performing' organizational forms that are also adaptive, fluid, and incomplete to keep pace with the increasing speed, agility, and complexity that mirrors the modern economy. Under pressure of

the outside world, people create, maintain, and dissolve boundaries (Tissen & Lekanne Deprez, 2008) as a way of simplifying, ordering, and capturing the complex environment. Since Coase's article on *The Nature of the Firm* in 1937, the question of firm boundaries has emerged as an important research topic within the 'theory of the firm'. The competing explanations for the boundary choice and the processes of 'boundary busting' show, however, a tendency to recreate 'old performance' into an equally old organizational structure, but in a different way. As a consequence, more or less forced reorganizations take place that detach people from the right performance instead of aligning them with it. According to the contemporary literature on new forms of organizing (Frost, Osterlich & Weibel, 2010; Schreyögg & Sydow, 2010; Worley & Lawler, 2010; Kesler & Kates, 2011; Galbraith, 2012; Alberts, 2012; Sheridan, 2013; Laloux, 2014; Robertson, 2015), modern companies are in need of a reinvention of the traditional command and control systems and of more experimentation with intrinsically flexible, dynamic, post-bureaucratic, responsive, self-managed, and even agile organizational forms that support and encourage innovation, learning, creativity, and value creation and capturing, all in order to cope successfully with turbulent environmental conditions.

One of the most displayed and common 'habits' of managers in this regard involves the 'rehashing' of familiar organizational forms and structures into so-called 'new' forms. Despite their variance in shapes and forms, the concept of 'new organizational forms' is often used as if it has a commonly understood meaning (Palmer, Benveniste, Dunford, 2007), notwithstanding a cacophony of—more or less—appealing terms and metaphors. These 'new forms' sometimes create the impression that the more exotically they are named, the more 'avantgarde' management will be. Due to a lack of empirical studies, more is known about how organizations should be designed than what they are actually like. New organizational forms are required, but largely 'unknown'. On the other hand most current organizations are 'known', but they are not wanted anymore. Very few organizations have truly embraced these new concepts (Getz, 2009; Frost, Osterloh & Weibel, 2010; Laloux, 2014): "Yet the adoption of such [new] organizational forms remains low" (Getz, 2009, p. 34).

Within the spatial theory of organizations, an emerging attempt is made to systematically focus on the intersection of knowledge, people, technology, organizations, and space. Knowledge governance—i.e., choosing

organizational forms and mechanisms that can influence the process of using, sharing, integrating, and creating knowledge in preferred directions and towards preferred levels (Foss, Husted & Michailova, 2010)—has recently become a distinct issue in management and organization (Foss & Michailova, 2009). The relationship between space, governance issues, and knowledge processes remains under-researched, theoretically as well as empirically.

Multiple spaces can be identified and used to connect knowledge to thinking, in such a way that workers can add better value ‘simply’ because the nature of their knowledge fits—maybe even ‘naturally’ fits—their mental ways of doing. It is argued in this thesis that such spaces can be organized in a distinctly guided fashion, by means of ‘spatial arrangements’ in which work is no longer divided through the structuring of functions, tasks and activities, but through knowledge, focus, and attention brought together and connected in the best possible context for people to work in, and more specifically, to ‘put their minds to’. According to Lekanne Deprez and Tissen (2011) such arrangements can be defined as:

Intelligent combinations of like-minded people, shared knowledge and dedicated technology, brought to value by means of distinctly separate but connected organizational forms, which direct, guide, and support the focus, attention and concentration of knowledge workers towards the optimal use of their minds with regard to performance, added value and performance improvement. (p. 4, adapted)

In this dissertation the focus is on governing different types of knowledge processes for different kinds of people using various technologies within a specific organizational form. Foss, Husted, and Michailova (2010) point out that important constructs—such as capabilities, dynamic capabilities, absorptive capacity, communities of practice, and so on—are macro-level constructs, on the firm-level. Foss, Husted & Michailova (2010) argue that:

These constructs are not clearly rooted in (micro-) foundations, which, among other things, means that their origin and nature remain unclear. Micro-foundations involve a quest for theorizing explanatory mechanisms that are located at levels of analysis lower than those of the phenomena that one seeks to explain. (p. 457)

While teams, groups, projects, and communities may be invoked as micro-foundations for the above macro-constructs, and are entirely legitimate components of explanation, ultimately micro-foundations mean theorizing in terms of actions and interactions of individuals. In this thesis, both macro (e.g., organizational forms, knowledge processes) and micro (inner space of individuals) levels will be addressed.

Microfoundations, aggregation and the design of knowledge-based organizations.

The origins of competitive advantage can be traced to the unique information or expectations of a firm in a market (Barney, 1986) and/or to serendipity and luck (Alchian, 1950; Denrell, Fang, & Winter, 2003; Winter, 2013; Cunha, Rego, Clegg & Lindsay, 2015). In a ‘factor market’, some resources might, in essence, be underpriced due to the unique knowledge or information possessed by a firm. The focus on firms as possessors of unique knowledge or information of course is shorthand in the sense that firms more generally are collections of individuals. Information and knowledge are not possessed by the firm (Nelson & Winter, 1982) per se, but rather by the individuals within it (though, for an overview of this debate, see Felin & Hesterly, 2007). Or the joint knowledge of many individuals is somehow aggregated up to firm-level knowledge. Individuals within an organization might also have wide-ranging, even conflicting, information and expectations about the most fruitful course(s) of action (Barney & Fellin, 2013). In the organizational, management, and strategy literatures, there are now frequent calls for microfoundations. However, there is little consensus on what microfoundations are and what they are not (Barney & Fellin, 2013).

Building the connections between ‘organizational structure’ and the microfoundations approach, linking micro and macro levels is an important next step. What is perhaps most directly relevant for organizational and strategy scholars is the question of organizational design, which presumes intentional or purposeful aggregation within organizations. Organizational design and structure play a central role in how information is aggregated (Stinchcombe, 1990). Design and structure is a way of purposefully delineating who

interacts and communicates with whom, who has ultimate decision rights over what, and so forth. The capabilities of individuals, and thus organizations, may remain dormant or latent if organizations are poorly designed (Felin, 2012).

1.1.3. Balancing complexity and simplicity in organization theory development

'There is nothing more practical than a good theory,' wrote Lewin (1952, p. 169)⁸. According to Vansteenkiste and Sheldon (2006) Lewin's message was twofold:

Theorists should try to provide new ideas for understanding or conceptualizing a problematic situation, ideas which may suggest potentially fruitful new avenues of dealing with that situation. Conversely, applied researchers should provide theorists with key information and facts relevant to solving a practical problem, facts that need to be conceptualized in a detailed and coherent manner. More generally, theorists should strive to create theories that can be used to solve social or practical problems, and practitioners and researchers should make use of available scientific theory. (p. 63)

How do theories make a difference (Exploring Group Communication, 2012)? Their main function is to help to make sense of phenomena, including human behavior. They support to answer 'why' and 'how' questions about the world. More specifically, they can fulfill three major functions:

- 1 The first function is *explanation*. Theories can help us understand why entities—physical objects, processes, or people—behave the way they do, individually or in interactions with each other;
- 2 The second function is *postdiction*. Theories can help us interpret specific past incidents and events and account for why they would be expected

⁸ Does Lewin even mean what we think he means? This possibility arises because of Shelley Taylor's (1998, p.87) discovery that what Lewin actually said was, "A business man once stated that there is nothing so practical as a good theory" (Lewin 1943, p. 118). Weick (2003) remarks that "it makes a big difference whether the practicality of theory is attributed to a skeptical business practitioner or a self-interested academic theorist" (Weick, 2003, p.460).

to happen as they did. Thus, they give us assurance that order exists in at least part of the world; and

- 3 The final function is *prediction*, whereby theories help us gain confidence in describing what is likely to take place in the future. Many physical phenomena occur with a degree of stability and consistency over time.

Generally there are two approaches to close the gap between theory and

Balancing complexity and simplicity.

In their introduction to a special topic forum published in the Academy of Management Review, Suddaby, Hardy and Huy (2011) revealed that their article “Where Are the New Theories of Organization?” was inspired by the observation that most of the theories of organization used by contemporary management researchers were formulated several decades ago, largely in the 1960s and 1970s, and these theories have persisted, mostly intact, since that time (Suddaby, Hardy & Huy, 2011, p. 236). In 2003, Starbuck already discussed this issue extensively in a chapter entitled “The Origins of Organization Theory”. This chapter argues that:

Contemporary organization theory owes its existence to social and technological changes that occurred during the last half of the nineteenth century and the first half of the twentieth century. These changes created both a basis for theorizing and an audience for theories about organizations. (p. 144).

Ricardo Semler (Lloyd, 1994) observed in an interview—during the launch of his book *Maverick*—that “most companies are still autocratically run and many have become *museums of history*” (Lloyd, 1994, p. 10, *italics added*). Recently, Davis (2010) has analyzed the prospects for cumulative theory development in organization theory. He remarks, *theory*: Yet the theoretical flowering of organization theory’s first two decades was arguably followed by three decades of muted theoretical progress or even stagnation. Like symphony orchestras that play a repertoire of a dozen baroque and classical composers year in and year out, organizational research can sometimes appear like a living museum of the 1970s. (p. 691, *italics added*). Comparing ‘old versus new’ organizational theories (Starbuck, 2003) might initiate the organization research community into posing the wrong questions:

Since organizations are diverse and complex, and since they inhabit diverse and complex environments, the complexity of organization theory makes sense. But this complexity poses the classical dilemma of how complicated theories should be:

Complex theories capture more aspects of what researchers observe, but they are hard to understand. Simple theories are easy to understand but they overlook phenomena that some people deem important. (p. 176)

Balancing complexity and simplicity in organization theory development is a delicate process. Organization theory has developed considerable complexity (Starbuck, 2003), so much complexity:

That doctoral students sometimes complain that it makes no sense to them. The students say they don't understand how the fragments of organization theory relate to each other, how they differ, what each has to offer. In particular, recognition has grown that organizations are quite heterogeneous.(p. 176)

Within this context, Corley and Gioia (2011) have addressed an important question: "What is a theoretical contribution?" They consider that part of the difficulty in delineating the elusive concept of theoretical contribution is that organization and management studies is an eclectic field—and one with multiple stakeholders as well:

Not only do we self-identify as 'borrowers' from many other scientific disciplines (e.g., psychology, sociology, economics, etc.), but we also claim to speak to both academics and practitioners. This medley of foundations, voices, and audiences often creates confusion when discussing contributions. (pp. 12 – 13, *italics added*)

practice: either by making practice more theoretical (e.g., Morgan, 1986; Morgan 1998, Boxenbaum & Rouleau, 2011; Greenwald, 2012) or by making theory more practical (e.g., Vansteenkiste & Sheldon, 2006).

Lundberg (2004) questioned, in this respect, Lewin's claim about the practicality of theory by asking the question: Was Lewin right that there is nothing as practical as a good theory? Making sense of situations and how they got the way they are is what managers and organizational scientists both fundamentally do.... They are both attempting to understand something, how

it works or not, and how to improve it (p. 8). What distinguishes them from each other is the type of conceptual models or frames they employ. The conceptual frames that managers most commonly hold and are comfortable with inform them on what to achieve, prescribe how to achieve it, and dictate what to do if it is not being achieved. Most scientists hold and are comfortable with conceptual frameworks that describe what some part of reality is like and explain how it works. Scientists, of course, also tend to share a process—the scientific method—of how to improve their preferred conceptual frames. The ultimate goal of a reframing process is to produce alternative ways of solving problems—how to deal with challenges and how to build theory by “combining lenses” (Editors’ Comments, 2011, p. 6). This ‘slow revolution’ in multiple-lens explanations is currently underway: “Combining multiple theoretical lenses to develop new explanations of management phenomena and solve managerial challenges will continue to be a critical aspect of how research is conducted in our field” (Editor’s Comments, 2011, p. 11). Hassard, Wolfram and Rowlinson (2013) state that “organization theory is always empowered primarily by methods and perspectives from the wider social sciences. Predominantly, it is informed by theories and methods from anthropology, economics, psychology, and sociology” (Hassard, Wolfram & Rowlinson, 2013, p. 310).

Lundberg (2004) argues that if theory is as difficult to create, then Lewin’s claim probably should really be about the conceptual frameworks entitled *models*:

As we have seen, ‘good’ refers to how well the model does what it is supposed to do: on the one hand, to enable the discovery and accurate description of portions of reality (whats and hows); on the other, to usefully guide practice for performance improvement. Good prescriptive models are therefore practical for managers to pursuing performance, and good descriptive models are practical for scientists for enhancing knowledge about realities. Because conceptual frames are requisite for sensemaking (Weick, 1995), the more accurate, focused, and verified the frame, the better sensemaking is likely to be—for managers, for scientists, for everyone. (p. 14)

Within this thesis, combining multiple theoretical ‘spatial’ lenses (e.g.,

information sciences, architecture, economics, psychology, geography, and sociology) will create a spatial turn within contemporary organizational theory and represents another step towards a spatial theory of organizations.

2 Organizations as spaces

Human life and human behavior are always situated in a particular space and/or place. Place often represents the “here and now of immediate perception” (Ford & Harding, 2004, p. 817). Space on the other hand generally represents a certain broadness of perception. Organizations are particular kinds of spaces, in the sense that they embrace human behavior. These organizational spaces are designed with a purpose in mind. They succeed (or fail) to the extent that these ‘spaces’ evoke the desired behaviors from their ‘members’ necessary to achieve the organization’s purpose (Liedtka & Parmar, 2012).

Space is understood to be more abstract than place and even opposite in meaning. They are in effect “locked into a duality whereby the one meaning constitutes the other” (Schultze & Boland, 2000, p. 216). Tuan (2007) asserts that:

The ideas ‘space’ and ‘place’ require each other for definition. From the security and stability of place we are aware of the openness, freedom, and threat of space, and vice versa. Furthermore, if we think of space as ‘that which allows movement’, then place is pause; each pause in movement makes it possible for location to be transformed into place. Whereas place is associated with a sense of being and contended belonging, space is also associated with ‘becoming’ and with a constant striving for newness and growth. (p.6, *italics added*)

During the last 35 years, culture as a whole and philosophy in particular have paid increasing attention to space (Berquist, 1999). Current literature on space routinely nods to Michel Foucault’s famous 1967 lecture, “Of Other Spaces,” as the first time that space—instead of being ‘dead’, fixed, or treated as an immobile container or setting—began to have a discernible history (Foucault 1986) where space is ‘seen’ as a constructed category in the framework of human history. Space is usually considered as an umbrella construct—i.e., “a

broad concept used to encompass and account for a diverse set of phenomena” (Hirsch & Levin, 1999, p. 199). It is expansive and broad in scope, connecting multiple ideas and phenomena. In 2004, Hubbard, Kitchin, and Valentine (2004) provided “a comprehensive and critical guide to some of the most important thinkers and intellectuals influencing the contemporary development of spatial theory” (Hubbard, Kitchin & Valentine, 2004, p. 1). They selected 52 key thinkers who contributed significantly to the understanding of the importance of space and place in shaping cultural, social, economic, and political life in recent years. The selection of authors was dominated not only by geographers, but also included sociologists, historians, political theorists, philosophers, and psychologists⁹. Leading theoreticians on space across the social sciences and humanities (e.g., Stuart Hall, 1996; Michel Foucault, 1986) have stressed the importance of taking space seriously in the attempt to understand social and cultural phenomena. Likewise, writing on globalization and the information and knowledge society also positions concepts of space and place at the center of social, economic, and political thought. Influential thinkers as diverse as Anthony Giddens (2000) and Manual Castells (2000) all offer their own distinctive contribution on the importance of space in contemporary life. These publications represent an irreversible change in the relationship between place and space, namely as a spatial turn (Sydow, 2002; Warf and Arias, 2008; Döring and Thielmann, 2008; Van Marrewijk and Yanow, 2010) that indicates how space in many different disciplines—anthropology, sociology, religion, political science, film, cultural studies, and organization science—has come to play a proactive role in ‘opening up’ the physical world we live in. The authors address how theory and practice concerning space is used in a variety of fields from diverse conceptual perspectives. However, the relevance and use of space for the purpose of organizing has not been a central issue in organizational science (Sydow, 2002; Tissen & Lekanne Deprez, 2008; Marrewijk & Yanow, 2010; Lekanne Deprez & Tissen, 2011). Space has largely been a neglected and even ignored phenomenon in organizational studies (Berquist, 1999; Hernes, 2004; Kornberger & Clegg, 2004; Clegg & Kornberger, 2006; Taylor & Spicer, 2007, Tissen et al., 2008; Tissen & Lekanne Deprez, 2008; Góra, 2010; Marrewijk & Yanow, 2010; Lekanne Deprez & Tissen, 2011).

The historical foundation of the term ‘space’ is difficult to grasp, or—as

⁹ Recently, Warf and Arias (2008) and Döring and Thielmann (2008) have published up-to-date literature reviews concerning the role of space in selected disciplines.

Berquist (1999) eloquently deliberates—is difficult for us to see other than as the result of a long history of not seeing space:

First, space is an odd term about which to write a history. Throughout most of the history of western thought, few persons have recognized that space is historical; that is, space has generally been understood as a given, not as a category about which there could be variation. History existed within space (and time); there was no possible history of space, because history required variation and space was neutral and beyond change. Tracing the transformation of this static view of space can proceed only with difficulty, but one might profitably point first to the Einsteinian notions that understand space, time, mass, and energy as functions of each other. The interrelationship between such realities requires us to rethink all of them and to change at fundamental levels our approach to space. But the ramifications of such notions have been slow at best. Only in the 1960s can one readily perceive further changes, or at least easily trace the movement of such ideas outside of physics.

The first difficulty in sketching a history of space is that such a history would have to begin with a defence of itself as an acceptable reality. Next, the spatial historian would need to interrogate sources from the ancient and modern worlds, even though those sources were convinced that space had no potential history. Then we would need to examine the changes in our academic work as a result of space's history. For the last three and a half decades, more or less, philosophers and other academics have gained “ground” in the sense that space is seen to be an important and necessary category of discourse, even a historical discourse (Clark 1992; Casey 1997). Space has a genealogy and a history; it exists as a constructed category within the framework of human history. Space is something we make, create, produce, shape, reshape, form, inform, disform, and transform. All these human activities are operations upon space, leaving traces that mark its history.

Secondly, when discussing space one generally wishes to simultaneously change its perceptions of space (i.e., to bring space into ‘our focus’, to direct ‘our minds’ towards space instead of place). This proves exceedingly problematic, because most of us don’t know how to see space. In

fact, space—in continuing common consciousness as well as in the history of academic thought—is invisible emptiness; space is the absence of things, as well as (by definition) in between things. Perhaps space is even beyond emptiness; space can ultimately be conceived as the framework of existence in which other things exist. Such definitions and notions push space almost outside the realm of existence, certainly past the realm of perception, and thus *almost outside the possibility of investigation and analysis, let alone design*. Such space is mathematical, theoretical, and imperceptible. One may analyse it, but one cannot impact it, for such space constitutes the very fabric of reality. Mathematicians can categorize space (as rectilinear or Euclidean, or as curved, or as imaginary, or in any of an infinite number of kinds of space), but space can never be experienced and no one can act upon space. Einstein’s theoretical work proved exceptions to this, but those exceptions were *outside the human scale*; a singularity or even a smaller gravity well can curve space, but human-sized objects affect space only in imperceptible ways, and perceptible effects upon space and time remain the result only of non-human-proportioned objects, such as stellar masses.

If a defined history of space does not exist, other conventions call for definitions to capture its meaning. A *definition of space*, however, always remains an approximation, as the field of study has not yet built its rightful boundaries. (pp. 1-2, *italics added*)

In Berquist’s seminal paper both organization and management theory are largely absent as emerging fields for the development of a spatial theory on organizational design and management. This reflection strengthens the notion of ‘invisible emptiness’. Paradoxically, space within an organizational context potentially creates a powerful metaphor for describing and communicating those “hidden” features of an organization that represent its foundation, its potential capabilities, and its success in the future. As discussed earlier, a metaphor provides a cognitive bridge between two domains. For it to be effective, those domains (e.g., space and organization) must clearly share some key ‘traits’ and should produce a new, emergent meaning that is *more* than the sum of its parts. Metaphors can be good or bad, brilliantly or poorly conceived, imaginative or dreary—but they cannot be “true” (Von Ghyczy,

2003, p. 90). Therefore metaphors are often considered as “too imprecise, as promoting ‘sloppy thinking’ and as lacking rigour” (Putman & Boys, 2006, p. 542). Tsoukas (1991), Cornelissen (2006), Cornelissen and Kafouros (2008), Cornelissen & Kafouros (2008b) have developed models that overcome some of these critical comments. Especially the generative capacity of metaphor to create new ways of seeing, conceptualizing, and understanding organizational phenomena is widely acknowledged within the scholarly organizational community (Cornelissen, Kafouros & Lock, 2005).

Cornelissen, Kafouros, and Lock (2005) examined how metaphors are developed and selected within organizational theory and research. They have reviewed the theoretical literature on metaphor and surveyed the organizational literature to document past and contemporary metaphors-in-use (1993–2003). They identified the heuristics (e.g., judgmental rules) that have been used by organizational researchers in developing and selecting metaphors. On the basis of these identified heuristics, and the biases and errors associated with them, the article of Cornelissen, Kafouros and Lock (2005) poses a number of governing rules which can guide organizational researchers in their continued development and selection of metaphors in the organizational field:

Within their research they define metaphor as a linguistic utterance in which the combination of words is literally deviant in the sense that terms that have originally or conventionally been employed in relation to a different concept or domain are applied and connected to a target term or concept within organization theory... We also assume that metaphors as linguistic utterances reflect and intimate cognitively fundamental meanings about organizations and organizational life; and that these meanings can be traced and inferred through a cognitive linguistic analysis. In other words, we consider metaphor as a salient and pervasive cognitive process that links conceptualization and language. (p. 1549)

The final product involves a categorization of metaphorical theoretical constructs central to the field of organization theory, classified according to the root metaphorical schemes upon which they are each formulated and understood. They then elaborated upon the different ‘root metaphorical

schemes' and the set of 'organizational' and 'organization' conceptual metaphors that according to the first stage of their analysis are prominent within organization theory—that is, metaphors that are frequently mentioned and used, and on that basis occupy a central place within organization theory. Within this elaboration, the authors aimed to retrace and reconstruct the heuristics that organizational researchers have used in developing and selecting certain metaphors in their theorizing and research. In the end, the authors have categorized each conceptual metaphor (a metaphorical word combination involving either 'organizational' or 'organization') according to the larger root metaphorical scheme upon which it is formulated and understood.

Twenty-five significant categories for the 'organizational' conceptual metaphors and 1 categories for 'organization' conceptual metaphors were identified. Geographical space metaphors have as their source domain the distribution of objects or places in space, particularly geographical locations and places. This root metaphorical category includes such metaphors as 'domain', 'world', 'setting', and 'landscape', whereby organizations are represented in terms of geographical spaces and locations. The image of organization as an 'organizational domain', for example, represents the scope and nature of organizational activities as confined to an enclosed space.

The authors have identified six heuristics that provide a motivated explanation for how predominantly metaphors are developed and selected within organization theory. Especially the *relational heuristic*—"that relations in the metaphorical image should match the relations of their counterparts in other semantic domains" (Cornelissen, Kafouros & Lock, 2005, p. 1563)—applies to space. The authors argue that metaphorical images are often selective in the heuristics that they embody, and that the "most apt and effective metaphors are the ones that satisfy multiple heuristics rather than a single one" (Cornelissen, Kafouros & Lock, 2005, p. 1569). They have identified two governing rules to aid organizational researchers in their search for novel categorizations and deeper insights through metaphor. Within the context of this thesis, governing rule number one—"relational metaphors are preferred over attributive metaphors" (Cornelissen, Kafouros & Lock, 2005, p. 1571)—is important. The relational metaphor, through its projection and mapping of interconnected relations between previously unrelated concepts, has the potential to produce novel cognitive categorizations and new frames for

researching the world of organizations. Space—and the related concepts of spatial organizations and spatial arrangements—can be regarded as a relational metaphor, because the relationship between space and organizations has been largely absent in the academic and managerial literature (for some notable exceptions: Hernes, 2004; Clegg & Kornberger, 2006; Taylor & Spicer, 2007; Dale & Burrell, 2008 and Kornberger, 2008). The metaphor “space” is not restricted to an organization’s internal, “built”, physical environment, but it is just about how organizations relate to each other and to the world they are part of.

In this thesis, space is regarded as a ‘metaphor-for-future-use’ within the context of organizational theory and practice. Although space and organizations can at first glance be considered to be distant from each other, this distance will likely be reduced in due time. Together, these governing rules “encourage organizational researchers to search for creative and new ways of conceptualizing organizations” (Cornelissen, Kafouros & Lock, 2005, p. 1571). These rules allow for a more liberal and advanced use of metaphor with metaphor being used to reveal deeper and more profound insights into the world of organizations: “When used in such a way, we believe that metaphors can prove enormously productive of further theoretical advances and empirical observations within organization studies; by sparking off inquiry and directing researchers to explore links that would otherwise remain obscure” (Cornelissen, Kafouros & Lock, 2005, p. 1572).

As discussed above, the focus of this thesis is to examine spatial organizations and spatial arrangements within the context of a spatial theory of organizations. Although we cannot prove a metaphor (Kolb, 2008), it is argued that the metaphor of space and the related concepts of spatial organizations and spatial arrangements will bring researchers out of their “cognitive comfort zone” (Cornelissen, Kafouros & Lock, 2005, p. 1572). These concepts potentially embody enough creative tension and turmoil to conceptualize and design new ways of working within new organizational forms.

Within this context, it was Henri Lefebvre (1991)—a Marxist theorist—who argued that space is foremost a social product. He proposes that space is produced through three processes:

- practices, such as walking, occupying, and meeting;
- planning, in the form of architecture, regional and city planning,

- ergonomics, and office landscaping; and
- imagining, manifest in representations such as literature, promotion, and art, or through interpretive studies of phenomenological experiences of space.

Góra (2010) argues the following:

These processes of producing space correspond to three ontological and three epistemological modes of space. Ontologically, space splits into the ‘physical’, ‘mental’, and ‘social’ space, whereas epistemologically it consists of ‘spatial practice’ (‘perceived space’), ‘representation of space’ (‘conceived space’) and ‘representational space’ (‘lived space’). The modes of this dialectic triads are not analytically separable but must be treated holistically. Each mode remains in a relationship with the other two, so that together they make up space. (p. 68)

It has become increasingly common to examine space from the notion of a “three-tiered” segregation as well as overlap. Lefebvre (1991) identified a ‘conceptual triad’ (Ford & Harding, 2004, p. 817) (i.e., three ways of understanding space). Every experience is covered within three interrelated aspects of space:

- Spatial practice (denotes perceived spaces), that is space in its specific form, which embraces production and reproduction;
- Representations of space (denotes conceived spaces), that is the dominant space in any society. They are imaginary spaces as we conceptualize them with non-verbal symbol and signs; and
- Representational space (denotes lived spaces), that is the way that we order space through signs and codes.

According to Hernes (2004) the perceived, the conceived, and the lived are Lefebvre’s more epistemological dimensions of how we position ourselves in relation to space. Our everyday actions are embedded in spaces which we actually perceive as such. Organization reality is a spatial practice that reproduces itself through many different means. Meetings are spatial practices that reproduce themselves through social action. Conceived spaces are tied to the imageries created by people in power as the ‘producers’ of space (e.g., architects, managers). An organization chart represents an example of a representation of space. Lived spaces evolve from our historical past. They consist of subtle non-

verbal signs and codes through which we make sense of what goes on around us (this is why we live these spaces rather than just perceive them).

For Lefebvre, space is something which is the product of three specific and continuous struggles. These are the everyday struggles around spatial practices, the carefully planned *representations of space*, and the imagined representational space. The threefold distinction briefly described here is useful as a classifier of main uses of space, although it does not describe what different space actually involves (Hernes, 2004).

Apart from Lefebvre (1991), Soja (1996) adapted the notion of space as “three-tiered” and thus extended Lefebvre’s model into the trialectics of spatiality. Soja believed that space is never a given. It is never an “empty box” to be filled, never only a stage or a mere background. On the contrary, space is always a cultural constructed entity. It is part of the general cultural web, and like any cultural entity space is formed and changed, accepted, or rejected. Soja (1996) presents three modes of spatial thinking:

- First space (perceived pace) is concerned with physical space;
- Second space (conceived space) is the mental/cognitive representation of space; and
- Third space (lived space) is the lived experience. Lived space embodies the real and imagined life world of experiences, emotions, events, and political choices. Third space is a mode of thinking about space that draws upon both the material and the mental spaces of perceived space and conceived space, but extends well beyond them in scope, substance, and meaning. It is simultaneously real and imagined and more.

	Space 1	Space 2	Space 3
Lefebvre	Perceived space	Conceived space	Lived space
Soja	First space Physical place	Second space 'Perceived' (mental/cognitive representation of a place)	Third space Lived experience

Figure 2.1. Understanding space in a three-tiered way: An overview.

The second threefold distinction offered by Lefebvre is the difference between three forms of space: mental, social, and physical. Mental space accommodates the sphere of theory and meaning, social space consists of social relations, and physical space is essentially tangible material. Within an organizational context these different notions of space focus on different areas:

- Mental space is basically the *space of thought*. It consists of, for example, knowledge, learning, and sensemaking (Hernes, 2004);
- Social space evolves from interactions that form relations of a more predictable nature. Social space is a network of relations where norms of behavior regulate much of what is going on (e.g., human presence). This need not to be physical and it may just as well be virtual, imagined, or contingent (Hernes, 2004); and
- Physical space refers to tangible structures created principally in order to regulate work and interaction. Examples within an organizational context are structures in organizations, budgets, work schedules, and so on (Hernes, 2004).

This threefold distinction suggests an approach to organizational analyses and it is one of the first attempts to “organize for space”. Hernes (2004, p. 74) believes that Lefebvre’s ambitions go far beyond the more modest ambition of offering alternatives to the way firms organize themselves. Within the spatial theory of organization, this thesis builds upon Lefebvre’s distinction between physical, mental, and social space. According to Cairns, McInnes and Roberts (2003) Lefebvre concludes that:

Space is never empty and always embodies diverse meanings for the actors who share in it. Space may be physical and geographical, but—as discussed above—‘space’ is also a metaphor for people’s range of intention and understanding—things seen, but also things thought. Thus organizational actors may find both freedom and control within the spatial constraints in which they operate. (pp. 129–130, *italics added*)

Members of an organization will not only exploit the opportunities of space for their mutual benefit, but they will also create barriers and boundaries that might hinder their performance, growth, and sustainable development. Boundaries should not be considered as negative or limiting per se. As Simons (1995) points out, the purpose of brakes on a car is not to slow it down but

allow the driver to go fast. In space, boundaries are drawn again and again. Apart from tangible boundaries—such as gates, walls, budgets, and programs—most boundaries are unclear, invisible, and at best blurred. Even the study of boundaries—just like space—involves analyzing something that often cannot be seen: “Space only really makes sense in the presence of boundaries” (Hernes, 2004, p. 84).

Before transcending boundaries, they must be identified. The concept of organizational boundaries was comprehensively and critically assessed in organization literature by Paulsen and Hernes (2003) who concluded that:

Far from becoming ‘boundaryless’, organizations may be conceptualized as operating within and between boundaries at many levels of organization. Rather than decreasing in number, boundaries proliferate. Rather than becoming simplified, they become more complex.... What becomes crucial for analysis are the multiple ways in which boundaries are conceptualized and construed in particular contexts, and whether explanations that utilize boundary constructs are useful for describing social and organizational dynamics. (p. 303)

Hernes (2004) differentiates boundaries according to the mechanisms that govern what goes on inside them, which differs depending on whether we consider space to be social, virtual, mental, or physical. Organizations take up a lot of space. Most of it is physical space within the offices and factories which surround us and their rapid expansion during economic growth. Space matters. Increasingly, organizations also consist of other spaces which can and should form part of organizational design and practice. Next to being physical, organizations are also virtual (e.g., ‘in the cloud’ [Koulopoulos, 2012]) and mental.

Hernes (2004) believes that boundaries reflect the substance of space: “Boundaries may be grouped according to the substance of space, which distinguishes between physical, social and mental boundaries” (Hernes, 2004, p. 81). Therefore, following Lefebvre’s (1991) spatial typology—physical, social, and mental space—a three-fold typification is drawn between physical, social, and mental boundaries:

- Physical boundaries relate to formal rules and physical structures regulating human action and interaction in the group or organization;

- Social boundaries relate to identity and social bonding, tying the group or organization together; and
- Mental boundaries relate to the bounding of core ideas and concepts that are central and particular to the group or organization.

Studying the effects that boundaries have on space, Hernes (2004) distinguishes between three different ways how boundaries regulate space:

As ordering devices, boundaries act as tolerance limits for human actions and interactions, which means that most of the time, most of the people will stay within the boundaries, which again creates some stability of expectations. It is expected that people and units generally stay within the limits, which makes it possible for others to plan and to achieve what they set out to do. Crossing the ordering boundary implies transgressing organizational arrangements, such as by breaking formal rules (in relation to physical boundaries), violating social norms (in relation to social boundaries) or practicing heresy (in relation to mental boundaries). Spaces may be said to vary according to how tightly or loosely the boundaries order behaviour. The second effect of boundaries is as distinction. Boundaries are markers of identity serving to convey distinct physical, social and mental features by which a space is distinguished from the environment. As spaces are formed through the drawing of distinctions between themselves and the external environment, over time distinctions are continuously redrawn. A third effect of boundaries is to serve as thresholds. Boundaries act as thresholds to import and export of resources such as people, ideas and materials. Boundaries are ‘permeable’ or ‘leaky’. Very high thresholds signify that space is strictly regulated. Low thresholds, on the other hand, signify a higher degree of exchange with the external environment and has as main consequence a higher degree of malleability, because people may easily move in and out of space. (83-84, *italics added*)

Within this thesis it is argued that as work and organizations increasingly become ‘unbounded’, the development of a spatial construct of organizations becomes evident. Early indications that such constructs can be derived from the spatial theory of organizations as presented and discussed in this thesis originate from Hernes (2004); Kornberger and Clegg (2004); Chanlat (2006);

Taylor and Spicer (2007); Dale and Burrell (2008); Tissen and Lekanne Deprez (2008); Góra (2010) and Van Marrewijk and Yanow (2010), who all laid the foundations for recognizing and realizing the potential of a spatial theory (and practice) for modern organizations. Such a spatial theory is adding a lens of space that allows a researcher and practitioner to develop a new view on organizations that motivates the shaping of new organizational designs.

2.1 On space and knowledge

Over the past decades most work, even manual work, has become knowledge-based (Sinha & Van de Ven, 2005; Davenport, 2005; Hagel, Seely Brown & Davison, 2009; Gratton, 2011; Lund, Manyika & Ramaswamy, 2012) with knowledge-intensive work being regarded as complex, mental, intense, passionate, boundaryless, interactive, cognitive, connected, time pressured, and collaborative. Increasingly, organizations experience that there is simply too much for them to know. Obviously, knowledge is an ambiguous term and to this date scholars cannot agree on what knowledge actually is (Neta & Pritchard, 2009). Broadly speaking, knowledge can be seen as an asset as well as a resource that is both complex and difficult to deal with (Starbuck, 1992; Nonaka & Takeuchi, 1995; Boisot, 1998; Alvesson, 2004; Tissen, Andriessen & Lekanne Deprez, 1998; Ichijo & Nonaka, 2007; Foss & Michailova, 2009; Karreman, 2010; Alvesson, 2011; Grimaldi, Cricelli & Rogo, 2012; Krogh, Nonaka & Rechsteiner, 2012; Bennet & Bennet, 2014; Leonard, Swap & Barton, 2015). Organizations experience both a hidden fear that they are not getting enough knowledge and a potential threat that all this knowledge and the lack thereof will at some point cause a collective mental breakdown due to a perceived and even actual case of data, information, and knowledge overload (Lekanne Deprez, 2014). On the other hand organizations create knowledge and its potential value by nurturing informal relations through global knowledge networks and communities that encourage a free horizontal and global flow of knowledge within and across organizational boundaries. Most organization hope to be ‘hit’ by the right kind of knowledge at the right moment in time, but leave the shooting at the will of whoever is inspired and committed. Also, knowledge is sometimes seen as enforceable, both by—digital—technology (the gun) and the simple pressure to produce (the trigger). Indeed, the very existence of knowledge management is based on this

assumption particularly with regard to recurring productive knowledge creation.

Work—and consequently its output and outcome—is worldwide becoming more and more knowledge-based, knowledge-intensive and intelligent-rich (Davenport 2005; Heckscher 2007; Donkin, 2010; Lund, Manyika & Ramaswamy, 2012; McKinsey Global Institute, 2013). Due to this emerging ‘mentalization’ (Fisher & Fisher, 1998; Albrecht, 2003; van Aken, T. Bruining, B. Jurgens, A. Sanders, 2003; Davenport, 2005; Levinthal & Rerup, 2006; Amabile & Kramer, 2011; Valliere & Gegenuber, 2013; Foss & Stea, 2013; Kastelein, 2014; Islam, 2015; Stea, Linder & Foss, 2015) of work, organizing the interactive, strategic knowledge flows is a critical capability of people and organizations. However the definitional ambiguity of knowledge, (Lekanne Deprez, 2003; Zins, 2007; Buuren, van, 2009; Turchetti & Geiler, 2013) and the different types of knowledge make it hard to determine “Who needs to know?”

For example:

- *implicit and explicit* (Wilson, 2002; Day, 2005). Implicit knowledge is passively held matter—‘stuff’—that has never been documented but is failrly easy accessible (Leonard, Swap & Barton, 2015). Explicit knowledge can be formalized, codified, and communicated (it is also known as objective knowledge);
- *tacit and explicit* (Nonaka, Toyama & Hirata, 2008, Venkitachlam & Busch, 2012; Virtanen, 2013). Tacit knowledge is grounded in experience and difficult to express; members of an organization know it but cannot articulate it—at least not immediately, and often never—and therefore it is difficult to capture and codify (it is also known as subjective knowledge). For explicit knowledge, see item above;
- *sticky and leaky* (Brown & Duguid, 2001; Szulanski, 2003). Knowledge that appears ‘sticky’ to some can be ‘leaky’ to others. Brown and Duguid (2001) argue that “exactly the *same* knowledge can prove both sticky and leaky. Ideas, insights, inventions, and practices that are unable to travel within the organization prove to be quite capable of travelling to competitors (p.199, *italics added*);”
- *documented and undocumented* (Powell & Ambrosini, 2012). Powell and Ambrosini (2012) believe that tacit knowledge cannot be transferred and instead must be developed by a member of the organization through

practice. The authors use the terms documented knowledge and undocumented knowledge: “The use of these terms is intended to provide distance from the confusion over tacit and explicit knowledge. Documented knowledge is a direct analog for explicit knowledge. Undocumented knowledge is simple knowledge that has not been written down, which can be articulated in a discussion or documented at a later time (Powell & Ambrosini, 2012, p. 211), and

- *embrained-knowledge, embodied-knowledge, encultured-knowledge, embedded-knowledge, and encoded-knowledge.* Blackler (2002) has identified ‘five images of knowledge’:

- 1 *Embrained-knowledge:* abstract and theoretical and depends on conceptual knowledge and cognitive abilities;
- 2 *Embodied-knowledge:* is action oriented, tacit and relies on physical cues;
- 3 *Encultured-knowledge:* is collective, language-based, and is attained through social cues and arrangements;
- 4 *Embedded-knowledge:* resides in routines, formats, recipes, and systems; and
- 5 *Encoded-knowledge:* is big data, information, and knowledge stored in manuals, databases. (pp. 48-50)

Information and knowledge are commonly seen as distinctive and separate ‘in their own right’. Similar to information, knowledge is seen as both ‘separate’ and ‘spacious’. Knowledge is generally viewed as limitless and universal, while its overall mythical aura implies a certain undefined but substantial potentiality for advancement (Drucker, 1993; Adler, 2001; Jackson, S.E., M.A. Hitt, A.S. Denisi, 2004; Amidon, Formica & Mercier-Laurent, 2005; Hollanders & Soete, 2010; Child Ihrig & Merali, 2014). In his publication “Post-Capitalist Society”, Drucker (1993) underlines that the controlling resource and absolutely ‘decisive factor of production’ now is not capital, land, or labor. The basic economic resource is—and will continue to be—knowledge. The traditional ‘factors of production’—land , labor, and capital—will not disappear, but become and have already become secondary (Davis, 1989; Drucker, 1993). In the Agrarian Age people and societies lived from the land, in the Industrial Age they acquired wealth *under* the land, and in the knowledge-based economy the primary source of production is *within ourselves* (Savage, 2007).

During most of the industrial economy, knowledge was only of limited importance to the management of organizations. It was largely treated as more or less a given—a prerequisite—for the correct execution of core production processes (Starbuck, 1992; Davenport & Prusak, 1997; Pink, 2005). Experience-based craftsmanship (Sennett, 2006) was seen as more important than knowledge-based professionalism and skills as more important than formal education. Knowledge was not a means by itself, not for workers nor for managers—the latter generally originating from the ranks and files of internally skilled craftsman and selected on the bases of ‘who they were and not on what they knew’. Overall, the importance of knowledge limited itself to the physical reality of organizations (i.e., as a spatially restricted criterion related to issues of efficiency, production, input, output, and outcome).

2.2 It is all about creating value

According to Starbuck (1992) a knowledge-intensive firm draws upon investment in intellectual resources to *create value*, rather than in labor or capital. In other words, the competitive advantage for knowledge-intensive firms does not consist of cheap labor or economies of scale from large-scale manufacturing, but rather from the application of superior knowledge and judgment. An understanding of the nature of knowledge is vital for organizing it in such a way that it generates value by encouraging global flows of knowledge within and across organizational boundaries (Bughin, Lund & Manyika, 2014) “Knowledge is no longer that which is contained in space, but that which passes through it, like a series of vectors. Each having direction and duration yet without precise location or limit.” (Hesse, 1997, p. 30).

Within the theory of the firm, boundary choice reflects the role of management in assembling a strategic bundle of complementary assets, resources, and activities, either existing or foreseen, which when combined create value for the firm (Zenger, Fellin & Bigelow, 2011).

Pyramid-style knowledge models: Turning knowledge into action?

Knowledge only becomes powerful when it is put to work. All too often, organizations fall into the trap of assuming that knowing about something is all that they need to do. Only when it is understood that

knowledge is never an end in itself but simply a means to an end, knowledge-intensive organizations will be able to thrive. Then they must understand that success depends on a constant, continuous process of combining and creating knowledge into something new or different. This process has several stages, as illustrated in the knowledge pyramid (Lekanne Deprez & Tissen, 2002) shown in figure 2.2.

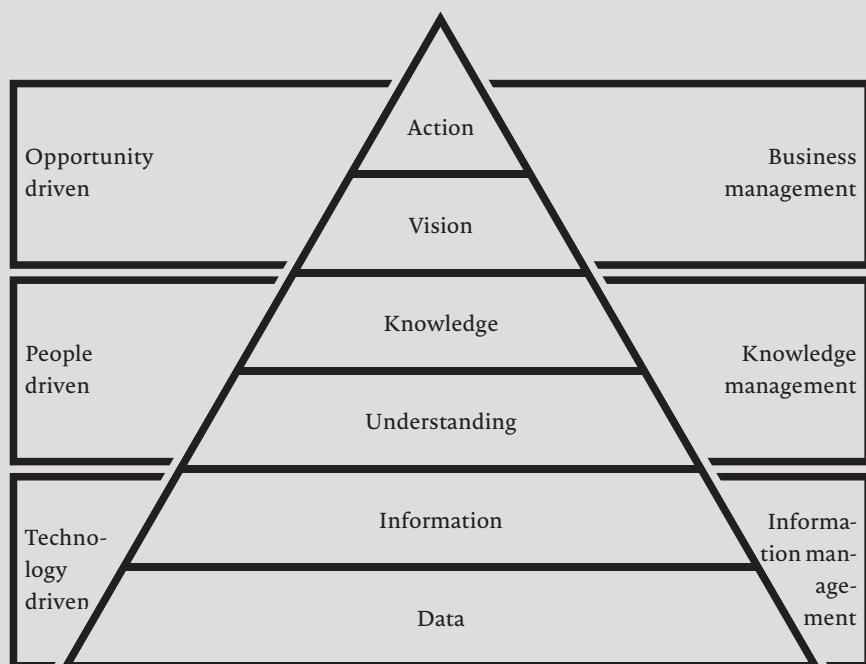


Figure 2.2. Turning knowledge into action: The knowledge pyramid (Lekanne Deprez & Tissen, 2002, p. 42).

The base of any knowledge infrastructure is **data**. It is vital that the minimum requirements for storing and retrieving data and information must be set. Often many tools are applied for data and information management. They must allow not only ease of input but also ease of access—anytime, anywhere, and anyhow. Everybody in a knowledge-intensive organization must understand the importance of relevant input and the importance of big data. But this is only the start. In knowledge-intensive organizations, big data need to be combined, shared and enriched to provide information. Only when

sharing its individual and collective understanding—create a shared vision and a shared ambition (Weggeman & Hoedemakers, 2014)—can a knowledge-intensive organization move into action. Various versions of the Knowledge Pyramid—also known as the ‘Knowledge Hierarchy’, ‘Information Hierarchy’, or Data-Information-Knowledge-Wisdom (DIKW) continuum—exist (Rowley, 2007; Frické, 2009; Bennet & Bennet, 2014). The now familiar notion that data leads to information, which leads to knowledge, which in turn leads to wisdom, was first specified in detail by R. L. Ackoff in 1988. Typically information is defined in terms of data, knowledge in terms of information, and wisdom in terms of knowledge, but there is less consensus in the description of the processes that transform elements lower in the hierarchy into those above them, leading to a lack of definitional clarity. Today the distinction between data and information is becoming ‘blurred’. Big (digitized) data—structured and unstructured—has become a strategic resource. Data’s value does not diminish when it is used. It can be processed and enriched again and again (Mayer-Schönberger & Cukier, 2013) There are more and different kinds of data available on different platforms: twitter, mobile phone, and so on. Furthermore, new data is accessible in real time. This stimulates the process of real time decisions. In addition, there is limited reference to wisdom.

Wisdom is the combination of knowledge and experience, but it is more than just the sum of these parts: “In essence, wisdom grows through the learning of more knowledge and the practiced experience of day-to-day life—both filtered through a code of moral conviction” (Costa, 1995, p. 3).

Given the limited transferability and replicability (Winter, Szulanski, Ringov & Jensen, 2012) of knowledge, this presents considerable difficulty for the ‘institutions of production’. The solution seems to lie in some process of knowledge integration that permits individuals to apply their specialized knowledge to the production of goods, processes and services, while preserving the efficiencies of specialization in knowledge acquisition (Demsetz, 1991). New technologies (Web 3.0, cloud based systems, artificial intelligence,, softbots and intelligent agents) have opened a connective virtual space in which individuals can create and recreate, shape and, re-shape the

reality they live in on a continuous bases, while at the same time being shaped and recreated by information and knowledge itself (Minsky, 1988). Traditional boundaries between people and technology are gradually fading. In chapter 8 of this thesis, the changing man-machine continuum and its impact on people, work, and spatial organizations is further discussed.

Once complex knowledge work takes place, this is increasingly regarded as 'mindful' work (i.e., as cognitively embedded, intense, passionate, time pressured, and collaborative). According to Langer (Kleiner, 2015) mindfulness means being awake, aware, and constantly attending to oneself and the world around:

When we're mindful, noticing more things, it's literally and figuratively enlivening. In a work situation that encourages mindfulness, we enjoy being there, we are healthier, it costs less, and there are fewer accidents. Research shows that when we're mindful, paying more direct attention to the people around us, we're seen as more charismatic. We're able to avert dangers and spot opportunities. (p.5)

Following Levinthal and Rerup (2006), mindfulness is conceived as involving attentiveness as well as the ability to respond agilely to 'cues'. By contrast, less mindful work involves fewer cognitive processes and greater reliance on previous routines. Within modern organizations, loosely coupled and coordinated groups, teams, and communities perform routine and complex work without 'institutional direction' (Shirky, 2008; Garud, Jain & Teurtscher, 2008; Getz, 2009, Laloux, 2014, Robertson, 2015). They create 'space' in the minds of people in organizations to organize, share, and exploit content (e.g., concepts, ideas) and thus turn knowledge into value..

The current web-enabled social media and network tools have the capability to support the rise of so called 'self-organizing, emergent organizations'. These tools have no inherent respect for organizational boundaries, bureaucracy, centralization, formalization, or other products of 'traditional organizational structures-thinking'. They are likely to facilitate incomplete, self-organizing, and fluid organizational forms. People from inside and outside the organization will create interactions among each other (e.g., by knowing and not knowing together, with a joint as well as separate view of getting their act together).

Through increasing our understanding of the ‘mentalization’ of work (Davenport, 2005; Levinthal & Rerup, 2006; Amabile & Kramer, 2011; Valliere & Gegenuber, 2013; Foss & Stea, 2013; Kastelein, 2014; Foss & Stea, 2014; Islam, 2015; Stea, Linder & Foss, 2015; Newport, 2016)—that is the nature and way people employ their minds towards the best use of knowledge—distinct ‘spaces’ can be seen, identified, organized, and utilized, aimed at enabling people to better focus their attention and concentration on what needs to be done better in a forward looking manner. Daniel Kahneman (Scharge, 2003) believes that the thing that is absolutely the most striking is:

How seldom people change their minds. First, we’re not aware of changing their minds even when we do change our minds. And most people, after they change their minds, reconstruct their past opinion—they believe they always thought that. (p. 5)

Organizational spaces can be identified and used to connect knowledge to thinking, in such a way that workers can add better value ‘simply’ because the flow and nature of knowledge fits—maybe even ‘naturally’ fits—their mental state of mind and way of doing. These spaces can however be organized in a distinctly guided fashion by means of ‘spatial arrangements’ in which work is no longer divided through the structuring of functions, tasks, and activities, but through knowledge, focus, and attention brought together and connected in the best possible context for people to work in, more specifically to ‘put their minds to’. Such arrangements (Lekanne Deprez & Tissen, 2011) can be defined as:

An intelligent combination of like-minded people, shared knowledge, and dedicated technology brought to value by means of distinctly separate but connected organizational forms. These forms—arrangements—direct, guide, and support the focus, attention, and concentration of organizational members towards the optimal use of their minds with regard to performance improvement creating standard, structured, and shared moments of value. (p. 4, adapted)

At the mental level, it is all about gaining people’s attention by guiding them to focus on ‘one thing at the time’. Attention is one of the most fundamental tasks of the brain, one that is crucial for the performance of knowledge tasks. According to Ocascio and Wohlgezogen (2010), three processes appear most

consistently in the literature: selection, vigilance, and regulation—the what, how, and when of attention:

Selective attention describes choosing to notice a particular external stimulus; due to its computational limitations the human brain cannot process all external stimuli simultaneously and thus has to choose which external stimuli to attend to and which to screen out. Selective attention determines what is being attended to. Attentional vigilance describes the capacity of an individual to sustain concentration on a particular stimulus. It's about how attentive an actor is toward a stimulus: during periods of sustained attention, attention toward a stimulus is high, when sustained attention can no longer be maintained, attention is low. Current neuroscience adds a third attentional process: the ability to deal with interruptions. This function relates to memory and planning components of the mind, which are essential for the development of skill and maintenance of efficient task performance. This third process enables us to process multiple targets quasi-simultaneously, by switching back and forth between different stimuli. This is called: attentional regulation. Vigilance and regulation can be seen as supplementary forces: the former allows individuals to attach their attention from that stimulus, reallocate it to a different stimulus, and then come back to the first. In practice there is a natural trade-off between vigilance and regulation: an actor cannot sustain attention firmly on a stimulus and at the same time flexibly switch back and forth between stimuli. (pp. 192–193, *italics added*)

Further expanding the DIKW continuum model within the context of attention management (Valliere & Gegenuber, 2013), moving upwards in this continuum requires mental attention and the understanding achieved through deliberation and sustained concentration. Deliberative attention (i.e., the cognitive capability of sense making in a complex environment and the ability to draw meaning from it [Valliere & Gegenuber, 2013, p. 135]) is a valuable source. The authors have developed a deliberate attention management model (DAM), a model of demand and supply of deliberate attention within an organization. As work spaces—and their inhabitants—are confronted with shifting roles, multiple projects, multiple sharing, and social media tools, shifting priorities and multiple tasks, most people

increasingly ask themselves how they can dedicate attention to the work at hand without being overwhelmed and distracted. Leroy (2009) showed that when a person switches from some task A to another task B, one's attention does not immediately follow—a residue of the attention remains active on task A and one is likely to demonstrate poor performance on task B: “As revealed by two experiments, people need to stop thinking about one task in order to fully transition their attention and perform well on another” (Leroy, 2009, p. 168). The more intense the residue, the worse the performance (Newport, 2016).

Earlier it was stated that space only really makes sense in the presence of boundaries. Mental boundaries cannot be seen, but they relate to mechanisms such as ideas, understandings, and beliefs that tend to guide organized actions. Drawing mental boundaries forms part of the way people cope in making sense of the world (Hernes, 2004b). For example, multitasking within certain contexts is proven to be counterproductive; the more workers switch tasks, the less they accomplish (HBR, 2013). However, that doesn't mean all multitasking at work is inefficient. Often the level of multitasking matters; there's a certain point where taking on more tasks made workers less productive rather than more so (Mangelsdorf, 2011). Recently, Devora Zack (2015) presented neuroscientific evidence to prove that people cannot do more by trying to tackle several things at once—it is an illusion: “Your mind can't be in two places at once” (Zack, 2015, backcover). The author promotes ‘singletasking’—“to get more done, one thing at a time” (Zack, 2015, p. 129)—as a promising alternative to multitasking. The mental work productivity challenge is no longer ‘getting things done’ (Allen, 2015) but ‘not getting it all done and manage your attention’ (Crabbe, 2015). Birkinshaw and Ridderstråle (2015, p. 4) have defined a company's return of attention (ROA) as “the quantity of focused action taken divided by the time and effort spent analyzing a problem.” Each organizational form has a different return of attention and is better able to deal with the demands of turbulent—even chaotic—environments. Organizing for space challenges our imagination to design organizations with enough mental space and ample boundaries to regulate the flow of knowledge in such a way that it is turned into value for the stakeholders of the organization. Furthermore it is argued that within knowledge-enabled organizations, owning assets is no longer the most important indicator of success. Instead, these type of organizations have

developed and learned new ways to sustainably benefit from assets that do not need to be in their exclusive possession. Knowledge cannot and should not be encapsulated in buildings or tangible assets¹⁰; it flows horizontally within and across organizational boundaries; it is shared in the cloud and it moves in physical, virtual, and mental spaces producing valuable knowledge.

2.3 From managing for performance to organizing for value

Normally organizations are not regarded as entities that can be designed for performance in a natural way (i.e., in which the right performance is generated at the right moment in time). Within the area of organizing and designing spatial organizations, the objective is to reframe an organization less as ‘structured’ and more as ‘arranged’. This is not just a question of semantics. It is about reframing an organization and turning it into something distinctive (i.e., something that makes a difference). All organizations face the challenge of deciding from an infinite number of ways to combine their resources and activities to create and produce their services, products, and processes in a distinctive way (Roberts, 2004). Instead of focusing on the importance of investing in and cultivating internal sources (“resource-based view”), the context of organizations must not be overlooked. Professor Ranjay Gulati (Gilbert, 2010) of Harvard Business School said that “most companies with an inside-out perspective become attached to what they produce, sell and to their own organizations” (Gilbert, 2010, p. 1 *italics added*).

The actual rise of spatial thinking in organizational design theory comes from a perceived—and thus yet to be proven—managerial paradigm shift which turns away from the resource-based ('placebound') view of the firm dominant in most organizations today, to the knowledge-based ('spacebound') view of organizations. During recent years the latter arose from the potential for development and sustainable growth inherently associated with the

¹⁰ However, Boisot (1998) argues that some types of knowledge ‘assets’ can transmit well over time but not at all in space: “Their information content is deeply embedded in, and hence confined to a specific location and cannot travel at all. Some works of architecture have this quality. No photographs of the west portal of Chartres Cathedral, for example, can ever fully replace the direct experience of them. Verbal and written descriptions of these two works can, of course refer to experience, but they cannot replace it” (Boisot, 1998, p. 121).

knowledge-based economy and knowledge flows of goods and services ‘wrapped’ in data, information, technology, and know how (Bughin, Lund & Manyika, 2014; Manyika, Lund, Bughin, Woetzel, Stamenov & Dhringa, 2016). Whereas the dominant managerial paradigm derived from the resource-based view is ‘to manage first and organize later’, the opposite is true in the knowledge-based economy. In this view it is expected that organizing resources better will have a more profound effect on business performance and on improving it than managing resources better. Within industrial-based organizations the focus is on creating, capturing, measuring, and improving the performance of employees, managers, groups, teams, communities, and organizations (Peters & Waterman, 1982; Sink, 1985; Rosenzweig, 2007b; Paauwe, 2009, Laloux, 2014). Within knowledge-intensive organizations, the focus is on co-creating, capturing, measuring, and improving the added value of employees, managers, groups, teams, communities, and organizations (Tissen, Andriessen & Lekanne Deprez, 1998; Boissot, 1998; Andriessen & Tissen, 2000; O'Reilly & Pfeffer, 2000; Bowman & Swart, 2007; Fitz-Enz, 2009; Grimaldi, Cricelli & Rogo, 2012; Morgan, 2012).

Morgan (2012) shows that the value of emergent collaborative knowledge-intensive organizations does not come from an actual technology platform or disruptive ICT but from the use of the platform (Ciborra, 1996; Ciborra, 1997; Thomas, Autio & Gann, 2014) by management and employees. The value of deploying an emergent collaboration platform can be seen in two ways:

- Anecdotal ('soft benefits'); and
- Financial ('hard benefits');

Soft benefits include:

- 1 Company morale improvement;
- 2 Speed of access to information and people;
- 3 Improved communication and collaboration;
- 4 Insight into the organization (alignment);
- 5 Agility of the organization;
- 6 Learning among employees;
- 7 Innovation;
- 8 Improve quality of life; and
- 9 Positive company perception.

Hard benefits include:

- 1 Activity on the platforms (comments, ideas shared, groups created);
- 2 Money saved (on office space, decreased travel costs, hardware, software, and so on);
- 3 Revenue generated (the amount of new ideas that employees come up with that are implemented and result in more profit); and
- 4 Improved productivity.

True value is created in so-called ‘value zones’ (Nayar, 2013) where employees and managers within a co-creating setting approach work directly—in physical places and/or virtual spaces—with clients, customers, and civilians to deliver moments of value (Lekanne Deprez & Tissen, 2011) by solving their problems, exploring common challenges, and realizing collective ambitions (Weggeman, 2007; Gaspersz, 2009; Ready & Truelove, 2011; Weggeman & Hoedemakers, 2014). Collaboration means embracing various perspectives and creating self-inflicted turmoil ('creative conflict'). That is why spatial organizations do not go along to get along (Hill, Brandau, Truelove & Lineback, 2014) but bring together different ideas and suggestions in new arrangements.

2.4 On space and organizations: Understanding organizations according to a ‘spatial reading’

Modern work design is “no longer contained within a job or even an organization; it often transcends the boundaries of organizations, professions and countries” (Sinha & Van de Ven, 2005, p. 389). According to Nonaka and Toyama (2007), knowledge assets arise within the knowledge creating process:

Unlike other assets they are intangible, are specific to the firm and change dynamically. The essence of knowledge assets is that they must be built and used internally in order for full value to be realized, and hence they cannot be readily bought and sold. (p.25)

Nickerson and Zenger (2004) explain how a firm’s prospective objectives for knowledge creation dictate the choice of how to organize:

Here the critical question is not whether knowledge should be owned or acquired in the market or how the exchange of knowledge should be facilitated, but rather *how a manager should organize individuals to generate knowledge that a firm seeks.* (p. 618, italics added)

Within an increasingly knowledge-based economy, modern organizations are commonly portrayed as having creative, innovative, and intellectually demanding workspaces, flocked with smart workers (Tissen, Andriessen, Lekanne Deprez, 1998), hyperspecialists (Malone, Laubacher & Johns, 2011), Knowmads (Moravec et. al, 2013), 'Hipsters' (Victoriano, 2014), and other clever people (Goffee & Jones, 2009). Their work lifestyle sets itself against so-called nine-to-five work lives, namely by depicting the former as exciting, challenging, creative, and free and the latter as boring, dull, and constraining (Costas, Ekman, Maravelias & Spoelstra, 2013). Increasingly, researchers cast a critical eye on this view of complex, smart work by drawing attention to worker experiences of boredom, dullness, isolation, dumbness, sharobesitas, and even stupidity (Sternberg, 2002; Costas & Kärreman, 2011; DeLong & DeLong, 2011; Alvesson & Spicer, 2012; Lekanne Deprez, 2014). In particular, Alvesson and Spicer (2012, p. 1195) show that "there is a huge body of work on non-rationality in organizations, which reminds us of the limitations to the intelligent mobilization of cognitive capacities". Consequently, Alvesson and Spicer (2012) hope to prompt wider debate about why it is that *smart organizations can be so stupid at times.*

Give us space.

Costas Ekman, Maravelias and Spoelstra (2013) believe that:

Creative knowledge work is extremely dominated by fantasies of freedom. The nature of these fantasies concerns a form of freedom that is best characterized as 'having your cake and eating it too' or, as Boltanski and Chiapello (2005) have called it, 'opportunism or never having to choose'. Freedom is understood as having no limits: you never have to choose A at the cost of B. Being free means that you can find a way of getting both A and B, even if they are technically mutually exclusive. Employees want their managers to be coaching, caring and personal, not reducing the relationship to rules and asymmetry. But at the same time they want their managers to be authoritative, steering and boundary drawing. Similarly, the managers want the creative, limit-

breaking and flexible employee, but they also want predictable, reliable, traditional, rule-following and obedient employees. And they shift back and forth depending on what their purpose was in the specific moment. (pp. 13–14)

According to Starbuck (2007), the term ‘organization’ dates to Roman times when people used it to denote a state of good health; they said an ‘unhealthy person had a body that lacked organization’. During the late 18th century, in rather direct analogy to the medical usage, some people began to speak of societies as possessing or lacking ‘organization’. When the 18th and 19th centuries brought the proliferation of organizations, people used different names for different forms of them; and, late in the 19th century, people began to use the term ‘organization’ to denote a not-for-profit voluntary association formed for pleasure and shared interests (i.e., a social fraternity). Finally, during the 1920s and early 1930s, various writers started to talk about a more general category, and after experimenting with some alternative labels for this category, they settled on the term ‘organization’. This idea that churches, armies, companies, voluntary associations, and governmental agencies all belong together as variations within a single category is not an incontestable fact but a hypothesis about the usefulness of a general category.

Comparing organizations not only shows how organizations are alike but also how they are different from each other (Aldrich, 2009). Starbuck (2007) states that during the 1960s and 1970s, a lot of statistical research sought to identify the common properties that researchers assumed were shared by all kinds of organizations. This research basically demonstrated that the only properties shared by all organizations are ones that have no substantive importance. Whereas people create organizations to do things that are not already being done, aim to rise beyond the ‘sea of sameness’ and break free of the pack, the desire to find general properties forced researchers to ignore or de-emphasize those properties that enable organizations to do distinctive things, and thus to exist.

Along the way, the interpretation of the organizational world has become more open, incomplete, and emergent. Although mechanistic interpretations of the world in terms of mechanical linkages, their formal order, and almost beautiful ‘clockwork exactness’, are still valid, organizational reality is becoming more interconnected and complicated. Arthur (2009) believes that:

The worlds these mechanisms reveal are complex. They are open, evolving, and yield emergent properties that are not predictable from their parts. The view we are moving to is no longer one of pure order. It is one of wholeness, an organic wholeness, and imperfection. (pp. 211-212)

Increasingly, our image of perfection (e.g., blueprint maps of organizations) is replaced with an image of imperfect wholeness, and within that wholeness, a messy vitality (Arthur, 2009). Order, closedness, and equilibrium as ways of organizing explanations are giving way to open-endedness, indeterminacy, and the emergence of perpetual novelty. Over the past 30 years, many influential management thinkers and gurus (e.g., Stan Davis, Jay Galbraith, Arie de Geus, Raymond Miles, Henry Mintzberg, Gareth Morgan, David Nadler, Tom Peters, Jay Galbraith, Bill Starbuck, and Margreth Wheatley) have largely come to accept—and to advocate—the idea that organizations are not machines; they are as unpredictable, unruly, self-organizing, and even responsive as any living being. Just as organizations will increasingly exist in less tangible, less prescribed forms, managerial thinking is becoming less departmentalized, less ‘silo-based’, and more open. The managerial mind is in the process of making a fundamental shift beyond ‘just’ tweaking existing organizational forms and organizational remixing. This mind shift in thinking—dealing with uncertainty, complexity, and messiness—has a profound impact on the way organizations are and should be designed. All design efforts require at least an assessment of the current organizational forms and their ability to deliver the required results. Organizational design within complex and dynamic contexts needs to be adaptable, flexible, fluid, sustainable, agile, and fit for the future.

In the early 1990s, a particular ‘new’ form of organization reached its tipping point (i.e., “it reached the moment of critical mass, the threshold or the boiling point” [Gladwell, 2000, p. 12]). These ‘new’ organizations were commonly known as the Knowhow Company (Sveiby, 1992), the Knowledge Intensive Firm (Starbuck, 1992; Alvesson, 1995; Alvesson, 2004; Alvesson, 2011), the Intelligent Enterprise (Quinn, 1992), Professional Services Firm (Maister, 1993), Brain-Based Organization (Harari, 1994), Smart Organization (McGill & Slocum, 1994), Knowledge Creating Company (Nonaka & Takeuchi, 1995), Knowledge-Intensive Business Services (Miles et al., 1995) and the All Brains,

No Body-Organization (Tissen, Andriessen & Lekanne Deprez, 1998). All these ‘different forms and concepts’ derive from the premise that understanding and applying knowledge is not just an asset among others, but a crucial source that contributes to the successful performance in an emerging knowledge-based economy. According to Sveiby and Lloyd (1987); Starbuck (1992); Tissen, Andriessen, and Lekanne Deprez (1998); Alvesson (2004); and Alvesson (2011), there are a number of circumstances specific to Knowledge-Intensive Organizations (KIOs) in terms of the nature of work (knowledge-work), its organizational form, and how performance is organized and managed. Although there is a great importance attributed to the crucial source of KIOs (i.e., knowledge) it’s still difficult to specify what kind of knowledge is involved in a particular situation. Furthermore, the value of knowledge can seldom be simply demonstrated. Otčenášková, Bureš, and Mikulecká (2012) have defined knowledge-intensity as an extent in which the knowledge processes are performed and knowledge resources are utilized. Their paper deals with the theoretical fundaments of this concept and outlines three potential approaches to knowledge-intensity measurement. Makani and Marche (2012) have developed a framework for identifying the core dimensions defining knowledge intensity. The authors have empirically explored the key elements for classifying and differentiating KIOs from other traditional organizations and conclude—confirming the theoretical view—“that knowledge-intensity in organizations can best be defined by two distinct groups of factors, namely, those related to knowledge workers’ activities and their organizational needs” (Makani & Marche, 2012, p. 260). Alvesson (2004) summed up the key characteristics of KIOs. Within the context of this thesis, the most important characteristics include:

- “a fairly high degree of autonomy and the downplaying of organizational hierarchy;
- the use of adaptable, ad hoc organizational forms; and
- the need for extensive communication for coordination and problem solving” (Alvesson, 2004, p. 237).

In early 2000, René Tissen and I had developed a shared interest in expanding the concept of KIOs into the concept of spatial organizations. This was partly instigated by the publication Zero Space. Moving Beyond Organizational Limits (Lekanne Deprez & Tissen, 2002) my holding a position as a part-time professor of Knowledge Organizations and Knowledge Management at the

University of Applied Sciences Zuyd, Heerlen, The Netherlands. Over the years, as a researcher I evolved from being a KIO researcher and practitioner into becoming a researcher and practitioner of spatial organizations.

According to Lekanne Deprez & Tissen (2002) the concept zero space allows people to leave their comfort zones and get past the limits in organizations:

- They will understand the complexity of today's organizations and their limitations to continued success.
- They will reexamine preconceived notions about what makes an organization successful;
- They will go beyond the quick fix on organizational issues and focus on the architecture of the organization, its boundaries, and its people; and
- They will design and imagine an organizational approach that suits them and their business" (pp. XI–XII).

This 'zero space mindset' was all about letting go of all of those restricting pre-conceived ideas and notions that were dominant in the industrial economy. It was about emptying one's mind about barriers that exist—no more limits. But how do space and organizations relate to each other in this space with infinite potential? Chanlat (2006, p. 21) states that each organization can be understood according to a spatial reading. Within this perspective, an organization is viewed as a mixture of spaces. Spaces may be of different physical, social, virtual, or mental nature. Furthermore, spaces reconfigure, emerge, evolve, and shape themselves in many "forms". Spaces relate to each other and to the local and global environment. An organization is integral to the composite of spaces in which people live and work. People connect within and across certain dimensions of space. Although the study of the relationship between physical spatial settings and organizations (i.e., workplace layout, geographic concentration of high tech companies) has a long history (Oldman, Cummings & Zhou, 1995; Berquist, 1999; Halford, 2005; Clegg & Kornberger, 2006; Chanlat, 2006; Taylor & Spicer, 2007), the notion of space within organizations and management theory is largely ignored and is still in its infancy (Hernes, 2004; Clegg & Kornberger, 2006; Taylor & Spicer, 2007; Dale & Burrell, 2008; Tissen & Lekanne Deprez, 2008; Kornberger, 2008; Góra, 2010; Van Marrewijk & Yanow, 2010; Lekanne Deprez & Tissen, 2011).

Chanlat (2006) presented some "footprints [of space] in the history of management literature" (p. 17). First of all, the author summarized his

reflections on space mainly drawn from psychology, social psychology, sociology, anthropology, and geography into seven characteristics of what constitutes organizational space.

Organizational space (Chanlat, 2006) can be:

- 1 divided with separation between internal and external worlds. There are buildings, doors, walls, guardians, etc. This separation between inside and outside was fundamental for the identity of the workers, foremen, employees, and managers. Currently, these physical limits still exist, but nowadays people can work for an organization without being there;
- 2 controlled in which each space is by and large controlled (e.g., visual, distant, electronic, management control);
- 3 an imposed and hierarchical space in which every organization is more or less hierarchically divided and each hierarchy is visible in space;
- 4 a productive space in which all organizing occurs in a productive space that has to fulfil its objectives. In that sense, hospitals, universities, theaters, public offices, and plants are different productive spaces because of their own objectives;
- 5 a personalised space in which historically, human beings have been territorial beings. Life in organizations is fundamentally territorial. We make claims on and defend our control of a variety of organizational objects, spaces, roles, and relationships (Brown, Lawrence & Robinson, 2005). So, people embed their home and workplace with personal meaning (i.e., the individualization process). Some organizations do not allow personal displays because of the fear they will compete with organizational identity: "Organizations must recognize, however, that people strive for balance between inclusion in the group and individuality" (Brown, Lawrence & Robinson, 2005, p. 591);
- 6 symbolic in which the sense of culture feeds the identity and image of an organization, its spatial configuration, and aesthetics, which, together, participate to create the symbolic universe of the organization (Strati, 1999; Gherardi, Nicolini & Strati, 2007; Ewnstein & Whyte, 2007; Wasserman & Frenkel, 2010); and
- 7 social in which every organizational space is a social milieu. In it, we find different people organized in a social system that is organized through a certain type of division of labor. (pp. 18–21)

Chanlat (2006) portrays a fascinating overview of how some of the main management schools during the 20th and early 21st century (e.g., scientific management, fordism, bureaucracy, human relations, cognitive systems theory, culture and symbolism, critical perspectives, political and psychosociological currents, and so on) have treated space, or better still, have not treated space. “But, we can also notice that space in spite of everything is implicitly present” (Chanlat, 2006, p. 21 *italics added*).

This thesis intends to develop the notion of space in its organizational context into a spatial theory of organizations, by including and empirically testing the way modern organizations can actually be designed as spatial organizations. In doing so, this thesis builds upon Lefebvre’s distinction between physical, mental, and social space (Lefebvre, 1991) and Hernes’ (2004) publication ‘The Spatial construction of Organizations’ which states that in order for the observation of space to be possible, organizational spaces must be distinguishable from other spaces. Within this thesis, forming organizations that connect knowledge, people, and technology across organizational boundaries—just like building bridges between two banks without eliminating the river (Lekanne Deprez & Tissen, 2002)—moving into three types of space is assumed to converge towards what we commonly refer to as ‘the organization’:

- a) inner space: the mental dimension—this represents the cognitive, emotional, and intuitive space employees possess and need to become and stay innovative, engaged, creative, and productive members of an organization. This space becomes productive space when it concentrates and focuses the concentration and attention of workers towards creating and capturing knowledge value;
- b) ‘connective Space—the virtual dimension in which employees share, connect, and interact any place, anytime, and anywhere (Davis, 1987; Davidow, 2011, Adler, Heckscher & Prusak, 2011). This space becomes a productive space when it triggers the inner space of workers with data, information, and knowledge at the right moment in time; and
- c) ‘outer space’ (which refers to the physical world)—the physical dimension and primarily to employees’ work environment (Kastelein, 2014) involving homeworking and interlocal presence. This space becomes productive space once it opens the minds of workers to the role of creating and capturing knowledge value, both routinely in terms of

output as well as ‘open minded’ in terms of outcome.

For an overview of several ways of understanding space in a three-tiered way, see figure below.

Author	Spaces		
Lefebvre (1991)	Physical	Social	Mental
Hernes (2004)	Physical	Social	Mental
Kerckhove (2001)	Physical	Virtual	Mental
Lekanne Deprez & Tissen	Outer	Connective	Inner

Figure 2.3. Organizing for space: A threefold distinction.

Inner space: Individual and collective sensemaking.

Inner space can be ‘open’ or ‘closed’ space. It is an all-encompassing concept that indicates the degree of ‘freedom versus focus of mind’ people should possess to allow himself or herself to perform effectively. Due to the difference in position of each observer, each person experiences a different reality. Furthermore, people are generally unwilling to accept someone else’s model of their own ‘realities’ (Johnson-Laird, 1983; Johnson-Laird, 2005). Nevertheless, humans understand the world by constructing models of it in their minds. These models are simpler than the reality they represent and are therefore incomplete (Johnson-Laird, 1983; Chermack, 2003). Cognitive psychology literature focuses on mental representations. Representations refer to the way humans build ‘stand-ins’ for reality in their minds. The concept of representation can best be introduced by considering that the mind and brain are involved in coordinating the behavior of an organism in its environment. To coordinate such behavior, “an organism must create some working understanding of its environment, and it does so by constructing a mental representation, or model, of that environment (Chermack, 2003, p. 411, *italics added*). A cognitive map refers to the way the mind creates a map or model of a situation that it uses as a reference point. Weick (1979) and Weick, Sutcliff, and Obstfield (2005) have argued that mental models guide, shape, and provide the basis on which individuals interpret and make sense of organizational life: sensemaking in

organizations (Weick, 1995; Maitlis & Christianson, 2014; Brown, Colville & Pye, 2014). People can weave together disparate inputs into a “story” that has meaning. It is only when events or data are ambiguous or contradictory that individuals become aware of themselves as actively struggling to make sense. In the sensemaking process, individuals scan the environment for relevant information, interpret that information to give it meaning, and then base their actions on these interpretations (Dixon, 2014).

Furthermore, transactive memory—or metaknowledge—involves a team member’s understanding of what other members know, and therefore provides hints about ‘who knows what’, a transactive memory system (TMS), goes beyond the presence of knowledge and focuses on how teams engage in transactive processes (Ren & Argote, 2011). Therefore, the significance of inner space within organizations is that a manager’s and/or an employee’s shared mental model ‘co-shapes’ an organization’s form, its strategy, and its people management.

Very early on in organizational theory, Mayo (1933) and his main collaborators focused on organizational space as a social space. Chanlat (1996) views that:

The physical design of space became a factor in the construction of social links by spatially organizing the formal and informal relationships in a plant. Moreover, it created a feeling of belonging that permitted a symbolic investment not only in the job done but also in working life more broadly. For Mayo, this knowledge lead to a better organization that could realize social harmony. (p. 25, *italics added*).

Also Kornberger and Clegg (2004) present some examples of “spatiality” within organizations:

- Taylor—a leading proponent of scientific management—reorganized the spatial arrangement of the entire organization by dividing space into individual cells, so that every single activity had to take place within its own space (cell), separated from the others. According to Carr and Hancock (2006):

Taylor viewed space and time as commodities to be factored into job design, organization processes, and control mechanisms. Space and

time were conceived as a priori categories, as natural, fixed entities that instrumentally should be of core concern to management. Inspired by Taylorism, modernist architects rendered workspace rational, instrumental and, above all, controllable. (p. 545)

- Ford wanted to redesign the use of space, inspired by the Chicago slaughterhouses. He sought to impose a new design of power on ‘bodies and hands’ and on the spaces they occupied. In those early days, Fords’ companies spent large sums on socially organizing its inner space—the moving production line of Ford involved a significant investment in human-based plant layout and design that many rivals could not afford to emulate.

Nowadays, many organizations are experiencing the challenge of realizing a total breakdown of time and space as a limiting factor. Once a spatial limitation is reached, rather than viewing it as a constraint, space needs to be redefined or reframed so that it can accommodate new needs and requirements (Davis, 1989). Optimal performance in such spatial organizations is heavily impacted by its ability to continuously acquire and integrate relevant knowledge. In order for knowledge to be useful and valuable, it must be organized by developing digital knowledge maps. Within this thesis, the focus is on knowledge maps because they display a visual representation of an organization’s knowledge sources (APQC, 2015). A knowledge map acts as a ‘snapshot in time’ to help the members of an organization perceive and understand three topics:

- identify strategic knowledge that is critical to success and underpin performance;
- ‘know’ what an organization has and where it resides. “Before you can decide what to share, you have to know what to have” (MacMillan & Ihrig, 2015, p. 3); and
- visualize how knowledge flows between people and machines, technology, and systems.

Identifying and mapping strategic knowledge is an iterative process that involves detecting the critical internal and external knowledge flows organizations use, possess, and should develop and/or acquire to serve their clients and customers. Such maps help to distinguish certain key knowledge

areas and /domains. Spatial organizations regulate the flow of knowledge horizontally within and across organizational boundaries by moving in and through inner ('mental'), connective ('virtual'), and outer ('physical') space to create and capture moments of value.

PART II
ON RESEARCH

3 Researching spatial organizations

3.1 Introduction

In 1999, Doreen Massey stated that the term space is “one of the most obvious of terms used in a thousand different contexts, but whose potential meanings are all too rarely explicated or addressed” (Massey, 1999, p. 1). At that time only very early references appeared on the issue and relevance of space in the context of modern organizations (Kerckhove, 2001), which seemed to hold potential for practical use (i.e., which could act as a catalyst for establishing better links between new organizational forms and actual business performance). A research group headed by Professor René Tissen of Nyenrode Business School started in 2000 to explore how space could be better understood in relation to its envisaged impact on organizations, businesses, and people. Miller, Greenwood, and Prakash (2009) have stated that an important reason for the current decline in significance of organization theory is “that it has drifted from some of the early core domains and questions” (Miller, Greenwood & Prakash, 2009, p. 273). In particular, the organization and management theory division (OMT) of the Academy of Management in the United States of America has lost one of its central contributions, namely the “appreciation of organizational design” (Miller, Greenwood & Prakash, 2009, p. 273). Spatial organization design lies at the heart of modern organizations creating the internal strength and organizational capabilities to adapt, change, and transform themselves in order to be ‘future proof’.

3.2 Conducting useful research: Disturb oneself

To add sustainable value, research must create intrinsic and extrinsic know-how that helps organizations deal with complex problems that are not easily solved through single-discipline theoretical knowledge (Van de Ven, 2007). This means researchers need to fundamentally change how and what they contribute to organizational knowledge if they want to help organizations make the transformations needed to be successful and sustainable over time. Mohrman and Lawler (2012) offer five recommendations to management researchers:

- 1 Investigate and understand how organizations design and redesign

themselves and provide insight into the design features that enable agility and change implementation;

- 2 Be close enough to practice to be able to generate knowledge that is useful to organizations as they consider how to address the challenges they face;
- 3 Identify and study organizations that are outliers (i.e., those that are experimenting with new approaches);
- 4 Bring broad knowledge to bear to address the multifaceted challenges organizations face; and
- 5 Operate more quickly and more collaboratively to generate knowledge that supports practice.

Doing useful research that contributes to organizational practice (Lawler, Mohrman, Ledford & Cummings, 1985; Mohrman & Lawler, 2011) benefits from—and often requires—meaningful collaboration with organizations to frame and conduct it. Mohrman & Lawler (2012) believe that:

Those who want to conduct studies that yield knowledge that helps organizations navigate turbulent waters must commit to working collaboratively with organizations. They also must spend time in the field becoming familiar with the world of organizational practice. Only then can they know what kinds of problems have to be solved, and enough about their operating realities to know what kind of knowledge will be useful. (p. 50)

Within such a shared organizational context, a ‘good’ theory is a theory that contributes to dealing more effectively with practice. Researchers need to ask themselves whether the results of putting theory into practice are useful in solving the challenges and problems of practitioners as opposed to academics. Theory, no matter how rigorous and vigorous, will not count unless there is a collaborative relationship between researcher and client—e.g., manager, professional, employee—or will theories be sufficiently robust without the client’s contribution. Thus practice and theory are indivisible. Neither can

fully exist and flourish without the other : “Theory is when you know everything but nothing works. Practice is when everything works but no one knows why. In this room, theory and practice come together. Nothing works and no one knows why” (Herb Kelman cited in: Hackman, 2011, p. 103).

When managers are faced with the unpredicted or the unforeseen, “this not only provides a challenge but also alternative frames for looking at problems and thus as more than ‘just’ providing solutions to them” (Coutu, 2006, p. 86). Mohrman and Lawler (2011b) have summarized their lessons learned from ‘doing useful research’ (i.e., research that advances both theory and practice):

The organizational world has been fundamentally altered by new technologies that have enabled new ways of organizing: by globalization and the emergence of strong competitors in new markets; and by the acceleration of societal, governmental, and ecological change. Organizations are continually being started, designed, and redesigned as a result of the decisions and actions of their members, who often have little knowledge of the research on organizational effectiveness. Organizational practices have largely evolved independently of academic knowledge. A disconnected academia has failed to keep up and as a consequence has had little influence on managerial practice. (p. 408)

The authors present two frameworks for how academic researchers can contribute to practice. The first retains the traditionally held view that knowledge flows from academic research to practice. Unlike the prevailing academic model, this model explicitly makes practice the ultimate ‘customer’ of the knowledge that is generated and broadens the view of the value stream to include the many pathways through which academic knowledge generation can link to practice. In the second framework, the value stream is re-conceptualized as a complex network of actors who play different roles in advancing and applying knowledge, rather than as a linear flow from academia to practice. This network is characterized by multi-stakeholder and cross-boundary collaborations that enable the matching of knowledge from different actors and the joint exploration of problems and challenges with the purpose of co-developing new knowledge. In this framework theoretical knowledge and actual practice co-evolve with each other: “The challenge for

academics who aspire to make a difference is determining how to engage across boundaries so that research yields knowledge that contributes more effective organizational decisions and actions” (Mohrman & Lawler, 2011b, p. 409).

Doing research aimed at helping to shape new forms of organizations requires different research methodologies and skills (Tushman, 2011). Typically, researchers study what is effective ‘today’ (Mohrman & Lawler, 2012):

To produce knowledge that can create new organizational designs, we need to study organizations that are outliers....Outliers provide fertile fields in which to learn about the emerging order, about how organizations are redefining the problems and opportunities they face and putting in place new approaches to operate effectively in a dynamic environment. (p. 42 *italics added*)

Starbuck (2006) believes that one way to disturb oneself [as a researcher] is to investigate ‘extreme cases’—situations or behaviors that appear to be entirely different from the average situations of behaviors:“Because the phenomena one observes most often strongly influence one’s expectations, extreme cases challenge one’s understanding” (Starbuck, 2006, p. 149).

One has to become good at detecting trends and directions, anticipating the issues that will be confronted by organizations, and understanding the forces that will change the nature of organizations and behavior within them: “We need to understand what is changing and what it means for organizing. We need to apply, extend, modify, and combine theories to craft research that yields knowledge that will help organizations deal with the new challenges they face” (Mohrman & Lawler, 2012, p. 43).

Researchers should be engaged with practitioners and with the problems and challenges organizations are facing. Mohrman and Lawler (2011b) continue their discussion by focusing on how to generate knowledge that adds value:

Research is used when it connects to practice and fits the context practitioners experience. Practitioners decide whether knowledge is useful in their own context (Rynes-Weller, 2012). Researchers have to ask themselves how to define and conduct their research with enough

exposure to and consideration of contextual richness to explain in what contexts the knowledge is generated and the contextual elements that contribute to the dynamics that are observed and the organizational effectiveness that is obtained. Researchers have to ask themselves how they are going to achieve that level of contextual awareness. (p. 49)

Within this thesis a design-based collaborative management research methodology (single-case) is applied within Statistics Netherlands to bridge the theory-practice gap. Inspired by Simon's (1969) *The Sciences of the Artificial*, an organizational 'science for design' approach seriously addresses the need for scholars and managers alike for better organizational forms and processes. According to Jelinek, Romme, and Boland (2008), organization design science is still very early in its development:

Different, even conflicting theories about organization design and development abound; laboratories for organizational experiments are largely absent; and little knowledge on management and organization is systematically codified—too much remains anecdotal and dependent on context. As a result, the current state of a science for organization design is fragmented and immature. (p. 317)

Previous academic research on organization design primarily focused on questions of theoretical relevance. A science-for-design perspective differs in two ways:

- It can bridge the worlds of theoretical and practical significance. Without theory, organizational practice is uninformed; without practice, organization theory is moribund 'declining'; and
- The enormous diversity in organization research and theory is merely confusing without an adequate epistemology, particularly in view of the need to connect to practice.

A design science approach can facilitate an integrative framework that acknowledges the unique role and contribution of key epistemological traditions in organization studies (including positivism, constructivism, and pragmatism).

Herbert Simon (1969) was the first to suggest the idea of design science in his

book *The Sciences of the Artificial*. There, Simon distinguished between natural sciences and artificial, or design sciences, stating that natural sciences are concerned with how things are, whereas design sciences are concerned with how things ought to be.

Design science research changes by definition the state-of-the-world through the introduction of novel artifacts¹¹. Thus design science researchers are comfortable with alternative world-states. Other values underlying design research (Trullen & Bartunek, 2007) are that:

- they are based on collaboration between researchers and clients;
 - design research focuses on solutions rather than trying to thoroughly analyze situations before taking action;
 - the focus is on ‘pragmatic experimentation’. The assumption is that a full-blown correct design is not developed at first; rather, it is important to experiment with possible designs and rules until one that seems acceptable becomes evident;
 - understanding particular situations within their larger context is important; and
 - design research is based on a systematic intervention approach that involves stated goals that align with the intentions of the environment.
- (pp. 27–28)

Design science focuses on addressing ill-structured, managerial, and organizational challenges, opportunities, and problems¹². A typical design science or design-based research effort proceeds as follows (Vaishnavi & Kuechler, 2008):

11 One can distinguish the following kinds of “artifacts” (Jelinek, Romme & Boland, 2008, p. 321): products (as the end results of a manufacturing process); structures (signaling the sequence of authority levels and the distribution of task domains), and good, services, and identities (as artifacts to be traded or sold). Each artifact has its own jargon and thought-world; the criteria for assessment are different for products (e.g., functionality and utility) than for organizational structures (e.g., transparency and accountability): “artifacts is what you see, hear and feel as you hang around [in an organization] (Schein, 2009, p. 22).”

12 Organizations are often portrayed as “artifacts initially founded by some individuals for some purpose, in a particular context that imposes a number of constraints on their functioning, rather than as objects created by nature—like the planets in the universe” (Avenier, 2010, p. 1238).

- Awareness of the problem: An awareness of an interesting problem (challenge or opportunity) can come from multiple sources, and the output of this phase is the Proposal, formal or informal, for a new—or extended—research effort (see figure below);
- Suggestion: The Suggestion phase follows immediately behind the Proposal and is intimately connected with it, as the dotted line—see figure 3.1—around Proposal (e.g., for the European Commission) and Tentative Design (a prototype). Both indicate the output of the Suggestion Phase. Suggestion is an essentially creative step¹³ wherein new functionality is envisioned based on a novel configuration of either existing or new and existing elements;

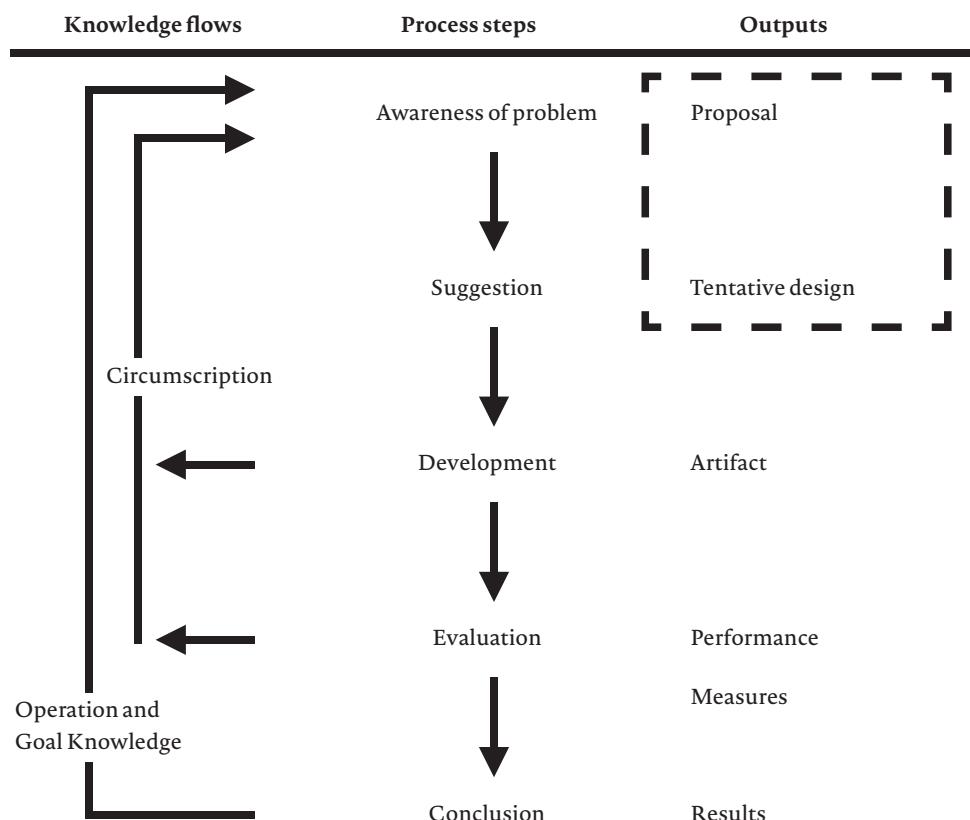


Figure 3.1. The general methodology of design science research.

¹³ “This step has been criticized as introducing non-repeatability into the design science research method. However, the Suggestion step has necessary analogues in all research methods” (Vaishnavi & Kuechler, 2008, p. 20)..

- **Development:** The Tentative design is further developed and implemented in this phase. Elaboration of the Tentative design into complete design requires creative effort and persistence. The techniques for implementation will vary depending on the artifact to be constructed;
- **Evaluation:** Once constructed, the artifact is evaluated according to criteria that are always implicit and frequently made explicit in the Proposal (Awareness of Problem) phase. Deviations from expectations, both quantitative and qualitative, are carefully noted and must be tentatively explained. That is, the evaluation phase contains analytic sub-phases in which hypotheses are made about the behavior of the artifact;
- At an equivalent point in positivist research, analysis either confirms or contradicts a hypothesis. Essentially, save for some consideration of future work as may be indicated by experimental results, the research effort is finished. Vaishnavi and Kuechler (2008) assert that:

For the design science researcher, by contrast, things *are* just getting interesting. Rarely in design science research, are initial hypotheses concerning behaviour completely borne out. Instead, the evaluation phase results and additional information gained in the construction and running of the artifact are brought together and fed back to another round of Suggestion¹⁴. (p. 21, italics added)
- **Conclusion:** This phase involves the finale of a specific research effort. Not only are the results—are they ‘good enough’?—of the effort consolidated and ‘written up’ at this phase, but the knowledge gained in the effort is frequently categorized as either ‘firm’, (i.e., facts that have been learned and can be repeatedly applied or behavior that can be repeatedly invoked) or as ‘loose ends’—anomalous behavior that defies explanation and may serve as the subject of further research.

Design-based research is characterised by searching for the available design alternatives for the best components in developing the best design for the

¹⁴ Often this type of design process results into a new design and the knowledge one develops is more ‘humble’ than say, in medicine or chemistry. It is often difficult for practitioners to freeze the ‘new organizational design’ in their minds. Within an increasingly turbulent and interconnected world anything that’s ‘frozen’ becomes irrelevant. During the interactive process between academics and practitioners new information and design options continuously emerge and are added to the ‘new’ organizational design framework.

solution (Pries-Heje & Baskerville, 2008). The five general outputs of design-based research (March & Smit, 1995; Vaishnavi & Kuechler, 2008) are:

- 1 constructs—the conceptual vocabulary of a problem–solution domain;
- 2 a model—a set of propositions or statements expressing relationships among constructs;
- 3 a method—a set of steps used to perform a task;
- 4 an instantiation—that which operationalizes constructs, models, and methods. It is the realization of the artifact in the environment. Emphasizing the proactive nature of design science research, March and Smit (1995) point out that an instantiation sometimes precedes a complete articulation of the conceptual vocabulary and the models (or theories) that it embodies (e.g., aircraft flew decades before a full understanding of how such flight was accomplished. And, it is unlikely the understanding would ever have occurred in the absence of the working artifacts); and
- 5 better theories (Purao, 2002)—artifact construction as analogous to experimental natural science.

The goal of case studies in this respect (Yin, 2009) is to better understand complex social phenomena and real-life events such as organizational and managerial processes: “A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2009, p. 18).

In 2004, Flyvbjerg formulated the five common misunderstandings of case study research. One important misunderstanding focused on the value of case studies to the scientific discourse: “One cannot generalize on the basis of an individual case; therefore, the case study cannot contribute to scientific development” (Flyvbjerg, 2004, p. 421).

In his article Flyvbjerg (2004) corrects, rephrases, and redirects this misunderstanding so that it reads:

One can often generalize on the basis of a single case, and the case study may be central to scientific development via generalization as supplement or alternative to other methods. But formal generalization

is overvalued as a source of scientific development, whereas ‘the force of example’ is underestimated. (p. 425)

Eisenhardt and Graebner (2007) use cases as the basis from which to develop theory inductively. The theory is emergent in the sense that it is situated in and developed by recognizing patterns of relationships among constructs within and across cases and their underlying logical arguments. The objective of building theory from cases is theory. Central to building theory from case studies is replication logic: “Each case serves as a distinct experiment that stands on its own as an analytic unit” (Eisenhardt & Graebner, 2007, p. 29). But unlike in large-scale hypothesis testing research, there is no sure-to-please standard template for writing emergent theory into theory-building research. Single cases can enable the creation of more complicated theories than multiple cases, because single-case researchers can fit their theory exactly to the many details of a particular case and offer ‘better stories’ which are helpful in describing phenomena.

3.3 Excellence in design.

The question whether a spatial theory of organizations exists can only be answered through applying the notion of space to organizations in actual practice. Designers and practitioners—when integrating research and practice—often face conflicting standards of design excellence. Practising the art of organizational design can have both a forward and a reverse effect on the attitudes and behaviours of individuals, teams and organizations. Within this context, Garud, Jain and Tuetscher (2008) view design:

....As continually evolving and essentially incomplete.... In summary, while the scientific approach views incompleteness as a threat, a pragmatic approach harnesses its value. Eventually, a pragmatic approach involves the fusing together of two meanings of design—that is, as both process and as outcome. Any outcome is but an intermediate step in an ongoing journey, representing both the completion of a process as well as its beginning. Whereas the scientific approach emphasizes the need to crystallize designs, the pragmatic approach highlights the value of retaining fluidity. (p. 367)

A degree of ‘solidification’ of a newly designed organization—by means of its form—is at some point in time required. Organizations will experiment, iterate, debrief, unlearn, and forget, learn, and then start the process over again if necessary. Therefore designing a spatial organization requires several iterations of its components to ultimately reach a unified form. Dunbar and Starbuck (2006) believe that designing must always be iterative, that design efforts must be persistent, and that designing and taking actions are intimately bound up with one another. In the process of designing organizations, designers nearly always misunderstood the goals and scope of the project. Therefore they should view their efforts as experiments that might not turn out to be predicted, and they should pay careful attention to the outcomes of these ‘experiments’. Some outcomes accord with designers’ expectations and others do not.

3.4 Designing for the future: Envisioning a process of discovery

Every organization’s situation is special and unique. Therefore the ‘right’ organizational design for one company will probably not work for others, even within the same industry (Divakaran, Neilson & Pandrangi, 2013). On the other hand, the symptoms of having the wrong organizational design are regrettably common. Divakaran, Neilson and Pandrangi (2013) assert that:

They include business units and functions that protect their own domain’s priorities to the detriment of the overall business, hoarded or wasted resources, strategic goals without follow through, and a culture that dismisses or ignores accountability. These problems are not just a matter of personal ill will, incompetence, external pressure, or cultural resistance. They exist because organizational design determines behavior. When a company’s organizational forms are inconsistent with the broader objectives of the business, that misalignment affects the day-to-day actions of individual employees. It leads perfectly competent people to chronically underperform. (p. 3)

New forms of organizations have changed the way people and organizations behave, operate, and relate to each other. Researchers analyzing, framing, and selecting these new forms of organizations have been exposed to the same

turbulent environment. According to Mohrman and Lawler (2012):

They (i.e., researchers) too face the challenge of staying relevant amid fundamental change. As the global economy has become more complex and unpredictable, having access to multiple sources of knowledge is critical to organizational effectiveness. The same is true for researchers. To be relevant they must connect with practitioners and with cross-disciplinary and multicultural colleagues to solve complex problems. Researchers must position themselves in a network of organizational knowledge that focuses on where organizations are going and how they can get there, not where they have been. (p. 42 *italics added*)

Within this context, Starbuck (Clegg & Starbuck, 2009) argues that a great predominance of research examines what is rather than what could be. Often researchers accept the world as they find it rather than investigating how the world reacts when someone tries to influence it. Clegg and Starbuck (2009) assert that:

Researchers make passive analyses of retrospective data. To invent a theory that explains what has already taken place is much easier than to invent a theory that predicts what will take place. Researchers who propose retrospective theories know what phenomena their theories must explain, so all serious proposals are consistent with the prominent stylized facts. Tests of such theories do not really challenge the validity of understanding (p. 348)

Members of modern organizations have their own ideas about what is desirable and what they want and need to do. Organization researchers have to be prepared to advocate their theories, and to retreat and reformulate when their theories turn out to be inaccurate. Designing organizations should be a process of discovery because people cannot base effective designs solely on prior knowledge. Clegg and Starbuck (2009) state that:

Organization theorists ought to be skeptical about what they think they know because so much of their purported “knowledge” is unreliable. In addition, the apparent problems in organizations are not what they seem to be. The participants in organizations present facades that mask

many issues (Nystrom and Starbuck, 2006), so would-be designers have to discover the real problems. (p. 349)

Generating knowledge that improves the design of new forms of organizations is socially constructed and socially owned. For relevant and usable knowledge to exist, many people must *agree* with each other about its existence: “As long as researchers cannot agree about what effective research looks like, they will remain unable to evaluate their findings meaningfully and reliably” (Clegg & Starbuck, 2009, p. 349). Mohrman and Lawler (2012) state that to generate knowledge that is relevant for theory as well as practice, researchers need to adopt collaborative approaches and bring multiple disciplines and perspectives to bear to understand the fundamental problems and challenges that are being investigated and new approaches that are being adopted. The authors state that:

We need to learn from organizations we study. Many organizations now operate cross-functionally to address today's complex problems.... Academics must also combine knowledge to yield new knowledge to address complex problems. Practice is *ahead of theory and research* in most of the changes that are occurring in the global economy. Therefore, academics must join the knowledge of practice with the knowledge of academia to do useful research. (p. 45 *italics added*)

Researchers need to operate more quickly and more collaboratively to generate knowledge that supports the practice of designing modern organizational forms. There have been many calls to bridge the so-called ‘research-practice gap’. Management research often bears little resemblance to management practice (Baldridge, Floyd & Markoczy, 2004; Ivancevich, Deuning & Lidwell, 2005; Bansal, Bertels, Ewart, MacConnachie & O’Brian, 2012). For research to impact practice, it has to provide knowledge useful for practitioners as they try to solve problems and achieve challenges at hand and perform effectively in a particular context (Mohrman & Lawler, 2011). For example, organizational design research often uses theories and concepts that derive from research conducted before 1980. Clegg and Starbuck (2009) have expanded this discussion:

However, from a design perspective, organization theory has been

preaching the same theories for decades. The theories in textbooks derive from research conducted before 1980, much of which relied on questionable data about the kinds of organizations that dominated the early and mid-twentieth century. However, recent research is unlikely to help people to make organizations better. Textbooks are still repeating old ideas because organizational researchers stopped studying individual organizations and focused instead on networks or populations of organizations. (p. 348, *italics added*)

Typically, researchers study what is effective today. Within this context Mohrman and Lawler (2012) state that for researchers to produce knowledge that can create new organization designs, we also need to study organizations that are *outliers* (Aguinis, Gottfredson & Joo, 2013; Birkinshaw, 2015b; Puranam & Håkonsson, 2015; Puranam & Håkonsson, 2015b) or '*extreme cases*' (e.g., Starbuck, 2006, p. 149)—those that are experimenting with new approaches or achieving unique and superior outcomes: "We need to gain access to these outliers so we can understand the organizational features, challenges, and dynamics that enable them to operate in new ways, so we can create knowledge that is useful to other organizations" (Mohrman & Lawler, 2012 p. 42). Although statisticians warn the research community against the non-representativeness of these extreme cases, "it is also true that thinking carefully about what makes them atypical may improve our understanding of the typical case" (Puranam & Håkonsson, 2015, p. 2).

During recent decades several intermediates (i.e., practitioner-scholars, consulting firms, and professional groups) emerged 'co-bridging' the research-practice gap. Tenkasi (2011) states that:

Practitioner-scholars are actors who have received traditional academic training and who apply their knowledge of theory and research to an organization's particular challenges to resolve business problems. Unlike traditional academics, practitioner-scholars are full-time organizational employees and thus are primarily committed to practical concerns and advancing organizational causes. (p. 212, *italics added*)

Does collaborative research help to bridge these 'gaps'? Kiesler and Leiner (2012) focus on the rigor-relevance gap that has become a prominent issue in

management and organization science. Management researchers are accused of practicing their science in detachment from the real world of managerial practice, to infer their research problems from the scientific discourse instead of practice. Management researchers produce research predominantly in response to other researchers' research—they persist in “an incestuous closed loop”, as Hambrick (1994, p. 13) diagnoses. There has been many calls for bridging (and even ‘closing’ [e.g., Bansal, Bertels, Ewart, MacConnachie & O’Brian, 2012]) this gap. Management and organization researchers should break out of the loop and expose themselves to the real life of management and organization practice. From a constructivist perspective, knowledge of the real world would enable them to come up with research questions whose pursuit would generate results with relevance for science and practice. Management and organizational researchers must ask questions with organizational practitioners, not about them, and collaborate with practitioners in seeking answers and solutions, not tell them what to do (Mohrman & Lawler, 2012). Kieser and Leiner (2012) indicate that communication between management researchers and practitioners is inadequate—or even poor. The authors refer to researchers and practitioners as ‘two communities’:

Members of these two communities not only speak different languages but they also, in their respective professional work, follow different logics....[D]ialogues between researchers and practitioners not only get ‘lost in translation’—the interlocutors do not understand each other because they speak different languages—but also ‘before translation’: they base their arguments on different logics. (p. 15)

In spite of these difficulties, collaborative research, more than other forms of contact with practitioners, is seen as ensuring alignment of researchers’ and practitioners’ interests in management and organizational research. In the *Handbook of Collaborative Management Research*, Mohrman, Pasmore, Shani, Stymne, and Adler, (2008, p. 626) state that “the only effective way to rapidly close the knowledge-relevancy gap is through closer collaboration between the academics and management communities”. Many different approaches can be incorporated under the label ‘collaborative research’. Mohrman, Pasmore, Shani, Stymne, and Adler (2008) have made an attempt to classify these approaches into three categories. Especially one category is valid within the context of this thesis: “This is collaborative research in which the academic

researchers and the practitioners set out to research a problem where their interests intersect, and where the shared purpose is to create knowledge of new organizational/managerial approaches” (Mohrman, Pasmore, Shani, Stymne & Adler, 2008, p. 617, *italics added*).

The research methodology within this thesis focuses on the dynamics of collaboration between practitioners and academic researchers and between insiders and outsiders to facilitate the generation of actionable knowledge that meet the requirements of both practitioner and academic communities. Most researchers do not package knowledge in forms that are practice-accessible. Argyris (2003) defines actionable knowledge as that which allows organizational actors to implement their intentions. A collaborative structure between academic and practitioner-scholar is needed because applying theory and research knowledge to address organizational problems and challenges inevitably occurs in local practice context (Tenkasi, 2011).

As collaborative research programs generally unfold over time, the knowledge of each community (theory and practice) increases; theories are enriched and advanced: “A research program may lead to new designs that incorporate the knowledge from multiple practices and that enrich each practice’s knowledge base in an iterative manner” (Mohrman & Lawler, 2011, p. 26, *italics added*).

Recently, participants in the Organizational Design Community’s 2013 Annual Conference faced the challenge of “making organization design knowledge actionable” (Meyer, 2013, p. 16). The beliefs and assumptions that challenge the conventional wisdom concerning organization design, knowledge, and action are summarized on the right-hand side of table 3.1 (Meyer, 2013).

Table 3.1. Assumptions about organizational design (Meyer, 2013, p. 17).

Established assumptions	Emerging assumptions
“Fit” and “congruence” constitute fundamentals of good designs. Designers must align components of designs with each other and with environments.	Organizations face multiple environments and these environments evolve continuously. Designers should avoid rigid configurations of components and tight alignments with environmental elements.
Organization designs should be encoded in hierarchical structural configurations supported by organizational routines that program members’ behavior.	Organization designs should emerge from “design thinking” by invoking principles that generate empathy with users, identify related worlds, and test new ideas via rapid prototyping.
Designs should propel organizations toward equilibrium. Designers should create structures and processes that ensure control, create stability, and absorb uncertainty.	Organization designs should propel organizations away from equilibrium for that is where self-organizing processes can occur. Designs should set in motion novel actions in pursuit of novel goals.
Designers should incorporate features into the organization that allow it to capitalize on environmental opportunities.	Designers may seek to change environments to render them more munificent for and receptive to organizations.
Designs are purely cognitive or ideational patterns constructed from abstract ideas	Design principles can be elicited by behavioral simulations in the laboratory and discovered by acting within 3D virtual environments.

Scholars have recently recommended designing organizations—that face conditions at right-hand side of table 3.1.—not as a stable structure to achieve but as a developmental process to keep underway (Meyer, Gaba & Coldwell, 2005). But where does design knowledge about organizations come from? According to Meyer, (2013) researchers increasingly observe that “the origins of organizational knowledge moved beyond role specialization and division of labor to adopt a more collaborative posture, emphasizing the importance of engagement, conversation, and collaboration between scholars and practitioners” (Meyer, 2013, p. 19).

The importance of observing organizations as one-by-one is an important step towards conceptualizing and designing new organizational forms. The right-hand side of Table 3.2. summarizes emerging assumptions about design knowledge.

Table 3.2. Assumptions about design knowledge (Meyer, 2013, p. 19).

Established assumptions	Emerging assumptions
Once knowledge has been created by scholars, it may then be transferred into application by practitioners.	Knowledge is generated through the skilled translation of ideas back and forth between academic and practitioner communities.
Knowledge arises from the systematic analysis of scholars' retrospective descriptions of historical organizational structures and processes.	To be useful, knowledge must incorporate contemporary organizational phenomena like information technologies and globalization.
Credible design knowledge comes from collecting objective data from large numbers of organizations, conducting systematic analyses of these data, and calculating quantitative relationships between design attributes and outcomes.	Credible design knowledge comes from field research, open-ended conversations with practitioners, and naturalistic observations. Knowledge is valid only when outcomes are predicted <i>a priori</i> , designs are implemented in context, and results are observed in real time.
Design knowledge achieves validity through nomological rigor, operational definition of variables, and documentation of causal relationships between carefully measured variables, as demonstrated by statistical analyses.	Design knowledge achieves pragmatic validity through communication in clear and evocative language, should often be elucidated in narrative form, and benefits from illustration in pictorial diagrams.
Prescriptions for designing organizations ought to be deduced logically from scholars' theoretical models and show how design attributes will bring about desired outcomes.	Design prescriptions should spring from designers' interventions because the full range of possible structures often is not exhibited by existing organizations, and the full range of feasible actions often cannot be imagined by their members.

Knowledge becomes actionable through a collaborative translation process that fits knowledge to its local context. The act of translating an idea into

actionable knowledge changes the idea itself. Austin (2013) argues that “for knowledge to become accepted as actionable, it must be linked to the receiver’s conception of what is relevant and useful” (Austin, 2013, p. 29). The author describes three specific translation ‘moments’ needed not only to make knowledge actionable, but also to lead it to ‘different’ organizational behaviors:

- First translation moment: Creating a new mindset—breaking out of an existing mindset in order to create a new mindset;
- Second translation moment: Moving from ideas to action—transforming new knowledge and ideas into sustained action; and
- Third translation moment: Shifting contexts.

The third translation moment, shifting contexts, comes when it is time to take a successfully implemented initiative and apply it to another part of the organization. However, the design idea that was transformed into action through the first and second translation moments may not be the same idea in a new context: “In order for the third translation to be successful, the idea needs to be retranslated into a relevant concept for the new context” (Austin, 2013, p. 33).

Especially an initiative’s success in a pilot project or in a limited part of the organization can lead managers to expect similar experiences when the initiative is transferred to other contexts within the organization. Shifting an idea to a new part of the organization requires an understanding of the characteristics of that part of the organization. When a pilot project has been successful, a critical success factor for shifting contexts is the managers’ capability to demonstrate ‘situational awareness’ focusing on the unique needs of the new context.

3.5 Towards design-based collaborative management research

Collaborative research is seen as a promising approach for bridging both the research-practice (Bansal, Bertels, Ewart, MacConnachie & O’Brian, 2012) and rigor-relevance gap (Shani & Coghlan, 2014). Traditionally, the process of connecting academic theory and academic research to practice was seen as the exclusive responsibility of the research-scholar. Academics were asked to devise ‘smart’ ways to make such a bridging possible through the contextualization of ‘their’ research results so that it had enhanced meaning

for practitioners (Tenkasi, 2011). Simultaneously practitioners (management, employees, and other relevant stakeholders) want their organization to be designed to be fit for the future in order to anticipate rather than follow technological, digital, social, market, and economic developments. New academic organizational models, designs, and forms are required that create collaborative spaces (e.g., ‘collaboratories’ [Wulf, 1993]) where new (spatial) organizational models, designs, and forms can be co-created, co-designed, and co-piloted).

Within this thesis, the design-based collaborative management research has been enriched with *insider action research* (Coghlan, 2011):

Insider action research is centered on the process whereby the action research is conducted by a ‘full member’ of an organizational system, rather than by one who enters the system as a researcher and remains only for the duration of the research. Insider action research challenges the notion that being ‘native’ is incompatible with good research. (p. 69)

Over the past 30 years, a richer and deeper understanding of action research has developed. This understanding captures action research as a philosophy of life that finds expression in collaborative modes of relating and inquiring into issues judged to be worthwhile (Reason & Bradbury, 2008). Adopting a design-based collaborative management research approach implies a dynamic process leading to impermanent, incomplete outcomes, and iterative engagements with designing (Garud, Jain & Teurtscher, 2008), organizing (Pettigrew et al., 2003) and managing (Mintzberg, 2013) momentary and constant improvement (Jelinek, Romme & Boland, 2008). Kimbell (2012) states that:

When the designers¹⁵ have finished their work, and the engineers and manufacturers have finished theirs, and the marketers and retailers have finished theirs, and the customer or end-user has engaged with a product or service artefact, the work of design is still not over. Through

¹⁵ Beinhocker (2007)—expanding on Daniel Dennett (1995)—believes that “organizations evolve and emerge ‘evolutionary’, creating [organizational] design without a designer” (Beinhocker, 2007, p. 187, *italics added*). Robertson (2015)—expanding on Beinhocker (2007)—asked himself the question: “How can we reshape a company into an evolutionary organism—one that can sense and adapt and learn and integrate?” (Robertson, 2015, p. 7).

their engagement with a product or service over time and space, the user or stakeholder continues to be involved in constituting what the design is. Designs (the noun) are constituted through the practices of both professional designers, customers and identifiable, known end-users, but also by many others. (pp. 135–136)

Early advocates of design-based research claim that such an approach can contribute to the development of organizational theory while at the same time enhancing professional practice (Romme, 2003; Van Aken, 2005; Van Aken & Romme, 2009, Van Aken, 2013). According to Andriessen (2007b, p. 90), design-based research has been proposed as a methodology and approach that can help bridge the gap between research and practice. Within this thesis the general principles of the design-based research approach and its three distinct stages (**I** Designing the solution concept; **II** Testing the solution concept; **III** Developing design knowledge) are applied within the context of spatial organization design.

In design-based research, a researcher not only designs and tests interventions, but congruently develops knowledge about the application domain of these interventions as well as insights about the underlying generative mechanisms for change. In designing the interventions, the researcher can make use of the results from theory-based research. Testing of the intervention will lead to practical solutions as well as a deeper insight into the validity and viability of the theory guiding the development of the intervention.

Andriessen (2007, 2007b) suggests that a design-based research can best be positioned as a research approach aimed at answering a particular type of research problem: the *design problem*. Design-based research is aimed at providing answers to design problems. A design problem can be phrased as an explorative question (How can we improve situation Z?) or a question aimed at hypothesis testing (If we do X, will it improve situation Z?). Andriessen (2007b) used the design-based research approach to develop a tool for the reporting of intellectual capital in firms.

Design-based research's dual purpose of contributing simultaneously to theory and practice is expressed in two distinctive but interwoven streams of inquiry, namely the knowledge stream and the practice stream:

- The objective of the knowledge stream is to develop generalizable

knowledge that can help create desired situations, preferably in a way that contributes to theory.

- The objective of the *practice stream* is to contribute to the practical concerns of people in problematic or challenging situations, by solving particular problems or realizing opportunities in specific circumstances and creating healthy organizations.

Table 3.3. Differences between the knowledge stream and the practice stream (Andriessen, 2011, p. 80).

	Knowledge Stream	Practice Stream
Function	Mobilize and develop knowledge	Problem solving and learning
Focus	In search for generalizable knowledge	In search for specific issues
Activities	Research and analyze	Advise and intervene
Perspective	Objective and independent	Deliberate and dependent
Goal	Advancing theory	Validation of practice (making complex simple)

Ten action research steps are grouped into three distinct stages of a design-based research approach:

- I Designing the solution concept (steps 1-3)
- II Testing the solution concept (steps 4-8)
- III Developing design knowledge (steps 9-10)

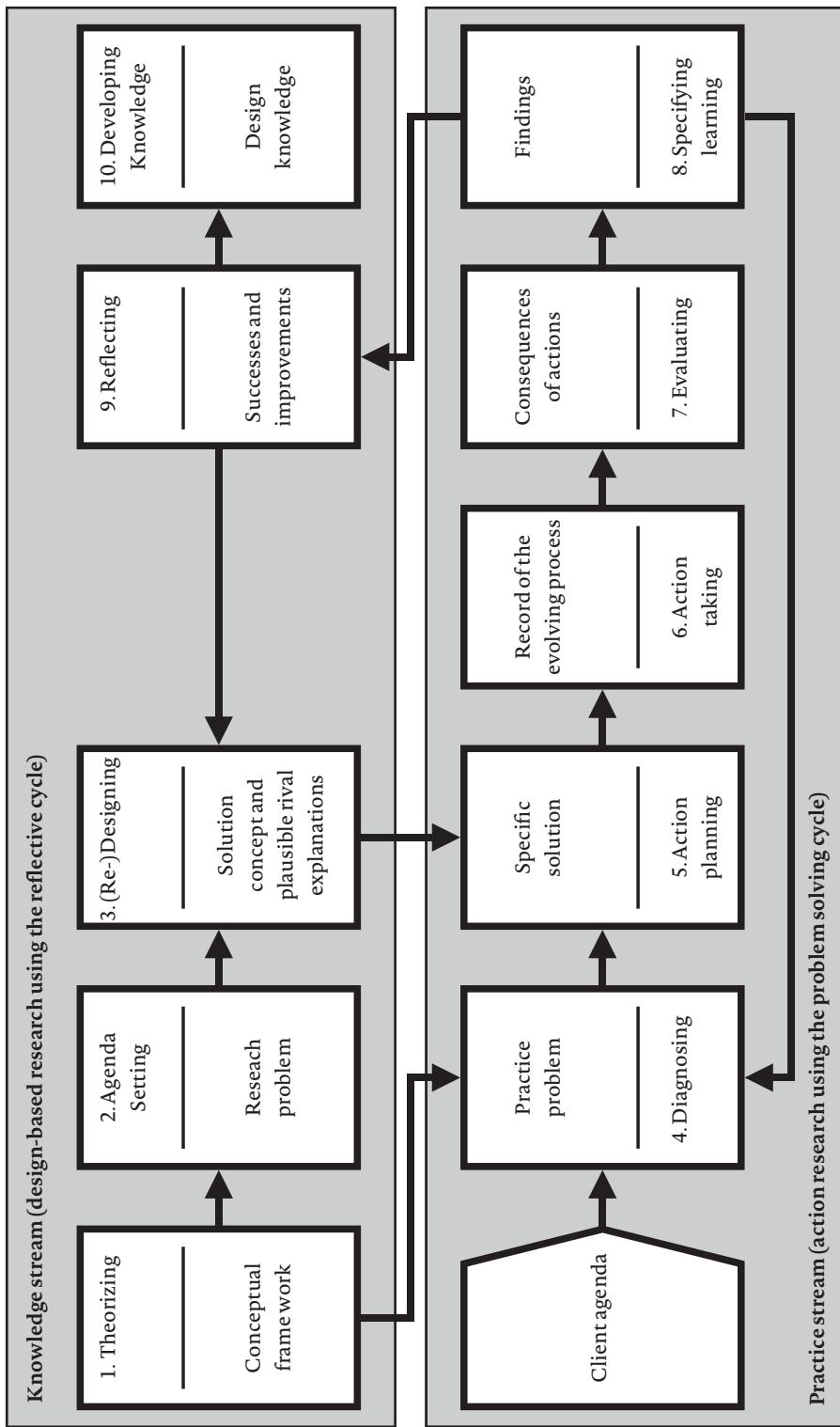


Figure 3.2. Research methodology of a design-based research effort (Andriessen, 2007b, p.94).

Adopting a design-based research perspective to organizations encourages attention to questions such as: If organizations are designed, by whom (Jelinek, Romme & Boland, 2008)? For what reason and for whose purposes? Why should this be so, and why are some reasons, purposes, and authors legitimized, while others are ignored? What approaches to design are more effective, resulting more often in beneficial designs (beneficial to whom?) and less often in unbearable costs (to be born by whom)? From a design perspective, these questions demonstrate the degrees of freedom, extend possibilities, and underline the temporary nature of any design.

The capability to work cooperatively and collaboratively is at the core of the collaborative management research methodology. It is about understanding each other's states of mind during the research project where the 'other's perspective' can help to improve one's own mindset. The focus is on identifying and obtaining the different perspectives of key stakeholders (e.g., customers, partners, managers, employees) in studying organizational issues. From this 'shared research practice', a common language and shared understandings of the organizational context will emerge. Often these shared understandings remain implicit. The combined *mindshare* (Teagarden & Schotter, 2013) of the knowledge and the practice stream is cumulative for both research and practice communities:

Mindshare is an individual level dimension that is partly explicit as specific knowledge, and it is also partly implicit, and not codified, including an individual's knowledge awareness and identification capacity, and an individual's and group's knowledge sharing and information processing capability. (p. 282)

Miller, Greenwood and Prakash (2009) have indicated that most practical organizational design problems do not relate in any obvious way to today's most favored organizational theories, such as organizational ecology, institutional theory, transaction-cost economics, and network theory. Within the design-based collaborative management research efforts, a varying number of insights, ideas, formats, frameworks, recipes, concepts, and arrangements are generated and connected to real life organizational problems and challenges. All of them were systematically and collaboratively evaluated and discussed until only a few remained.

In conclusion, the design-based collaborative management research approach applied in this thesis relies heavily on mainstream approaches but deviates from these on those instances and occasions whereby spatial theory construction needed to be ‘materialized’ into explainable practice. Furthermore, actual organizational practice needs to be related to theory to become validated. Within this thesis three main research methods are applied:

- Literature study
- International expert exchanges
- Multi-year (design-based) collaborative management research (Nyenrode Research Group and CBS Research Group including an ‘insider-researcher’): single-case (i.e., based on an ‘n of 1’) company (Statistics Netherlands)

PART III
ON DESIGN

4.0 Spatial organization design

According to Robbins (1987) modern organizations are like fingerprints. Each has its special form, its own identity, and its particular reputation. Yet no organizational form is truly unique. Organizations have many common aspects. These may all be different, yet they have design principles and design elements which are common to them all. This in turn means that no matter how well an organization is ‘designed and modelled’ in the first place, this is not a guarantee for future success. The issue of designing organizations has a long and rich history dating back to the 19th century, thus well before the industrial era when organizations were more tightly coupled than before to the economy (Dunbar, Romme & Starbuck, 2008). Anand and Daft (2007) have categorized the history of organizational design into three eras:

- Era 1: Self-contained organizational designs (Mid-1800s – late 1970s);
- Era 2: Horizontal organizational design with team and process-based emphasis (1980s); and
- Era 3: Organizational boundaries open up (mid-1990s).

Each era reflects considerable transformations in the *managerial mindset* on how to design and manage organizations. The first era probably took hold in the mid-1800s, and was dominant until the late 1970s. In Era 1, the ideal organization was self-contained. It had clear boundaries between itself and suppliers, customers, and competitors. Inputs arrived at the organization’s gate, and after a transformation process, left as a completed product or service. Almost everything that was required during the transformation process was supplied internally. The overall structure of self-contained organizations can be thought of as:

- the grouping of people into functions or departments (silos);
- the reporting relationships among people and departments; and
- the systems to ensure coordination and integration of activities both horizontally and vertically.

The common structures of this era, including functional, division, and matrix designs, rely largely on the vertical hierarchy and chain of command to define departmental groupings and reporting relationships (Anand & Daft, 2007).

The second era of organizational design evolved during the 1980s. As the world

grew increasingly complex, organizations of Era 2 experienced the limits of traditional design. Coordination between departmental ‘silos’ became more difficult and vertical authority-based reporting systems often were not effective in creating value for customers. At the same time, the information processing capacity of organizations improved greatly, due to the increasing availability of personal computers and networks. Design philosophies of this era emphasize the need to reshape the internal boundaries of the organization in order to improve coordination and communication. The horizontal organization (Ostroff, 1999) emphasized the need for reengineering along workflow processes that link organizational capabilities to customers and suppliers. While traditional self-contained organizations of Era 1 embodied the need for hierarchical control and separate functional specializations, the horizontal organization advocated the dispensing of internal boundaries as an impediment to effective business performance. If the traditional structure can be likened to a pyramid, the metaphor that best applies to the horizontal organization is a pizza—flat, but packed with all the necessary ingredients (Anand & Daft, 2007).

The third era of organizational design covers the mid-1990s, in which rapid improvements in communication technology (Internet, mobile phones) proliferated in organizations to fundamentally change traditional ways of working (Anand & Daft, 2007). Era 3 also coincides with the rise of emerging economies such as China and India, who have the availability of a vast pool of skilled expertise in performing very specific tasks such as low-cost manufacturing and software development. The external and internal boundaries of the organization opened up as never before. Managers became increasingly comfortable with the idea that their organization could not efficiently perform all of the tasks required to make a product or to deliver a service. In the early years of the era, large and bloated organizations shed a lot of tasks that were completed internally, and this led to a difficult period of adjustment. Later on, start-up organizations were designed at the outset to be more lightweight by having a number of tasks performed externally (Anand & Daft, 2007). During the early 1990s, a wave of “anti-pyramid rhetoric” hit the shores of the Western business world. The search for a new organizational model created a business vocabulary in which common rhetoric involved the smashing and/or flattening of hierarchy (Crainer, 1996; Ostroff, 1999; Ashkanas et al., 2002; Leavitt, 2005) where ‘bureaucracy busters’ were

introduced to break stagnant cultures (Ostroff, 1999), and where getting rid of rules and regulations and eliminating non-value added work became the norm for managerial performance. However, most researchers agree that both hierarchy and bureaucracy continue to be a persistent feature of contemporary organizations (Lundholm, Rennstam & Alvesson, 2012; Clegg, 2012). The biggest trend in the design of organizations in Era 3 has been, without a doubt, the outsourcing of various pieces of work done internally to outside partners. Anand and Daft (2007, pp. 334–340) have selected three organizational designs that are representative of this era: the hollow organization, the virtual organization, and the modular organization. The movement from Era 1 to Era 3 has vastly expanded the array of organization design choices (e.g., virtual, self-managed, open source, zero management) nowadays available to managers and employees.

Often managers and employees are left in the dark about their organizational structure or model. Sometimes there is a gut feeling that their organization has too many layers of management. But the bottom line is that management often is not able to come up with the right number of layers needed to create excellent performance. Confronted with a dizzying array of options to choose from, mastering the art of comparing organizational structures and advantages and limitations of these structures has become an important competence. Stanford (2007) has compared five well-known organizational structures to other organizational elements (e.g., division of labor, politics, and so on [see Table 4.1]). All the organizational ‘structures’ discussed—functional, divisional, matrix, network, and cluster—have particular advantages and limitations.

Table 4.1. Traditional and alternative organizational structures (Stanford, 2007, p. 66).

	Functional	Divisional	Matrix	Network	Cluster
Division of labor	By inputs	By outputs	By inputs and outputs	By knowledge	By skills and knowledge
Co-ordination mechanisms	Hierarchical, supervision, plans and procedures	Division general manager and corporate staff	Dual reporting relationships	Cross-functional teams	Centralized hub co-ordinating across partner organizations
Decision rights	Highly centralized	Separation of strategy and execution	Shared	Highly decentralized	Within each contributing organization
Boundaries	Core/periphery	Internal/external markets	Multiple interfaces	Porous and changing	Multiple changing interfaces
Importance of informal structure	Low	Modest	Considerable	High	High (hub to partner organizations)
Politics	Interfunctional	Corporate division and interdivisional	Along matrix dimensions	Shifting coalitions	Depends on contact between members
Basis of authority	Positional and functional expertise	General management responsibility and resources	Negotiating skills and resources	Knowledge and resources	Expertise resources, position in marketplace

	Functional	Divisional	Matrix	Network	Cluster
Resource efficiency	Excellent	Poor	Moderate	Good	Excellent
Time efficiency	Poor	Good	Moderate	Excellent	Excellent
Responsiveness	Poor	Moderate	Good	Excellent	Excellent
Adaptability	Poor	Good	Moderate	Good	Good
Accountability	Good	Excellent	Poor	Moderate	Good
Environment for which best suited	Stable	Heterogeneous	Complex with multiple demands	Volatile	Fast-paced
Strategy for which best suited	Focused/low cost	Diversified	Responsive	Innovative	Competitive

All the organizational ‘structures’¹⁶ discussed—functional, divisional, matrix, network, and cluster—have particular advantages and limitations (see Table 4.2).

Table 4.2. Advantages and limitations of organizational structures (Stanford, 2007, pp. 67–68).

Structure	Advantages	Limitations
Divisional/ product	Product focus Multiple products for separate customers Short product development and life cycle Minimum efficient scale for functions or outsourcing	High costs, loss of economies of scale Difficulty of co-ordinating geographic areas Lack Responsiveness to local conditions New product development falls between the gaps
Divisional/ geographic	Low value-to-cost transport ratio Service delivery on-site Closeness to customer for delivery or support Perception of the organization as local	Conflict between regions and Head Quarters Implementng new product lines or changes slow and difficult Difficult to apply global strategy Difficult to develop consistency and transfer learning

¹⁶In her publication “Guide to Organization Design”, Stanford (2007) uses the phrase structures to portray traditional and alternative organizational shapes. Within this thesis, modern organizations are depicted as organizational forms. In an earlier publication we characterized organizations as “fluid affairs” (Lekanne Deprez & Tissen, 2002, p. 31). “The spaces and places around us construct us as we construct them” (Dale & Burrell, 2008, p. 1). This process of interactive construction and configuration keeps organizational design in a state that is neither too fluid nor too crystallized (Garud, Jain & Tuertscher, 2008). The challenge is to keep things liquid as long as possible. Intentionally incomplete—that is, imperfect—design leaves room for growth, adaptation, and space. As soon as a design is drawn and installed, the independent reactions of all the ‘stakeholders’ affected begin to blur the lines, reshape the edges, and fill in the white spaces.

Structure	Advantages	Limitations
Divisional/market	Important market segments Product or service unique to segment Buyer strength Customer knowledge advantage Rapid customer service and product cycles Minimum efficient scale in functions or outsourcing Geographic market segments needed	High costs, loss of economies of scale Difficulty in co-ordinating geographical areas Less functional specialization May lack responsiveness to local conditions
Divisional/process	Best seen as an alternative to the functional structure Potential for new processes and a radical change to processes Reduced working capital Need for reducing process cycle times	Challenge to implement: need to redefine the operating culture of the business Clashes occur between HQ and divisions Increased likelihood of process overlap and duplication
Matrix	Flexible: teams may dissolve after task completion Specialist skills brought to bear where needed Attention paid to product/geography	Difficult to apply Supervisor power struggles and overlapping responsibilities Need for a lot of co-ordination Greater transaction costs
Network	Quick response to markets High autonomy, ownership, and accountability Less duplication of resources	Lack of deep functional expertise Difficulty with co-ordination between groups Accountability needs to be carefully thought through and made clear

Structure	Advantages	Limitations
Cluster	Partners focused on particular aspects of the value chain leading to: <ul style="list-style-type: none"> • greater economies of scale • superior skills developed • reduced redundancy of operations • lowering of barriers to entry • ability to create 'a series of short term advantage' 	Clear central direction required Selection of capable partners is an issue Keeping partners synchronised is problematic
Virtual	Enables enterprises or individuals to organize and collaborate around an endeavor or project (often in real time over the internet) sharing ideas and information without being bound by any kind of formal organization, royalty fees or legal risk	May clash with intellectual property rights Could enable competitors seize advantage

Overall conclusion: there is no all-purpose organizational design.

4.1 Challenging organization design

It is a common truism that organizations are increasingly faced with paradigmatic complexity, inherent instability, 'foggy' uncertainty, unprecedented unpredictability, unlikely interdependencies, and lack of control of both destiny and purpose (Child, Diederichs, . Sanders, Wisniowski, 1991; van Eijnatten & Putnik, 2004; Moldoveanu & Bauer, 2004; Birkinshaw & Heywood, 2010; Allen, Maguire & McKelvey, 2011; Burton, 2013). Modern organizations must be capable of operating in a difficult, non-linear, disruptive, dynamic, hyper-connected, and technology-induced environment for which they have to invest in new organizational forms (Dunford, Palmer, Benveniste & Crawford, 2007; Lekanne Deprez & Tissen, 2011; Puranam, Alexy & Reitzig, 2013). The overall ability to design organizations to meet various degrees of unpredictability and even chaos has become important as a means of survival

of the fittest of competing organizations, as well as a means to create inherent sustainability, within the context of sustainability as a largely overused and fuzzy buzzword for an ongoing ‘license to operate’.

Organizational designs are generally judged on their overall functionality (i.e., as to whether they foster the accomplishment of the criteria to which they were designed—criteria ideally determined by key stakeholders). Traditional organizational forms use hierarchical mechanisms as their primary means of control and coordination and those mechanisms can constrain broad collaboration both within and across organizations (Fjeldstad, Snow, Miles, Lettl, 2012, p. 735). Widely accepted traditional organizational structures include the functional, division, and matrix organizations that rely largely on vertical hierarchy and power driven chain of commands to define departmental groupings and reporting relationships (Anand & Daft, 2007).

In the 1980s, organizations first experienced the limits of traditional design. In particular the pyramidal structure with its ‘split brain design’ (i.e., all thinking and key decisions located at a ‘small top’ of the pyramid and the production of predominantly physical assets being situated in a ‘large body’ at the bottom of the pyramid) was challenged for its continued usefulness. Coordination between departmental ‘silos’ became more difficult and vertical authority-based reporting systems often were not effective in creating value for customers (Aaker, 2008). At the same time, the information processing capacity of organizations improved greatly, due to the increasing availability of personal computers and networks. Design philosophies of this era emphasized the need to reshape the internal boundaries of the organization in order to improve coordination and communication. Alternative ways of organizing were introduced (e.g., network and cluster organizational forms) that were seen to be much less reliant on hierarchy and implicitly explored and exploited existing and imagined ‘white spaces’ (Rummel & Brache, 1990) between departmental/organizational silos.

Manage the white space on the organization chart.

Rummel and Brache (1991) published in 1990 a book entitled, *Improving Performance: How to Manage the White Space on the Organization Chart*. In this book the ‘white space’—referred to in its title—is the space between the organizational silos that one finds on any

organization chart. The way one manages them is by defining business processes that flow across the various silos to produce and ultimately sell the organization's products and services: "Ask managers to draw pictures of their companies. You'll almost always get something that looks like the traditional organization chart. The drawing may have more tiers, more boxes, and different labels, but what it will show is the fact that each department or business unit has its own management hierarchy. As a picture of a business, what is missing in such a figure of boxes and lines? Well, it doesn't show the products or services we provide. It leaves out the customers we serve. It gives us no sense of the work flow through which we develop, produce, and deliver our products. The familiar organization chart does not show what we do, for whom we do it, or how we do it. The organization chart is a valuable administrative convenience for two reasons: It shows which people have been grouped together for operating efficiency and it shows reporting relationships. But it must not be confused with the 'what, why, and how' of the business. Unfortunately, the two are confused all the time. And when that happens, it is the *organizational chart, not the business, that gets managed*" (pp. 55–56, *italics added*).

Organizational silos can only thrive when individual people, departments, or organizations conduct business in a vacuum without taking into consideration the impact their actions have on the entire organization. Traditional (vertically-driven) organizations lead to silos built around departments, which make it difficult to alleviate interdepartmental issues at low or middle levels because the organization is not paying attention to other aspects or the cause and effect of various activities within the organization.

The seminal study of Rummler and Brache 'Improving Performance: How to Manage the White Space on the Organization Chart' (Rummler & Brache, 1990) is now considered to be the dominant driving force behind the process improvement revolution that subsequently took place (Hammer & Champy, 1993; Davenport, 1993). Until that time, it was not common to manage processes as a whole. Limited to no attention was given to the notion of space as work flowed across functional units pictured on organization charts. On the other hand, the horizontal organization (Ostroff, 1999) emphasized the

need for reengineering along workflow processes that link organizational capabilities to customers and suppliers. While traditional “self-contained organizations” of the Industrial Age embodied the need for hierarchical control and separate functional specializations, the horizontal organization advocated the dispensing of internal boundaries as an impediment to effective business performance. From the mid-1990s, rapid improvements in communication technology (internet, mobile phones, and so on) proliferated into organizations to fundamentally change traditional ways of working.

Extending Schon's (1983) metaphor of architectural design to describe the design of purpose driven organizations.

Liedtka and Parmar (2012) believe that:

Organizations, after all, are just particular kinds of spaces. Rather than working with bricks and mortar, organizational leaders create spaces out of different kinds of material: structures, cultures, systems, and processes. Nonetheless, these organizational spaces are designed with a purpose in mind, and they succeed (or fail) to the extent that they evoke the desired behaviours from their members necessary to achieve the organization's purpose. (p. 52)

The external and internal boundaries of the organization opened up as never before. Managers became increasingly comfortable with the idea that their organizations could not efficiently perform all of the tasks required to make a product or to deliver a service. The biggest development in the design of ‘open’ organizations has been the outsourcing of various pieces of work usually done internally, to external partners, combined with the increased digitization of the economy as businesses and governments increasingly utilized digital tools and technologies. Nowadays many organizations disrupt themselves and transitioning to digital’ (Brain Arthur, 2011; El-Darwiche, Singh & Ganediwalla, 2012; Tissen, 2012; Bughin & Manyika, 2013; Ismail, Malone & Van Geest, 2014; Westerman, Bonnet & McAfee, 2014; Catlin, Scanlan & Willmott, 2015). Confronted with a dizzying array of options to choose from, mastering the art of designing modern organizations in function of their purpose instead of just their performance has become a major challenge as most organizations need not only to organize ‘for output’, but also ‘for outcome and sustainable value’.

The ‘fitness’ of a particular organizational design will determine an

organization's capability towards continuous 'morphing' (Rindova & Kotha, 2001) where the organization transitioning—evolutionarily—from one form to a different one is managed through a process of incremental steps that preserve overall performance and value creation. There is no single organizational design methodology that works well under all circumstances; as there is no all-purpose organizational design. Each organizational design effort can be considered as an experiment of one. Organizations can learn from other organizational design options but in the end they must uncover—or reinvent—their own forms. Greenwood and Miller (2010) plea for a return to the study of types of organizations:

One can no more generalize about the design requirements of a small high-technology company, a public utility, a hospital, and a multinational network organization than one can generalize about the heartbeats of elephants and mice. This point is particularly apposite if it is accepted that organizational designs are best understood by characterizing their overall architecture: their structures, their systems, their processes, and their central tasks. Designs differ widely across different types of organizations, and thus those types must be analyzed individually. (p. 81, *italics added*)

4.2 Designing for purpose

Organizations exist for a purpose. But singleness of purpose within an organization is rare. Different parts of the organization establish their own goals and objectives to help meet the common purpose of the organization. Collaboration provides the connectivity that allows different parts inside and outside the organization to work together and create and capture value. Managers often design their organizations around what is valued. Great purposes are "transcendent, energizing and inspiring for all the interdependent stakeholders" (Mackey & Sisoda, 2013, p. 59). Members of an organization usually have a natural empathy to the organization's 'real' purpose, while often it is difficult to grasp or to embed this compassion in a formal mission statement. A mission statement provides the organization's 'reason for being' and it includes the core strategy that must be undertaken to fulfill a purpose. Obviously, organization design for purpose is more than connecting the boxes

of an organizational chart with straight or dotted lines. From the 1980s up until now, directors, managers, employees, and consultants have been struggling to reinvent the organizational chart as something other than a pyramid of jobs (Heckscher, 2007).

A deliberate organizational design is more than its structure (Stanford, 2005). The challenge within this thesis is to develop and design spatial organizations that are able to exist beyond the structure of an organization. Organizational design can be meaningful when it serves a common purpose that reveals both what an organization wants to be as well as the stakeholders it wishes to serve. In whatever way the organization is shaped, it must create a sense of ownership, trust, engagement, and commitment throughout the organization. An organization-wide responsibility to a purpose provides the stakeholders with a solid frame of reference. Without such a shared purpose, diversity and shared mistrust can fragment the organization. mission, vision, shared values, shared ambition, and core strategies only make sense if they are lived and owned by the stakeholders within and outside of the organization.

Design versus design thinking.

Fraser (2006) states that:

Most people associate the word ‘design’ with a physical manifestation of form and function—an aesthetic that appeals to the discerning user, a form that creates a satisfying user experience, a physical and emotional ‘journey’ for the user in spatial terms, or an engineering accomplishment that makes the concept viable, technically and economically. All of these are valid and valuable interpretations of design, relating to the craft and technical expertise of the design field that helps to create human and economic value for the world. But beyond these dimensions, the core principles and practices behind all great design can be more broadly leveraged into general problem-solving and, most importantly, the reframing of opportunities in a strategic sense. This is what is often referred to as ‘design thinking.’(p. 25)

As new organizational forms (Stanford 2007, Frost, Osterloh & Weibel 2010; Hamel, 2011; Kesler & Kates, 2011; Rasmus, 2011; Rasmus, 2001b; Fiol & Romanelli, 2012; Sheridan, 2013; Laloux, 2014,; Robertson, 2015) emerged, one

common ‘denominator’ became clear: a ‘strict’ division of labor—found in organizational structures like functional or divisional—can no longer be the basic building block for designing organizations. Metaphorically speaking, the new organizational design starts with the lines between the boxes (e.g., the ‘white space’ [Rummel & Brache, 1991]) of the formal organization chart. Within spatial organization design, this implies to first determine the meaning and connectivity of the lines between various organizational constitutions (individuals, groups, teams, networks, communities, organizations) and second to identify the requirements of knowledge integration before revealing the content of ‘boxes’ of an organizational chart (Frost, Osterloh & Weibel, 2010): “Although they [new organizational forms] differ in various aspects, one common feature is evident: They emphasize collaboration and voluntary knowledge transfer across functional, divisional, and increasingly, firm boundaries” (Frost, Osterloh & Weibel, 2010, p. 131).

In every organization, there are really two organizations at work: the formal and informal (Katzenbach & Khan, 2010). Often organizations without a ‘formal’ hierarchy will create some sort of emergent ‘informal’ hierarchy. The formal organization is the default ‘governing’ design structure of most organizations (functional, divisional, etc.) The informal ‘shadow’ organization is an agglomeration of all human aspects and non-institutionalized aspects of the organization such as culture, values, gossip, myths, and ‘uncharted’ connections (i.e., networks, communities, social media). Metaphorically speaking, the new organizational design starts with reframing the (straight and dotted) lines between the boxes of the formal organization chart. In spatial organization design, determining the meaning of the lines is focused on:

- organizing the ‘white space’ (e.g., the knowledge stocks and flows, people flows, and so on) within and between various organizational constitutions (individuals, groups, teams, networks, communities, organizations); and
- determining the content of the ‘boxes’ of an organizational chart (Frost, Osterloh & Weibel, 2010).

Organization design is the outcome of shaping and aligning the constituent components of an organization towards the achievement of an agreed mission (Stanford, 2007) created by individuals to realize the joint pursuit of mutually

agreed upon goals. Such an outcome implies that certain “designed-in qualities exist that keep an organization adaptable to its operating context” (Stanford, 2007, p. 4). The dominant style of design thinking within traditional organizations, that are often designed around ongoing tasks and assignments, is generally based on the use of two kinds of logic:

- The first, *inductive logic*, entails proving through observation that something actually works. Martin (2009) states that:

Inductive logic—the logic of what is operative—reasons from the specific to the general. If I study sales per square foot across a thousand stores and find a pattern that suggests stores in small towns generate significantly higher sales per square foot than stores in cities, I can inductively declare that small towns are my more valuable markets. (p. 63)

- The second, *deductive logic*, involves proving—through reasoning from principles—that something must be. Martin (2009) believes that:

Deductive logic—the logic of what must be—reasons from the general to the specific. If the general rule is that all cows are black, and I see a brown bird, I can declare deductively that this bird is not a cow. (p. 63)

Any other form of reasoning or arguing outside of these two is normally discouraged and sometimes even exterminated. The challenge is always, ‘Can you prove that?’ And to prove something in a reliable fashion means using rigorous inductive or deductive logic. Traditional organizational designers often use—and value—inductive and deductive reasoning. They induce patterns through the close study of organizations and people and deduce answers through the application of organizational design theories.

- However, modern organizational designers increasingly adopt a third type of logic: *abductive reasoning* (Martin 2004; Martin, 2009). Abductive reasoning embraces the logic of *what might be*.

Emergent design through abductive reasoning: Suggesting that something may be.

Martin (2004) believes that:

Whereas traditional firms organize around ongoing tasks and permanent assignments, in design shops work flows around projects with defined terms. The source of status in traditional firms is ‘managing big budgets and large staffs’, but in design shops, it derives from building a track record of finding solutions to ‘wicked problems’—solving tough mysteries with elegant solutions. Whereas the style of work in traditional firms involves defined roles and seeking the perfect answer, design firms feature extensive collaboration, ‘charrettes’ (focused brainstorming sessions), and constant dialogue

with clients. When it comes to innovation, business has much to learn from design. The philosophy in design shops is, ‘try it, prototype it, and improve it’. Designers learn by doing. The style of thinking in traditional firms is largely inductive—proving that something actually operates—and deductive—proving that something must be. Design shops add *abductive* reasoning to the fray—which involves suggesting that something *may be*, and reaching out to explore it. Designers may not be able to prove that something is or must be, but they nevertheless reason that it *may be*, and this style of thinking is critical to the creative process. Whereas the dominant attitude in traditional firms is to see constraints as the enemy and budgets as the drivers of decisions, in design firms, the mindset is nothing can’t be done for sure, and constraints only increase the excitement level. (p. 10).

The prescription is not to embrace abduction to the exclusion of deduction and induction. Rather, it is to strive for balance. Imbalanced design thinking often creates ineffective and inefficient organizational designs. The inability to weigh the balance between abduction, deduction, and induction produces organizations that are considered ‘flawed by design’ (Zegart, 1999). In his book on design flaws, Zegart (1999) challenges the historically-driven, conventional belief that national security agencies work reasonably well to serve the national interest as they were designed to do so. Using a new institutionalist approach, Zegart examines what forces shaped the initial

design of the Central Intelligence Agency, the Joint Chiefs of Staff, and the National Security Council in such ways that meant they were handicapped from birth. A flawed organizational design may be the correct diagnosis. The sufferings of a flawed organizational design are obvious. Some organizations that were created even have become tyrants. Lekanne Deprez and Tissen (2002) believe that:

Divisions, departments, business units, operating companies, national sales units have been created. All have had their uses. All were developed to make our companies more competitive, more streamlined, more rational, more profitable. But now the organizations we created have become tyrants. They have taken control, holding us fettered, creating barriers that hinder rather than help our businesses. The lines that we drew on our neat organizational diagrams have turned into walls that no one can scale or penetrate or even peer over. (p. 1)

Obviously designing organizations can be wrong as well as go wrong.

Design can be wrong and go wrong.

Flawed organizational design efforts fall into three categories:

- Poor design. Too often, redesign involves little more than “rearranging the deck chairs on the Titanic” (Mercer Delta, 2003b, p. 5). The result is an organization that looks different on paper but performs much as it did before “because none of the underlying problems have been addressed” (Mercer Delta, 2003, p. 2).
- Poor execution. In other cases, a strategically sound redesign can be implemented so ineptly that the organization actually loses value. In the midst of chaotic change, collective paralysis sets in; agile competitors move quickly to neglected customers and seize poorly served markets, and the organization quickly loses ground it may never be able to recap (Mercer Delta, 2003).
- Over design. Design is usually portrayed as forethought that leads to an intention. But on closer inspection, design may be less original than it looks. One reason is because beginnings and endings are rare, middles are common: “People, whether designers or clients, are always in the middle of something,

which means designing is as much about redesign, interruption, resumption, continuity, and re-contextualizing, as it is about design, creation, invention and initiation” (Weick, 2004, p. 74).

Preventing hazardous design flaws caused by an organizational design that has simply outlived its usefulness requires a style of thinking—design thinking and ‘design doing’—characterized by keeping organizations in a fluid state instead of being in a crystallized condition, thus fixed. Modern organizations are future proof (Rohrbeck & Bade, 2012), fluid (Schreyögg & Sydow, 2010), incomplete (Alexander, 2002; Garud, Jain & Tuertscher, 2008), living (de Geus, 1997), agile (Dyer & Erickson, 2009; Worley & Lawler, 2010, Alberts, 2012; Weber & Tarba, 2014; Williams & Lawler, 2014; Birkinshaw & Ridderstråle, 2015; McKinsey & Company, 2015), liquid (Collopy, Boland & VanPatter, 2005; Baumann, 2014), and unfinished (Alexander, 2002b). Jelinek, Romme, and Boland (2008) believe that implementing a successful design of organizations is “necessarily messy, dynamic, iterative, and responsive to circumstances, so any particular organizational arrangement is temporary, to be redone sooner or later as the undesired effects of our efforts are revealed, new needs arise, or better methods emerge” (Jelinek, Romme & Boland, 2008, pp. 321–322).

In their study of an exemplary organization—Infosys Technologies—Garud, Kumaraswamy, and Sambamurthy (2006) explore how organizations may be designed to transform themselves even as they continue to perform seamlessly on a day-to-day basis:

Designing for emergence¹⁷ requires piecing together a mutually complementary and balancing set of initiatives such that an organizational platform emerges to enable both transformation and day-to-day performance. As a result, organizations can endogenize potentially disruptive environmental forces into series of incremental

17 Emergence, in its everyday sense, means to appear, take shape, rise into view. Interestingly enough the word emergency which seems like it would share a common origin with emergence, is defined, in part, as an unforeseen combination of circumstances: “For the purpose of our discussion, emergent behavior can be thought of as a combination of these meanings, that is, rising into view from an unforeseen combination of circumstances” (Alberts, 2011, p. 56).

and manageable changes. One can contrast designs for emergence with designs that are purely modular. Designs that are purely modular have limited emergence capabilities as module interfaces and interactions are pre-specified. With designs for emergence, there are synergistic interactions between design elements as they complement and balance one another. (p. 285)

When something emerges, it just appears as if it comes out of the blue. One cannot witness it forming, rather it will be noticed when it has already been formed. As a result, one cannot trace back to discover what really happened (Alberts, 2011). What emerges is always surprising (Perkman & Spicer, 2014) because it is so different from the parts that created it. Wheatley (2012) defines emergent design as the process of having a clear intent, taking the first actions, and then seeing what is needed next.

Within this type of design, the members of an organization start imagining, developing, and delivering assortments of formats, frameworks, recipes, and/or concepts; ‘mix them’; and let the design emerge. Linear organization development tools are sequential—and often hierarchical—and appear to be ‘easy to manage’. In practice they prove to be inflexible and less able to respond creatively to problems and opportunities that present themselves along the way. Iterative organization development tools are ‘agile’ (i.e., having the ability to generate results under varying internal and external conditions [Worley & Lawler, 2010]) interactively ‘loop’ around the stages of development proving rewarding experiences for its stakeholders. Choose for each option (e.g., format, framework, recipe, and concept) the right combination of people, technology, and knowledge and an emergent organizational form will arise. This iterative design mindset is connected to the development and design of space-bound organizations.

Table 4.3. From place-bound towards space-bound

	Place-bound organizations	Space-bound organizations
1	Place	Space
2	Structures	Arrangements
3	Physical	Virtual, Mental
4	Linear development	Iterative development
5	Output	Outcome (value)
6	Strategy	Purpose

In traditional industrial organizations, the organizational reality of people was centered in and around places. The place-bound organization was comfortable with the idea that—within the organizational structure and the physical boundaries of the organization—it could efficiently and effectively perform all of the tasks required to make a product or service (i.e. output). The created output—in terms of tangible goods produced or services rendered—denotes the results generated by successfully executing the organizational strategy and the key functions of the organization that deliver value to the organization at large. The organizational design was represented by organizational charts and pyramid-shaped organizations. In space-bound organizations, on the other hand, organizational reality of people is the ‘space of flows (Castells, 2010)’. Flows of capital, people, goods, services, digital data, information, and knowledge often globally and virtual connected to stakeholders and clients inside and outside of the organization. The outcome—in terms of formats, frames, and recipes producing standard moments of value, structured moments of value, and shared moments of value—is generated through arrangements, rather than structures.

4.3 New organizational forms

Chandler’s idea that ‘structure follows strategy’ is one of the best-known organizational concepts in business. Chandler (1962) discusses in *Strategy and Structure* three types of structures: the functional, multidivisional, and

holding company. For each structure, a unique strategy emerged. A functional organization was useful for implementing a single business strategy. A multidivisional structure was used for diversification into multiple related businesses. The holding company structure was seen to be appropriate for diversifying into multiple unrelated businesses. Researchers called these structures the unitary or U-form, multidivisional or M-form, and holding company or H-form (Williamson, 1975). Since 1962 these forms have evolved from ‘structures’ to ‘organizations’ and from pure to mixed forms (Galbraith, 2012). In the 21st century, one cannot afford to dwell on organizational design as a process of choice between known discrete organizational types such as U-form and M-form: “The assumptions underlying such organization forms like the M-form and the H-form, no longer fit the economics of the new business models of the 21st century.” (Strikwerda, 2002, pp. 10–11, *italics added*).

Because the organization of a firm, company, or institution is ‘many things’ to multiple stakeholders, defining and agreeing on the objectives to be achieved by an organization design effort often emerges as a ‘design barrier’. It has been recognized—in practice and in academics—that there is no single organizational approach, model, or form available that works well under all circumstances. Organizational design rules are principles that define how an organization works, what it does, and how it is built. These design rules allocate functions to components, identify operating principles central to each component, and set interfaces among components. Organization structure is often used synonymously—and incorrectly—to mean ‘organization design’ (Galbraith, Downey & Kates, 2002). So a restructuring or reorganization that focuses—almost solely—on the structural aspects is not organization design (Stanford, 2007).

As we have discussed in paragraph 4.2, poor design of organizations results in poor outcomes and results. Doing organizational design is a fundamental process and not a repair job. One way to start such a design process is to consider an organization as a system. Stanford (2007) has summarized five models (McKinsey 7-S model, Gailbraith’s Star model, Weissbord Six Box model, Nadler & Tushman Congruence model and Burke-Litwin model: see Stanford, 2007, p. 22) that serve as a framework to envision the organization in a holistic way. Although these models have been tested for over at least two decades, each one was developed in an era of relative stability when

organizations tended to have a single overarching design. Today's and tomorrow's world is different. New demands call for new design rules for incomplete, fluid, and liquid organizations. So the current models, even if updated, pertain to a traditional—industrial economy—organizational design mindset. When new organizational forms are needed, engagement of the relevant stakeholders is required.

The reason why management gives remedial attention to their organizational design is that they are often not ‘in sync’ with the needs and requirements of their ‘members’ and relevant internal and external stakeholders. Managers are not able to tap into the talent pool—give people the opportunity to demonstrate their own talent—and collective intelligence within and outside of their organizations (Malone, Laubacher & Dellarocas, 2009). Modern organizational design has to ensure that the organizational model that the platform selects—by allowing participants to passionately discuss ideas, reframe current models, build prototypes, contribute expertise, and constructive disagreements—results in an organizational form that is adaptive, liquid, fluid, and incomplete enough to keep pace with the increasing speed, agility, and complexity that characterizes 21th century modern organizations.

Choosing the right design elements, design rules, and models for organizational design is one part of the design process. Another important step is to choose the right approach—the method for initiating and design work and also the way in which the design will be developed and implemented. The traditional process phases of assess, design, implement, embed, and review is often accompanied by a widespread stakeholder approach using research methods like surveys, action research, focus groups, and so on. Many approaches—e.g., world café, appreciative inquiry, storytelling, brain writing, future search (Stanford, 2007, pp. 25–30)—are available. The selection of a model and an approach (or approaches) is an intentional process because it forms a framework for future design.

In the past, countless organizational design efforts have failed because they were undertaken for no clear reason; they were undertaken for the wrong reason (that is, wrong or invalid in most stakeholders’ eyes); or they lost their connection with the original reason over time. Dunbar and Starbuck (2006) believe that most research studies on organizational design assume that

organizational designers understand well the design contexts and what design should achieve, rather than perceiving designs goals as in any way problematic:

Thus, attention has focused on what components to include in designs and how to evaluate design performance. The assumption is that if a design includes the appropriate components, if the relationships between these components are logically consistent, and if they are congruent with organizational goals, then the design will perform well. (p. 174)

Over time, organization design research has made progress by becoming more specific in identifying the components to be aligned, more detailed in identifying the criteria for evaluating 'fits' (Strikwerda, 2012), and broader in terms of range of rigorous research methodologies used to explore ideas about fit. As a consequence, discussions of organization design have grown more complex. Although lists of design components to be aligned and lists of evaluation criteria to check on alignment may appear to have practical value, these criteria 'for fit' say less than they appear to say. Dunbar and Starbuck (2006) state that:

At best, they [lists of components and criteria] might help designers decide whether they have reached a stable end-state. However, they do not indicate whether this end-state is a good one, and they do not provide useful information about how to go about achieving a good end-state. (p. 175, *italics added*)

Because designers do not have complete information when they begin, their activities must include exploration of multiple alternatives. The results of design efforts depend not only on relations among components, but also on the processes used to arrange components, the motivations of the people who are participating, and how all of these evolve over time.

Dunbar and Starbuck (2006) believe that designing must be iterative, that design efforts must be persistent, and that designing and taking actions are intimately bound up with one another. But in the process of designing organizations, designers nearly always misunderstand the goals and scope of

the projects. Therefore they should view their efforts as experiments—discuss, disagree, experiment, fail, and try again—that might not turn out to be predicted, and they should pay careful attention to the outcomes of these ‘experiments’. Some outcomes accord with designers’ expectations and others do not. As Brunsson (1982, p. 4) said: “when an organization is specifically designed to deal efficiently with one set of objectives, tasks and situations, problems may easily arise when it has to handle other objectives, tasks and situations.”

Designers and observers of design projects often have trouble extracting implications from unique cases, particularly as the bases that people usually use for generalizing (e.g., statistics) are absent. Useful generalizations can emerge from describing the processes designers use to accurately map and take account of the uniqueness they deal with in specific cases. Conversely, some designers start with generalized theories and hypotheses that prevent them from seeing, assessing, and exploiting unique elements in their settings (Dunbar & Starbuck, 2006). Therefore, designing organizations is an ongoing, emergent (Permann & Spicer, 2014) process rather than a one-off experience.

Experiencing a real design attitude: Just tear it up.

Boland and Collopy (2004) show that:

Toward the end of the design process for the Lewis Building [the new home for the Weatherhead School of Management, Case Western Reserve University, USA] there was a need to reduce the floor space by about 4.500—square feet. One of us [Richard Boland, Fred Collopy] travelled to Gehry’s Santa Monica offices and worked with the project architect, Matt Fineout, on the problem. We first identified those miscellaneous spaces that had to be squeezed into the smaller footprint (tea kitchens, closets, rest rooms, storage areas, and spaces for copiers, fax machines, and printers). There were many constraints to be met including proximity to classrooms and offices, “ownership” by various departments and research centers, and circulation patterns in each area. We went through the floor plans, beginning with the lower level and working our way up to the fifth floor. The process took two days. Working with large sheets of onionskin paper laid on top of floor plans, we would sketch possible arrangements until we had something we all agreed was a good solution. Then we would transfer the arrangement

in red pencil onto the plans. Each move of one element affected others and often required backtracking and revising previously located elements. Many times during the two days, we would reach a roadblock where things were just not working out, so we would start with a clean sheet of onionskin and try a different approach. At the end of two days, it was a tremendous sense of accomplishment to have succeeded in locating all the required elements into the reduced floor sizes. We were working at a large table and Matt was leaning far onto it, marking the final changes. As he pushed back from the table, we were joking about how tedious the process had been and how glad we were to have it over. As we joked, Matt gathered all the sheets of onionskin and the marked-up floor plans, stacked them, and then grabbed an edge and tore them in half. Then he crumpled the pieces and threw them in the trashcan in the corner of the room. This was a shock! What was he doing? In a matter-of-fact tone, he said, ‘We proved we could do it, now we can think about how we want to do it.’(pp. 3–5)

Good organizational design requires a key capability (i.e., the ability to understand that each organizational design option is only one of a number of designs that exists in a multidimensional design space [Galbraith, 2012]). The shift from old to new organizational forms is increasingly supplemented by a shift from old to new organizational design (i.e., from what modern organizations should ideally look like, to how they can actually be configurated or construed). However, historically, organizational models and their design principles have followed day-to-day business and operating needs and criteria. In the introduction of this thesis, it was discussed that the core organizational models of the industrial economy (e.g., the multidivisional form [Davis & Davidson, 1991; Roberts, 2004, Galbraith, 2012]) did not emerge until relatively late in the industrial era (in the 1920s). The current arrival of innovative “new” ways of organizing can at this stage be seen as the early signs of a fundamental change in the design of organizations, but their potential impact should not be overestimated. Researchers have stated that “instead of replacing ‘old’ with ‘new’, the two are compatible and can co-exist” (Dunford Palmer, Benveniste & Crawford, 2007, p. 25). The authors conclude their article with a challenging statement: “maybe what is ‘novel’ about ‘new’ practices is not the ‘new’ practices themselves, but the way they interact with traditional organizational practices” (Dunford, Palmer, Benveniste & Crawford, 2007, p.

39). In the same vein, Puranam, Alexy and Reitzig (2014) argue that:

However, for the same reason, new forms of organizing do not automatically imply the need for new theorizing as the solutions may exist and be well known in other contexts. Thus, in the case of each of the new forms of organizing we have discussed, our analysis suggests that (a) it is a new form of organizing relative to how the same goal was being met traditionally, (b) much of this novelty can be explained by existing theories, but (c) fruitful avenues for new theory development may lie in understanding the *complementarities* across the solutions to the problems of organizing that these new forms of organizing embody. (p. 177, *italics added*)

These ‘new’ models still need to reflect business and operating needs (e.g., an organization must be selectively dynamic [Tissen & Lekanne Deprez, 2007]) of the present and future. Many new forms are by themselves not yet clear enough for practice to be ‘embraced and implemented’. However, in ‘normal’ organizational practice, many managers and employees tend to take for granted that all design is relative to nothing: “Mess up an organizational design and individual people, immensely flexible as people are, may still find ways to circumvent problems, avoid the formal difficulties and deliver performance anyway” (Yokoyama, 1992, p. 120).

4.4 Designing spatial organizations

Research question: How does the use of a spatial theory of organizations support the understanding of the complexity of contemporary organizational designs? A central goal of designing spatial organizations is to create *moments of value* in processes of knowledge production, by means of arranging knowledge flows into distinct organizational forms that support optimal production, both in time as well as in effort of people and technology. Moments of value are defined in relation to the overall purpose of value creation of an organization, which can arise spontaneously, pre-conceived as well as planned. Within the spatial theory of organizations, three defined moments of value can be distinguished:

- standard moments of value;

- structured moments of value; and
- shared moments of value .

Three moments of value

- 1) A standard *moment of value* reflects the value that can be derived from commoditizing knowledge by means of modern technology (e.g., knowledge work automation [McKinsey Global Institute, 2013]) with the aim of realizing the efficient production of routinely available knowledge with machines being in the lead over people.
- 2) A structured *moment of value* arises out of the purposeful learning of people who provide value—either together or single-mindedly—within predetermined outcomes in which value creation is driven by structured knowledge frameworks, concepts, recipes, protocols, and procedures.
- 3) A *shared moment of value* reflects the knowledge imperative of innovating for shared value. Value creation through creative collaboration is driven by idea-sparring sessions, concepts, individual and collective aspirations and ambitions, planned and spontaneous exchanges, personal confrontations, and beliefs.

From the spatial theory of organizations (Lekanne Deprez & Tissen, 2009; Lekanne Deprez & Tissen, 2011), it was argued that standard moments of value can best be organized through *modular organizational arrangements*, structured moments of value through *circular organizational arrangements*, and shared moments of value through *cellular organizational arrangements*. At that time¹⁸ these organizational forms—modular, circular, and cellular—were commonly used within the practice and organizational theory of organization design.

A *modular arrangement* (Lekanne Deprez & Tissen, 2011) assumes that each module constitutes only one dominant—‘single minded’—way of people working alone and together to produce value. It is about the efficient application of knowledge, preferably but not limited through intensified automation. For example, the rise of so-called knowledge work automation

¹⁸ In 2012, the three organizational arrangements (modular, circular, and cellular) emerged into three spatial arrangements (KPCs, KSCs, and KICs).

(McKinsey Global Institute, 2013) in which the efficient production of knowledge is the key word, costs can be kept low because knowledge production as a whole is streamlined. People are only deployed if they can contribute to optimizing efficiency. Non-core knowledge functions and processes are all ‘outtasked’, outsourced, or offloaded, while the core of the network maintains full strategic control. The critical organizational design issues are the organization of the activities of the organization into modules and the definition of the interfaces between the modules (Grant, 2013). The designers of modular systems must know a great deal about the inner workings of the overall product, service, or process in order to develop the visible design rules necessary to make the modules function as a whole (Baldwin & Clark, 2003). The essence of the efficiency benefit of knowledge-based modular arrangements is that each unit (e.g., team, community) is capable of integrating knowledge among the individuals within the unit, while avoiding the need to continuously transfer knowledge between units:

“Standardizing the way in which a light bulb fits into a light socket permits light bulb makers and lamp manufacturers to work independently on design and innovation in each product area” (Grant, 2013, p. 553, *italics added*).

Four principles govern the design of modular arrangements:

- First, break key knowledge processes up into separable modules that can be produced on a stand-alone basis;
- Second, develop interfaces that allow different modules to work with each other (Huber, 2004; Malone, Laubacher & Johns, 2011; Grant 2013);
- Third, outsource—or offload—knowledge tasks that can be made more efficiently by external contractors; and
- Finally, enable the organization to focus on connecting, recombining and integrating the separately produced knowledge into new products or services.

The key to circular arrangements (Lekanne Deprez & Tissen, 2011) is to facilitate and install a ‘willingness to learn’-culture on the basis of which knowledge sharing processes can be created that will produce ‘moments of value’—those fleeting moments of true human and digital interaction that define an organization’s purpose and performance. Learning is considered a desirable side effect but is not the major goal for organizing knowledge in a circular way.

- Four principles govern the design of circular arrangements:

First, a number of design rules for defining decisions as well as the decision-making process are created and decision-makers identified and linked to each other (Romme & Endenburg, 2006, p. 296);

- Second, guiding tools and techniques are developed in the setting of learning objectives and of organizing and improving learning at the individual, group, and organizational level;
- Third, the mental attention of workers is focused on process optimization and on result solutions, rather than on problems and issues. The better members of an organization pay attention, the more excellent the results (Goleman, 2013); and
- Fourth, the circular approach acknowledges the ill-defined and embedded nature of organizational processes, and uses broader purposes, ideal-target solutions, and systems thinking, to guide long-term organizational outcomes.

A *cellular arrangement* (Lekanne Deprez & Tissen, 2011) is made up of cells (i.e., self-managing teams, autonomous business units) that can operate alone and in interaction with others. It is this combination of independence and interdependence that allows a cellular arrangement to generate and share the know-how that produces continuous innovation. Chowdhury, Endres, and Endres (2000) present a revised cellular organization that is not only ideal for knowledge creation and innovation, but also able to ensure proper maintenance and utilization of existing knowledge.

Four principles govern the design of a cellular arrangements:

- Each cell (group, team, community, business unit, etc.) has an autonomous and entrepreneurial responsibility to be inherently innovative;
- Each cell must be able to continually shape and reshape itself in order to live up to its promise (Wintzen, 2007);
- “Each cell is rewarded for acting independantly in a business-like manner” (Miles, Snow, Matthews, Miles & Coleman, 1997, p. 12);
- Each cell must stimulate collaboration through developing a common vocabulary and a common language. Just because people are better informed, it does not imply that they will act on the information and knowledge they have learned: “They weren’t really working together; they were just knowing together” (Kanter, 2006, p. 875).

While too little knowledge leads to inefficiencies, too much results in rigidities that tend to be counterproductive in a dynamically changing world (Schulze & Leidner, 2002). The idiosyncratic nature of knowledge makes it difficult to trade or to move it among members of an organization. Nonaka, Toyama, and Hirata (2008) argue that the most important characteristic of knowledge is that it is “created by human beings through their interactions and that, therefore, knowledge is subjective, process-relational, aesthetic, and created in practice” (Nonaka, Toyama, and Hirata, 2008, p. 14).

One of the key challenges is to design spatial organizations that reduce instead of increase demands on attention in order to allocate, focus, and use scarce attention resources to the most pressing ('wicked') problems, opportunities, and stimuli facing the organization. People often think that they create value, but actually they extract value from nature, from resources (energy, food materials, water), and from human beings. The challenge is how to design a spatial organization that contributes to the ability to take advantage of valuable opportunities to create value—or even better to capture some of the value people in an organization create. Critical value encounters are confrontational in the sense that new knowledge—or new combinations of existing knowledge—are able to create moments of value when the right people, the right knowledge, and the right technology are not only 'knowing together' but also tuned and guided towards what can be described as a *knowledge momentum*. In the spatial theory of organizations, this kind of momentum constitutes not merely an individual capability but an organizational capability and/or competence (or even a routine) that simply shows the things an organization is exceptionally good at day in, day out. Each organization mashes up these capabilities, competences, or routines in its own singular way, but always while using the distinct mentality of different kinds of knowledge workers as the core.

The definitional ambiguity of the concept 'value' (i.e., the value captured from mentalization of knowledge work) is high (for example: see the value assessment framework of Wenger, Trayner and de Laat [2011, pp. 19–23]).

In their research to further advance the understanding of the mentalization of knowledge workers, Benson and Brown (2007) showed that knowledge workers (Arthur, DeFillippi & Lindsay, 2008) could be better defined on the

basis of what they do rather than who they are (i.e., occupational position). Rennstam and Ashcraft (2013) stress “that knowledge is interactive in character—it is a situated, mutual, evolving achievement” (Rennstam & Ashcraft, 2013, p. 8). Furthermore the authors caution against the presumed association of knowledge work with a narrow set of practitioners of largely embrained knowing (i.e., abstract and theoretical and acquired through cognitive activity) and suggest a “more complete shift toward the study of ‘knowing in work’” (Rennstam & Ashcraft, 2013, p. 11). Breunig and Hydle (2013) believe that:

The measurement has changed from counting knowledge assets to focusing on measures of how collective knowledge resources can be successfully activated to promote organizational value creation.... That the most valuable knowledge is in movement between people and that knowledge needs to be used in order to create value.... The challenge is how to identify good measures for human interaction and link them to value contributions. (p. 562)

By creating knowledge momentum (i.e., by creating a unique organizational capability that matches knowledge supply and knowledge demand) the process of knowledge-value creation can be linked to the purpose of ‘organizational arrangements’. Through a knowledge conversion process (Nonaka & von Krogh, 2009)—that involves creating and spreading knowledge to make it accessible and usable within or between organizational forms—concepts like knowledge sharing (Wang & Noe, 2010), knowledge hiding (Peng, 2013), knowledge hostility (Husted et al., 2012), knowledge barriers (Riege, 2005; Paulin & Suneson, 2012), knowledge transfer (Levine & Prietula, 2012), and knowledge value (Sakaiya, 1992, Breunig & Hydle, 2013) find their way into the theory and practice of organizing knowledge for value.

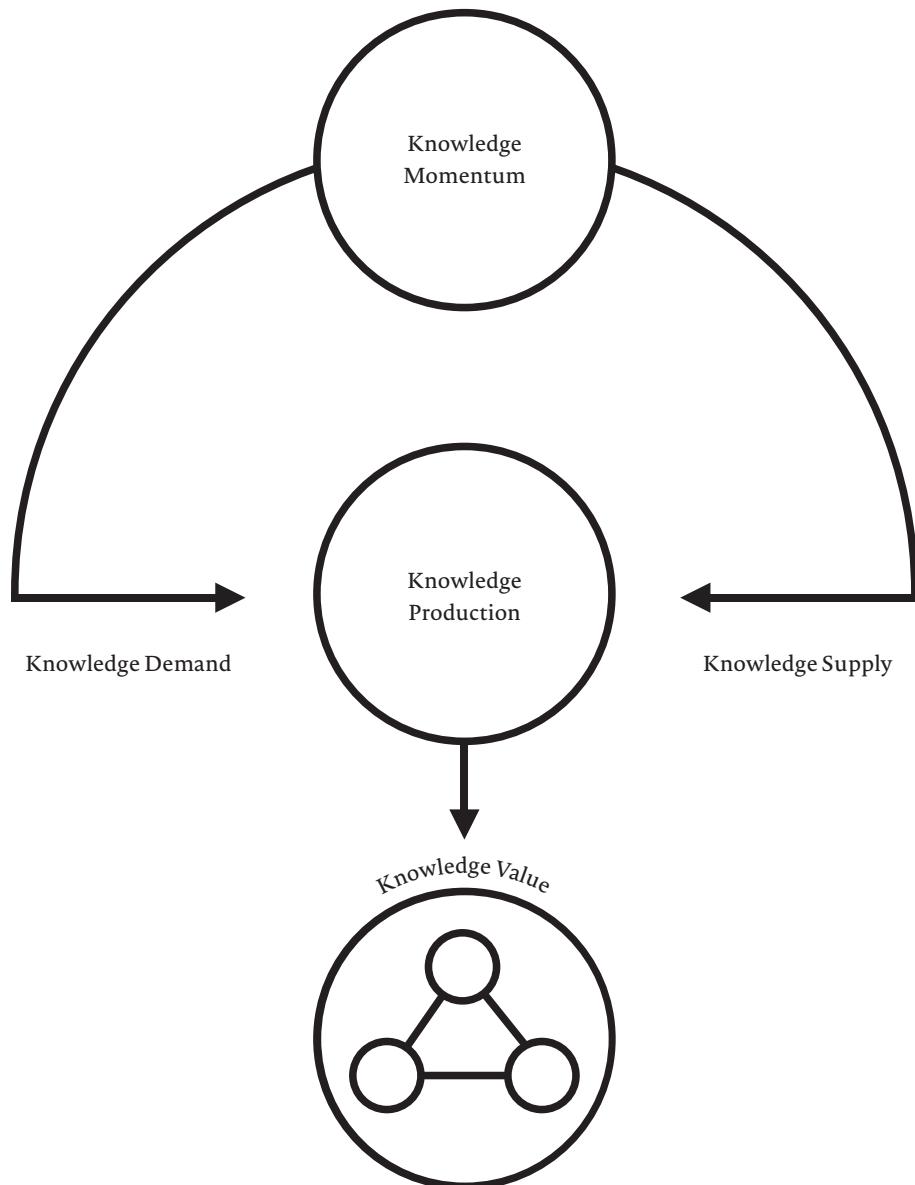


Figure 4.1. Knowledge production.

Figure 4.1 summarizes the basic elements of knowledge-productive activities that create knowledge value. A knowledge momentum is seen to be the trigger ('spark') between the supply of knowledge and the demand of knowledge. Successful 'sparking' in knowledge-based organizations include:

- determining the purpose of the organization—what is worthwhile, its reason for being here, what it chooses to pursue, and what makes a difference related to the knowledge strategies (Von Krogh, Nonaka & Aben, 2001; Donate & Canales, 2012) of the organization supplying a product, service, or process (knowledge supply). Each organization can learn from, but not adopt the purpose of another organization: it must uncover its own;
- an overview of relevant stakeholders involved in producing that product, service; or process; and
- the customers, clients, and/or civilians demanding—and buying, consuming—a product, service, or process (knowledge demand). Knowledge sources may lie within or outside the firm.

In order to match the right and timely process of knowledge creation to the overall purpose of a spatial organization, three types of spatial arrangements are developed during the design-based collaborative management research effort, with each arrangement designed to bring forward a specific moment of value:

- 4 Knowledge Product Combinations (KPC) to connect combine and apply routine knowledge through formats, frameworks, scripts, and systems. The dominant design principle is organizing with technology. Increasingly transaction-based jobs are being standardised, scripted/formatted, automated, and digitized (Frey & Osborne, 2013; McKinsey & Company, 2014; Deloitte, 2014; MacCrory, Westerman, Alhammadi & Brynjolfsson, 2014; Chui, Manyika, Miremadi, 2015; Foresight Alliance LLC, 2016; World Economic Forum, 2016). Management is focused on increasing 'span of control' by restricting the degree of mental freedom. The result is a series of standard moments of value.
- 5 Knowledge Services Combinations (KSC) to channel existing and new knowledge into shared products and services. The dominant design principle is organizing with knowledge. Organizations are characterised by a horizontal flow of internal and external knowledge streams across

virtual organizational boundaries. Knowledge is fluid, leaky, sticky, and so on and can be transferred all over the world nearly instantaneously and at little cost. Management is focused on span of content (i.e., the minimal required capabilities to professionally understand and act within a specified knowledge domain). Knowledge will be embedded in recipes and frameworks that will drive people's ways of dealing with challenges and problems. The result is a series of *structured moments of value*.

- 6 Knowledge Innovation Combinations (KIC) to generate innovative knowledge to co-create new products, services, and processes. The dominant design principle is organizing with people. One of the most important characteristic of knowledge is that it is created by *human beings through their interactions* (Nonaka, Toyama & Hirata, 2008) and that knowledge value—when applied—increases when it is shared. People are able to contextually apply their internal and external knowledge—getting their ‘interact’ together—in various constellations. Management is guided by span of mind which will be fuelled by the energy of the collaborative mindset where creativity is nurtured and innovation is encouraged. Hill, Bradeau, Truelove, and Lineback (2014) believe that innovative organizations do not go along to get along. Innovation requires creative collaboration, which typically involves passionate discussion and disagreement. People will leverage their unique body of knowledge by developing new ideas and concepts; posting ideas; highlighting the shared knowledge relevant to developing solutions to address a spatial organization design; and encouraging participants to combine either ideas or relevant knowledge. The output of a such a ‘concept generation process’ could be a wide range of solutions and challenges, a prototype, or a Minimal Viable Design (MVD¹⁹). Multiple options may be tested in an iterative way until the ‘right’ arrangement is found. The result is a series of *shared moment of value*.

In the table below, the three spatial arrangements are summarized.

¹⁹ “A minimum viable product is not the smallest product imaginable, though; it is simply the fastest way to get through the Build-Measure-Learn feedback loop with the minimum amount of effort” (adapted from Ries, 2011, p. 93).

Table 4.4. Spatial arrangements.

	Knowledge Product Combination (KPC)	Knowledge Services Combination (KSC)	Knowledge Innovation Combination (KIC)
Purpose	To connect and expand routine knowledge into products and services through formats and automated systems	To organize and optimize existing knowledge into co-created services	To create innovative knowledge that generates new products, services and processes
Time Principle	On plan/schedule	On demand	On chance/opportunity
Design Principle	Organize for technology	Organize for knowledge	Organize for people
Dominant Management Principle	Span of control	Span of content	Span of mind
Moments of Value	Standard moments of value	Structured moments of value	Shared moments of value

These spatial arrangements have emerged from the design-based collaborative management research efforts with Statistics Netherlands. During the period 2000–2006, the research emphasis underlying this thesis concentrated on theory building (Lekanne Deprez and Tissen, 2002; Tissen and Lekanne Deprez, 2008). In 2006, Frank Halmans (Statistics Netherlands) joined the research team as an *insider-researcher* to transfer the collectively generated insights, ideas, formats, framework, concepts, and arrangements into practice. Statistics Netherlands was willing to act as pilot organization for developing and applying new organizational designs. At that time the concept spatial arrangements (Table 4.4.) was still in its infancy.

4.5 Spatial management: why managers still matter

As the overall economic performance of individuals, organizations, and economies is becoming more dependent on knowledge production and knowledge flows through global knowledge networks (Bughin, Lund & Manyika, 2014), it is argued within this thesis that management tasks and activities need to be guided and coordinated in a manner that is *quite different* from the management of traditional manufacturing work. In today's knowledge-based economy, the managerial population is expected to shrink (CBS, 2015) because jobs require less supervision of people and managerial authority is supposedly in decline (Laloux, 2014; Foss & Klein, 2014; Robertson, 2015). Some argue that traditional boundary and control setting mechanisms such as routines, standardization, and hierarchies will diminish in relative importance. Horizontal and cross-functional processes in combination with a self-management mindset substitute for hierarchy and silo mentality in the guidance and coordination of roles, tasks, and activities, while the boundaries of organizations are blurring and employment relations undergo dramatic change (Stanford, 2007; Gratton, 2011; MacCrory, Westerman, Alhammadi & Brynjolfsson, 2014; Brynjolfsson & McAfee, 2015; Tett, 2015).

So far, however, management of the 21st century appears not much different from management in the late 20th century. In his seminal book on 'simply managing', Mintzberg (2013) states that "managers deal with different issues as time moves forward, but not with different *managing*" (Mintzberg, 2013, p. 12). Traditionally, the idea persists that without managers, organizations would likely come to a grinding halt. However a widespread dissatisfaction with the effectiveness of management has during recent years become apparent, even leading to situations of 'management bashing' and louder than usual calls for reinventing management as opposed to 'rejuvinating management', which is of all times and all cultures (see for example: Cornuelle, 1975; Koch & Godden, 1997; Cloke & Goldsmith, 2002; Tissen & Lekanne Deprez, 2006; Hamel, 2007; Davenport & Harding, 2010; Birkinshaw, 2010; Hamel, 2012; Birkinshaw, 2013b; Laloux, 2014; Robertson, 2015). Managers stand the risk of victimization, as being past their 'due date', or even attacked for their very existence following cynical remarks referring to their alleged poor added value: 'have you ever heard somebody proclaim that his

organization is short changed on managers?’

According to Hamel (2012, p. 190), the truth is that managers have been fiddling at the margins. “We’ve denounced bureaucracy, but haven’t dethroned it.” On the other hand, some assert that the basic principles of management are still relevant and valuable, but poorly taught and applied (Mintzberg, 2004; Datar, Garvin & Cullen, 2010).

The word ‘management’ often reminds people of power hungry, narrow-minded, egocentric individuals of higher, but undeserved, rank and status. Birkinshaw (2010b) believes that:

Somehow we’ve managed to denigrate management to the extent that it’s no longer actually deemed to be a subject that we should think about or aspire to. No kid today ever grows up thinking, ‘I want to be a manager’. So, we’ve got the problem in that the word has lost its sense of vitality. (p. 14)

According to Mintzberg (2009), a great ideal surrounds managers:

It’s this idea of standing on a pedestal and you wave your baton and accounting comes in, and you wave it somewhere else and marketing chimes in with accounting, and they all sound very glorious. But management is more like orchestra conducting during rehearsals, when everything is going wrong. We’re all flawed, but basically, effective managers are people whose flaws are not fatal under the circumstances. (italics added).

In traditional organizations, management is about extracting value from resources and human beings in order to produce products, services, and knowledge. However, according to Mackey and Sisodia (2013), businesses must view people not as resources but as sources: “A resource is like a lump of coal; you use it and it is gone. A source is like the sun—virtually inexhaustible and continually generating energy, light and warmth” (Mackey & Sisodia, 2013, p. 39). Treating employees as ‘human resources’ means to deal with them as “they get reduced to a narrow dimension of their whole selves” (Mintzberg, 2013, p. 46). According to Fishman and Sullivan (2013) “most people who have done time in cubicles imagine a world without managers as a kind of paradise

where workers are unshackled by pointless bureaucracy, meaningless paperwork, and incompetent bosses. A place where stuff actually gets done” (Fishman & Sullivan, 2013, p. 129).

In modern organizations, management is to be considered as the function of “staging the conditions for others to perform effectively” (Culbert, 1996, p. 330). Management is the practice of generating value for the organization—and themselves—by adding value to others. An organization will never be fully capable unless it is fully human (Hamel, 2011; Vinke, 2011). Gary Hamel (2011) argues that the only way to build an organization that is truly fit for the future is to build one that is truly fit for human beings²⁰. The real issue, of course, is getting beyond the rhetoric (Hamel, 2011, p. 190). In contrast, the role model of being a manager these days is—according to Davenport and Harding (2010)—evolving into “offstage management” (Stern, 2011), propelling principles of participative and self-management (Laloux, 2014; Robertson, 2015). Offstage managers focus on managing the environment—not the people—by creating a context for everyone to succeed in and—when everyone is capable—then steps out of the way (Stern, 2011). So it is not enough just to do ‘your thing’. As an offstage manager, one has to focus on getting one’s interact together. Within modern organizations, managers are able to practice the ‘quiet drive’: let other people shine, stimulate people’s potential, and spend time developing it: “Nobody comes to work in the 21st Century and says, ‘Please manage me’. People say, ‘Create an environment where I can be successful’” (K@W, 2012, p. 3).

Modern organizations add value to their workers, rather than merely extracting it from them. An employee’s primary purpose is to become the best version of him or herself (Kelly, 2007). But a drive for realizing such a purpose remains not constant in our lives. It is reexamined at various points throughout one’s career (and life cycle). Google is generally known as a company with a clear organizational purpose and a value-driven culture and the ‘Googlers’ understand where the organization is headed and why as well as how they contribute to society. Carr (2008) reveals in his publication “The Big Switch” the deepest ambition of Larry Page and Sergey Brin—the founders of Google:

20 Neumeier (2012) argues that we are not human beings; we are human becomings. We are not the sum of our atoms; we are the potential of our spirit, our vision, and our talent.

They [Larry & Sergey] weren't just interested in perfecting their search engine, they said. What they really looked forward to was melding their technology within the human brain itself. 'You want access to as much information as possible so you can discern what is most relevant and correct', explained Brin. 'The solution isn't to limit the information you receive. Ultimately you want to have the entire world's knowledge connected directly to your mind. (pp. 211–212)

This kind of ambition requires a spatial approach to organization design where physical, virtual, and mental space provide plenty of space to cover the world's knowledge and connect that body of knowledge in 'real time' to one's body and mind. At Google, managers practice the 'quiet drive' based on hard data and analytics. In fact, all people decisions are based on data and analytics (Bock, 2015). Given its unique capability of continuous innovation, the organization is not focusing on identifying and imitating good and best practices from other organizations. Google has always been an organization where people prefer to rely on internal 'Google' data. Since the early days of Google, people throughout the company have questioned the value of managers. Garvin (2013) states the following:

That skepticism stems from a highly technocratic culture. As one software engineer, Eric Flatt, puts it, 'We are a company built by engineers for engineers.' And most engineers, not just those at Google, want to spend their time designing and debugging, not communicating with bosses or supervising other workers' progress. In their hearts they've long believed that management is more destructive than beneficial, a distraction from 'real work' and tangible, goal-directed tasks. (p. 75)

Are managers able to support the process of people striving to become the best version of themselves? Do managers matter within Google? To find the answers, Google launched Project Oxygen, a multiyear research initiative to identify the key behaviors that separate good managers from bad ones, to measure the impact of good managers, and to use the results to improve the skills of the 'worst' managers (i.e., measuring the progress of struggling managers). It was meant to be a developmental tool and not a performance metric (Garvin, 2013). Here—within Google—managers deal with the messy

stuff—the intractable problems and the complicated connections (Mintzberg, 2013). This is what makes their work so fundamentally “soft” and why labels such as experience, intuition, judgment, and wisdom are so commonly needed to describe it. Put together a good deal of craft with the right touch of art alongside some use of science, and one ends up with a job that is above all:

- a practice;
- learned through experience; and
- rooted in context (Mintzberg, 2013).

The HR people analytics team helped to solve Google’s questions with available data on what managers actually do and what makes them successful within Google. Management is fundamentally about organizing people to do something (Michelman, 2013). Garvin (2013) asserts the following;

Even the low-scoring managers were doing pretty well. How could we find evidence that better management mattered when all managers seemed so similar? The solution came from applying sophisticated multivariate statistical techniques, which showed that even ‘the smallest incremental increases in manager quality were quite powerful.’ For example, in 2008, the high-scoring managers saw less turnover on their teams than the others did—and retention was related more strongly to manager quality than to seniority, performance, tenure, or promotions. The data also showed a tight connection between managers’ quality and workers’ happiness: Employees with high-scoring bosses consistently reported greater satisfaction in multiple areas, including innovation, work-life balance, and career development. Even though the behaviors weren’t terribly surprising, Michelle Donovan, says, ‘we hoped that the list would resonate because it was based on Google data. The attributes were about us, by us, and for us.’ (p. 77, *italics added*)

Garvin (2013) concludes that managers within Google must go beyond overseeing (‘controlling’) the day-to-day work (i.e., beyond ‘managing by span of control’). Instead they support the Googlers’ personal needs, development, and career planning:

That means providing smart, steady feedback to guide people to greater levels of achievement but intervening judiciously and with a light touch,

since high performing knowledge workers place a premium on autonomy. It's a delicate balancing act to keep employees happy and motivated through enthusiastic cheerleading while helping them grow through stretch assignments and carefully modulated feedback. When the process works well, it can yield extraordinary results. (p. 82)

Google is glorious. Or is it?

Leddin (2015) argues the following:

We have all heard the tales of how glorious it is to work at Google. Employees can bring their pets, there is a transportation system in place and, oh yeah, you get to be [a part] of one of the most utilized brands in the world. But, as we all know, no situation, especially work situation, is ever perfect. There will always be that one guy you cannot stand or that one department that does not function as effectively as it should. These elements are as true for any run-of-the-mill office as they are for the pristine offices of Google. Current and former employees of tech giant have recently expressed some aggravations they have had while working for the company.

One of the biggest complaints: everyone's overqualified. A major discrepancy is one that many of us may not have to deal with in our day-to-day jobs—everyone is *almost too smart*. This creates an entire new realm of competition as Google employees are up against some of the best brains in the business. This warrants the complaint that they care hire the best of the best, making everyone overqualified. According to a former engineer, 'There are enough talented people that being talented won't guarantee you an inside track on good projects, because there are thousands of equally smart people ahead in the queue and equally underutilized'.

Other employees complained that there is *no such thing as time off*. They claim that the benefits of working at Google are an illusion and that their perks are a way to keep you at the office and keep you on track. A culture has been created that an employee feels it is necessary to work on weekends or vacations, though they are not specifically told to.

While on the subject of culture, an employee complained that, while in the office, the *culture can be immature*. They refer to the office as a ‘never-never land’ where people refuse to grow up. This person claims that employees constantly socialize, drink throughout the day, play games, and, as a result, get little to no work done.

Diversity is a unique challenge, but for less obvious reasons. Diversity is also said to be an issue as an employee expressed that Google only hires the same type of person from the same handful of schools, backgrounds, etc. ‘It’s no exaggeration to say that I met 100 triathletes in my three years at Google. Only a handful of them were interesting people,’ stated an anonymous employee. Among other complaints were that vague promises are often made; employees should get everything in writing so that Google holds up their end of the bargain. In addition, while it is a big company, some feel that the pace is slower than a start-up.

Hard to affect change. Due to the size, employees have complained that it is *difficult for one person to make an impact on the company*. ‘Unless you are an amazingly talented engineer who gets to create something new, chances are you’re simply a guy/girl with an oil can greasing the cogs of that machine.’ This is in no way saying that Google is a company that treats their employees poorly. It is merely a reminder that no job or company is perfect and there is always room for improvement when it comes to workplace satisfaction. (pp. 1-2 *italics added*)

According to Mintzberg’s new model on managing (Mintzberg, 2013, pp. 35–70), the overriding purpose of managing is to ensure that units of value serve their basic purpose, whether this is to sell products in a retail chain or care for the elderly in a nursing home. Mintzberg (2013) even goes so far to introduce a model type manager who is “between the unit he or she manages (inside), and the world outside it—the rest of the organization (unless the manager is chief executive of the entire organization) as well as what is around the organization” (Mintzberg, 2013, p. 37).

The day someone becomes a manager for the first time, everything changes: “Yesterday you were doing it; today you are managing it. That can be quite a shock” (Mintzberg, 2013, p. 98).

One can neither do without managers nor afford to idolize them (Mintzberg, 2013, p. 101). So on the continuum shown in Figure 5.2, one should ignore the two extremes—of managers totally in charge at one end and organizations entirely without managers at the other—and consider instead what is labeled in-between maximal managing, participative managing, shared managing, distributed managing, supportive managing, and minimal managing.

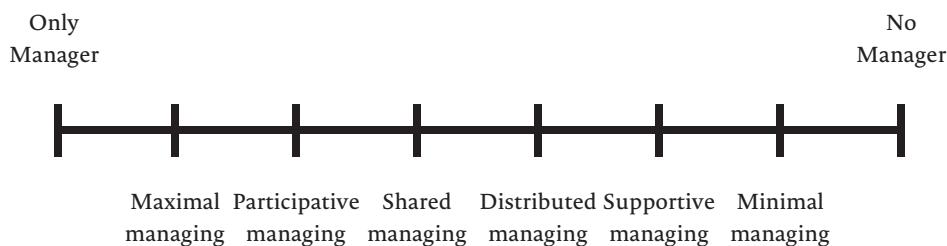


Figure 4.2. Managing by and beyond the manager (Mintzberg, 2013, p. 102).

- **Maximal Managing:** These are managers who plan, organize, coordinate, command, and control;
- **Participative Managing:** Managers let members of an organization participate within core processes and strategic decision making. The problem with participation is that the senior managers who give such power away can easily take it back;
- **Shared Managing.** A managerial job is shared among several people. Here managing is an interactive, influencing process among members of an organization that focuses on sharing power and influence among members of an organization, rather than centralizing it in the hands of a single manager acting as a ‘superior’;
- **Distributed Managing:** Distributed managing diffuses responsibility for managing more widely;
- **Supportive Managing.** If non-managers can do more of the managerial roles, then managers themselves can do less. Here managers link and deal with outside stakeholders to ensure a steady flow of resources,

while buffering many of the outside pressures coming in. Robert Greenleaf (Frick, 2004) has called this ‘servant leadership’:

A servant-leader stands in sharp contrast to the person who wants to be a leader first and then, after clawing his or her way to the top, decides to perform acts of service. The core idea of servant leadership is simple: authentic, ethical leaders, those whom we trust and want to follow, are servants first. (p. 5); and

- Minimal Managing. In the emerging self-managing paradigm, the freedom for members of an organization to explore new ways of working (including the introduction of ‘boss free zones’) threatens the role and position of managers (Puranam, 2014). Here there is hardly anything left to manage (Laloux, 2014; Robertson, 2015), sometimes hardly even an organization as such. But there does remain some coherent activity in need of coordination from managers. These are the ultimate adhocracies, which engage the full creative potential of broad communities. “People come and go—they enter, make changes, and exit—but the system carries on—in fact, with remarkable coherence. These are self-managed organizations, almost” (Mintzberg, 2013, p. 106).

Ultimately, the impact of managing is to enable the members of an organizational form (e.g., group, team, arrangement, community, network, organization, nation) by allowing them to do their best work (Goffee & Jones, 2013; Birkinshaw, 2013). Managers will generate value for themselves by adding value to stakeholders such as members of their organization, their customers, or society as a whole. In their article “Does Management Really Work?” Bloom, Sadun, and Van Reenen (2012) have made an attempt to answer the basic question: “Are organizations more likely to succeed if they adopt good management practices?” To formulate a testable hypothesis for their research effort, the authors asked whether or not the thousands of organizations they studied adhere to three practices that are generally considered to be the essential elements of good management:

- Targets: Does the organization support long term goals with tough but achievable short-term performance benchmarks?;
- Incentives: Does the organization reward high performers with promotions and bonuses while retraining or moving underperformers?; and

- Monitoring: Does the organization rigorously collect and analyze performance data to identify opportunities for improvement?

The research team asked managers a targeted list of open-ended questions designed to ferret out details about how their companies were—or were not—implementing these practices. Overall, the team (Bloom, Genakos, Sadun & Van Reenen, 2012) learned three things.

- First, according to their criteria, many organizations throughout the world are very poorly managed. Well-run companies set stretch targets on productivity and other parameters, base the compensation and promotions they offer on meeting those targets, and constantly measure results—but many firms do none of those things;
- Second, their indicators of better management and superior performance are strongly correlated with measures such as productivity, return on capital employed, and firm survival. Indeed, a one-point increment in a five-point management score that they created—the equivalent of going from the bottom third to the top third of the group—was associated with 23% greater productivity;
- Third, management makes a difference in shaping national performance. Their analysis shows, for example, that variation in management accounts for nearly a quarter of the roughly 30% productivity gap between the U.S. and Europe. (p. 77)

Furthermore, de Waal (2013) indicated that applying certain management practices—with in a ‘High Performance Organization Framework’—does impact the performance of organizations positively and that the causality is from management practice to organizational performance and not the other way around.

4.5.1 Managing spatial organizations

The emergence of management as a distinct and identifiable activity has had a big impact on the global society from late 19th century up until now. In his article—aptly entitled “The Management Century”—Kiechel (2012) describes how management came into being and shaped the world in which we live and work:

Three eras punctuate the period from the 1880s until today. In the first, the years until World War II, aspirations to scientific exactitude gave wings to the ambitions of a new, self-proclaimed managerial elite. The second, from the late 1940s until about 1980, was managerialism's era of good feelings, its apogee of self-confidence and widespread public support. The third and ongoing era has been marked by a kind of retreat—into specialization, servitude to market forces, and declining moral ambitions. But it has also been an era of global triumph, measured by agreement on certain key ideas, steadily improving productivity, the worldwide march of the MBA degree, and a general elevation of expectations about how workers should be treated. (p. 64)

The age of management continues but with a different focus. In its short history, management ideas and practices have spread to wherever capitalism and more or less free markets find a home (Kiechel, 2012). Mackey and Sisoda (2013, p. 11) proclaim that “in the long arc of history, no human creation has had a greater positive impact on more people than free-enterprise capitalism. It is unquestionably the greatest system for innovation and social cooperation that ever existed.... So much has been accomplished, yet much remains to be done.” From the 1980s up until now, directors, managers, employees, and consultants have been struggling to reinvent the organizational chart as something other than a pyramid of power (Heckscher, 2007). Mintzberg and Van der Heyden (1999) argue the following:

The organizational chart treats everyone and everything as an independent box. And every one of those boxes is connected by a vertical chain—that is, a chain of authority. If that is how we see organizations, is it any wonder there has been so much restructuring and delayering. (p. 90)

Traditional organizational forms employ hierarchically-based coordination and control mechanisms that support the tendency of management to respond to the most disruptive changes by accelerating activities that succeeded in the past (Sull, 1999). Spatial organizations—where knowledge is complex, leaky, sticky, and growing internally and externally—are less reliant on hierarchy²¹

21 “While hierarchy within a classical organization theory is defined in terms of delegation of authority, hierarchy within a systems perspective is defined by modularity” (Grant, 2013, pp. 549–550).

as a primary means of control and coordination. Bureaucracy and one-way management is replaced by collaboration and multiple-way management (including principles of collaborative self-management). Can distributed, shared—or even self—management fill the void left by the absence of activities, tasks, and functions that make hierarchical organizations work?

The origin of modern bureaucracy: Government by desks.

Clegg and Starbuck (2009) state the following:

Industrialization from 1850 to 1900 stimulated widespread and dramatic social change, including much strife and diverse new social problems. This idea of studying human resources, management, organizations, or strategy arose out of efforts to ameliorate strife and to solve some of the social problems. One theme that drove thought about organizations was dissatisfaction with bureaucratic behavior by governments. The basic principles of bureaucracy go back many millennia, but modern concepts of bureaucracy owe much to Jean-Bapiste Colbert, the Comptroller General of Finance under King Louis XIV. Colbert used rules to control government officials, to rein in corruption, and to create confidence that the French government was operating fairly. Less than 80 years after Colbert, however, Jean-Claude Marie Vincent de Gournay became France's Administrator of Commerce. Gournay decided that bureaucracy was making government administrators apply inappropriate rules without regard for their consequences. To dramatize the issues, he coined the sarcastic term 'bureaucratie'—government by desks. (p. 337)

Using the various forms of managing shown on the continuum in Figure 4.2, there is a shift from maximal managing to a unique blend of elements from participative, shared, distributed, supportive, and minimal managing. Organizational silos and departments are deconstructed into—web-enabled—arrangements, networks, and communities. Increasingly, new organizational forms appear that are not over controlled or wrongly controlled. Gary Hamel (2012) considers freedom (i.e., when people are free to follow their interest, choose their allegiances, and make their own commitments, flourish) a sound, conceptual rival to control. Workers who feel fenced in—physically,

emotionally, and mentally—with no room to grow often utter the phrase “Give me some space”. They need space to support them—as individuals and/or as in teams—to work without interruption and distraction. Consequently, these ‘free agents’ are known for being flexible by being self-directed and choosing to work anytime, anyway, and anyhow. This potentially leads to a continuously disrupted ‘work-life balance’ for being available all day, every day.

One of the best known examples of a ‘Bring Your Own Freedoms’ (BYOF) to work (Rozwell, 2013) is Google’s innovative ‘time off’ program, known as ‘20 Percent Time’. Here physical, virtual, and mental space has created freedom that has become a defining element of the contemporary workplace of spatial organizations (Lekanne Deprez & Tissen, 2011; Kastelein, 2014).

Within this context, Slijkhuis (2012, p. 95) argues that:

Modern workers [working within the context of New Ways of Working initiatives in the Netherlands] are allowed to work anytime and anywhere. Therefore, modern workers experience increasing amounts of freedom and responsibility in their jobs. However, for some individuals the freedom to make decisions about many aspects of their work may not be beneficial. For them, the lack of rules and regulations and the ambiguity that may follow from high autonomy will make their jobs more unclear and ambiguous. Individuals who are especially likely not to benefit from high levels of autonomy are individuals who dislike ambiguity and desire structure and certainty (i.e., individuals high in personal need for structure [PNS]). (p. 95)

The results of Slijkhuis’ research first of all show that for employees high in need for structure there is no positive relationship between autonomy and motivation, whereas this relation does exist for people low in need for structure. Slijkhuis (2012) also showed that the motivation and creative performance of people high in need for structure was not influenced by feedback that decreases or increases autonomy. Furthermore, for employees high in need for structure, the author found supervisors’ close monitoring practices to positively relate to intrinsic motivation. In short, the results suggest that people high in personal need for structure do not benefit from the high amount of autonomy, freedom, and flexibility that comes with the New

Ways of Work initiatives (Bijl, 2011; Rasmus, 2011; Coonerty & Neuner, 2013; Sheridan, 2013). Instead, they will flourish in organizations that are well-organized and can provide clarity, while people with a low need for structure flourish in organizations that apply the guiding principle of freedom and the concept of a self-managed organization. Walker (2011) argues that the emergent ‘neo-normative control theory’ posits that freedom is now the defining element of the contemporary workplace. Under neo normative control, organizations encourage self-expression, embrace behaviors that would ordinarily be considered deviant, and permit employees a high degree of discretion over the structure and content of their labor (Walker, 2011). By granting ‘20 Percent Time’, Google is demanding that its employees to be innovate—but only within predefined boundaries. Walker (2011) believes that:

Companies like Google have created a work environment that resembles a playground more than a prison camp. But neo-normative theorists are quick to point out that this freedom is deceptive, for it operates as a cover for the intensification of exploitation, all while making employees believe they are truly free. (p. 369)

Furthermore, Walker (2011) states that the ‘neo-normative corporation’ grants freedom provisionally as part of an implicit social and/or psychological contract. The underlying premise is that employees will respond with loyalty, diligence, and above all gratitude, or risk being stripped of their freedom (and employment). Though it presents itself as a gift, such a ‘neo-normative freedom’ is recallable, contingent, conditional, and deeply subsumed within a contractual logic. The company allowed employees to spend approximately one-fifth of their time—one day per week, four days per month, or maybe even a couple of months per year—working on a Google-related passion project of their own choosing or of their own creation. This is a Google policy, and it has been mentioned in official documents like press releases, company blog posts, and Larry Page’s and Sergey Brin’s 2004 founder letter to prospective Google shareholders. The policy led to products like Google News; Google’s autocomplete system, originally called Google Suggest; Gmail; and AdSense, the advertising engine developed to support Gmail financially, now producing roughly a quarter of Google’s revenue. Most ‘20 Percent initiatives’ are informally embedded within the strategy and purpose of Google.

Tate (2013) argues the following:

Because ‘20 percent time’ is less of a formal program than an idea or operating spirit available to bullheaded employees, availing oneself of ‘20 percent time’ has long entailed sacrifices. And at a company where bonuses make up a large percentage of income, these sacrifices can be financial, particularly if your manager and co-workers are, for whatever reason, unsupportive of your ‘20 percent time’ project. Even if said people could not block your ‘20 percent time’ project, they could make you pay a steep price for continuing to pursue it. (p. 1)

Tate (2013) believes that the core idea behind 20 percent time did not begin at Google and will not die there, because it clearly lives on at other tech companies (Apple, LinkedIn, Twitter, etc.). In 2013, Google has proclaimed—through a spokesperson—that Googlers are still encouraged to pursue what are often called ‘20 percent projects’ that involve Google-related interests outside their main line of work.

Google’s movement away from a ‘freedom’ innovation culture towards a ‘specialization’ one is part of a natural evolution of a global company with more than 40.000 employees in 40 different countries (Greiner, 1998; Phelps, Adams & Bessant, 2007). Google’s challenge for the future will be to maintain an innovative culture characterized by highly selective hiring process; true influence how Google is run; co-creation; a risk-taking attitude; a moral foundation; a deep sense of purpose; common values, receptivity to new ideas; freedom to act and behave; excess capacity; and an ability to focus on the future. Increasingly, spatial management of modern organizations includes a unique shared purpose. Modern organizations can learn from but not adopt the purpose of Google. They have to uncover their own that fits the identity of the organization.

The ‘right’ purpose—one in tune with the times—is more likely to be realized when developed collaboratively and reflecting the requirements from the stakeholders. However, if an individual’s attention is not directed at what needs to be done, chances are low that it will ever get done. Spatial management focuses on directing the attention of its employees and engage them to act according to the shared purpose of the organization. Goleman (2103b) argues the following:

Attention is a mental muscle. Like any other muscle, it can be strengthened through the right kind of exercise. The fundamental rule for building deliberate attention is simple: When your mind wanders, notice that it has wandered, bring it back to your desired point of focus, and keep it there as long as you can. (p. 53)

Goleman (2013b) has grouped the different modes of attention (selection, attentional vigilance, and attentional regulation: see Goleman 2013, Ocasio & Wohlgezogen, 2010) into three broad categories:

- focusing on yourself. Getting in touch with your inner voice (self-awareness) and putting one's attention where one wants it and keeping it there in the face of temptation to wander (self control);
- focusing on others, The word 'attention' comes from the Latin *attendere*, meaning "to reach toward" (Golemanb, 2013b, p. 54). This is a perfect definition of 'focus on others', which is the foundation of empathy and of an ability to build social relationships; and
- focusing on the wider world.
 - Focus on strategy: e.g., exploitation of the current advantage and exploration for new ones; exploitation requires concentration on the job at hand, whereas exploration demands open awareness to recognize new possibilities;
 - The wellsprings of innovation. New value arises from putting ideas together in novel ways and asking smart questions that open up untapped potential (Goleman, 2013b); and
 - Systems Awareness. System thinkers tend to make the best estimates within complex questions and situations.

Within spatial management it is crucial to learn to master the full range of attention by focusing on yourself, on others, and the wider world. Directing attention toward where it needs to go—using the available physical, virtual, and mental space—is a core capability for spatial management.

4.6 Knowledge governance in spatial organizations

Modern Organizations must not only have an installed and fully functioning governance structure, they also have to deal with continuously changing societal and organizational demands on governance and governance systems. Within an organizational context, governance is formally defined as those systems and processes that ensure the overall direction, effectiveness, supervision, and accountability of an organization (Cornforth, 2003). Recently, given the emerging trend of more inclusive interpretation of governance, Tihany, Graffin, and George (2015) refer to governance as “leadership systems, managerial control protocols, property rights, decision rights and other practices that give organizations their authority and mandates for action” (Tihany, Graffin & George 2015, p. 1).

A pragmatic definition of governance—that includes all modes of governance (e.g., hierarchy, market, network, platform, hybrid, spatial)—is “the interactions in which government, other public bodies, private sector and civil society participate (in one way or another), aimed at solving public challenges or creating public opportunities” (Meuleman, 2013, p. 2). Meuleman (2013) continues to assert his belief that:

“Broadly speaking, governance covers the way problems are tackled and opportunities created: it is about *how*, not *what* or *why*. Governance addresses crosscutting issues like the choice of institutions, instruments and processes, as well as decisions about the roles of those who will be affected. There is no pre-set governance approach for any particular problem: every case must be tailored to the statutory framework in which it occurs. (p. 1, *italics added*)

Without a supporting governing framework (e.g., Meuleman, 2014), members of organizations will often feel ‘lost in space’. Such frameworks (Meuleman, 2014) usually serve to simplify our complex world. According to Johnson (2013), frameworks perform a number of critical functions: they are shared conversational resources; and they provide a common emotional tone and they insure quicker responses. A sound organizational form determines what is possible in organizations since it enables action within a specific governance framework. Without a predictable pattern of recurring relationships, coordinated activity—such as knowledge transfer and knowledge sharing—

in the organization would be impossible. Reviews of the prior literature on the definition of structure has identified five common elements in most of its definitions: relationships, entities, configurations, context, temporal stability, and knowledge (Johnson, 1992; Johnson, 1993).

Governance mechanisms can include governing boards, monitoring systems, and signaling mechanisms like dashboard reporting or codes of conduct. According to Senge et al. (1999) the verb ‘govern’ derives from the Greek kubernán, ‘to steer a ship.’ In its Latin form gubernare, it came to mean ‘to guide and rule’ (as in ‘maintaining control of an empire’). During the industrial revolution, it acquired a machine-like connotation: “People began to speak of the ‘mechanisms’ of governance: the rules, decision rights, privileges, rewards and channels of authority” (Senge et al., 1999, p. 366).

In today’s organizations, governance is often defined as the Romans did: as the arrangement of power for directing and controlling other people. Directing implies orientating, in the sense of setting a direction; and controlling denotes adjusting. Senge et al (1999) state the following:

Obviously, which of these two sets of definitions is adopted says a great deal about whether ‘governance’ is seen as the imposition of one group’s will upon another or, as is closer to the Greek roots, the process of continually orienting and adjusting. (p. 366)

Within this thesis, governance is used as a formal and informal process of continually orienting and re-orienting an organization towards fulfilling its purpose. This definition matches the organization form of spatial organizations characterized by fluidness, agility, and incompleteness. Governance is meaningless without including an awareness (implicit or explicit) of the purpose and the value direction of the organization: “A value is only a value when it is voluntarily chosen” (Bill O’Brien, former CEO of Hanover Insurance in Senge et al., 1999, p. 13).

Most members of an organization believe, however, that governance is a matter of ‘hard structures’ alone: ownership of resources, decision rights, and boundaries and performance control systems.

“Most systems of governance are based on external control. But people thrive, in the long run, on a system based on self-control. Moving to self-control is a process of advancing to maturity—not just among individuals, but on the part of an organization” (Bill O’Brien in Senge et al., 1999, p. 380).

Successful organizations have learned how to govern their informal, unpredictable events while maintaining and adding formal, predictable governance structures, each in sync with each other. There are many types of governance such as Public Governance (Cornforth, 2003); Corporate Governance (Corporate Governance Code Monitoring Committee, 2008; MCCG, 2013); Transgovernance (Meuleman., 2013, In ‘t Veld, 2103); E-Governance (Hague & Pathrannarakul, 2013); Metagovernance (Meuleman, 2008), and Knowledge Governance (van Buuren, 2009; van Buuren & Eshuis, 2010; Zyngier, 2011; Foss & Mahony, 2010; Foss, 2013; Johnson, 2013).

For example, the corporate governance literature includes a very diverse and multidisciplinary set of studies encompassing accounting, economics, finance, law, management, and sociology. Corporate governance is indeed a multi-faceted domain. corporate governance is most often viewed as both the structure and the relationships that determine corporate direction and performance. The board of directors is typically central to corporate governance. Its relationship to the other primary participants, typically shareholders and management, is critical. Additional participants include employees, customers, suppliers, and creditors. The corporate governance framework also depends on the legal, regulatory, institutional, and ethical environment of the community. Whereas the 20th century might be viewed as the age of management, the early 21st century is predicted to be more focused on governance. Both terms address control of corporations but governance has always required an examination of underlying purpose and legitimacy (McRitchie, 1999).

There are indeed large differences in how modern organizations view and execute governance. These commonly appear in three distinct forms, namely hierarchical governance, network governance, and market governance. In addition to these forms of governance, van Buuren and Eshuis (2010) argue

that:

There is a fourth form of governance which cannot be reduced to one of the three forms described above; it forms a distinct mode to realize coordination and collective action. We call this *knowledge governance*. Knowledge governance is about purposefully organizing the development of knowledge in order to deal with societal problems. (p. 284)

Knowledge Governance focuses on value creation. According to van Buuren and Eshuis, (2010)

Compared to the other three modes of governance, knowledge governance focuses on the coordinative power of shared ideas. Actors who are jointly convinced about the feasibility of solutions and the seriousness of problems are also willing to adjust their strategies and to develop a coherent path of collective action. The role of governance is to facilitate the process of knowledge production and its dissemination. In knowledge governance, knowledge is approached as a public good that can be produced by public, private and societal actors. By facilitating the development of knowledge by and for actors, other ways of thinking, acting and judging are enabled. (pp. 284–285, *italics added*)

The term ‘knowledge governance²²’ was first used by Grandori (1997); Grandori (2001); and Ciborra and Andreu (2001); Husted, Michailova, Minbaeva, and Pedersen (2012) assert that a Knowledge Governance Approach (KGA) starts from the premise that in order to realize the competitive potential of knowledge as a strategic resource, intra-organizational knowledge processes should be influenced and directed through the deployment of specific governance mechanisms. Foss (2013) and Foss and Strea (2013) introduce knowledge governance within the context of

22 Recently, Zyngier, and Burstein (2012) have developed a knowledge management (KM) governance model. In their article they introduce six case studies to empirically investigate this concept. The authors have identified constructs for KM governance as a mechanism for achieving strategic KM benefits in a sustainable way. They have provided evidence that organizations successfully implementing KM governance, within the constructs of the model, effectively and systematically realize benefits of strategies to leverage and transfer knowledge to achieve organizational goals.

the importance of knowledge to the organization as a whole, and how corporate governance mechanisms influences knowledge processes. Knowledge governance constitutes the organizational level mechanisms determined by management that influence and direct the way knowledge processes occur in an organization. Foss and Strea (2013) argue that knowledge governance means more than the efficient organization of knowledge-related transactions, activities, or behaviors.

It also means governing the cognitions of individuals and therefore the knowledge that is pragmatically applied to make sense out of situations and what should properly be done in those situations. Although all work is knowledgeable, the practice-oriented approach towards knowledge implies that “the locus of knowledge is not in an occupation and its practitioners, but in its practices” (Rennstam & Ashcraft, 2013, p. 19). Knowledge is the basis for effective action in organization and the knowledge-creating processes cannot be outsourced easily because individuals interact with each other to exceed their own boundaries, and, as a result, potentially change themselves, stakeholders, the organization, and the environment. On the other hand, through the commoditization of knowledge—making knowledge available when and where we need it most fueled by automating an expanding variety of knowledge worker tasks (McKinsey Global Institute, 2013; MacCrory, Westerman, Alhammadi & Brynjolfsson, 2014; Davenport & Kirby, 2015)—many services, such as IT services, administrative and technological support, and software testing and development, have become increasingly standardized and modularized across products and industries. Often specialized tasks can be ‘off-loaded’ and could be performed ‘anytime, anyway, and anyhow’ with a higher quality, at greater speed, with a better outcome, or at lower costs by a specialized (human) resource. It is about knowledge in use and knowledge in work. Knowledge is embedded in practice. Within this context, the cognitive capabilities of employees constitute a primary source of competitive advantage for many organizations across diverse lines of work (Rennstam & Ashcraft, 2013).

The mentalization of work indicates a shift from knowledge as something that people have towards knowledge as something that people do and consequently emphasizes the organizational aspects of knowledge. How do governance structures and mechanisms influence knowledge-related behaviors, such as

individual knowledge creation, capture, sharing, integration, value, and so on? Within spatial organizations, the organizational design process—and the successive organizational form—will determine whether the use of—and sharing of—knowledge among its organizational members to create moments of value is beneficial. While organizations cannot govern knowledge flows by ‘just’ measuring output or pre-defining outcomes (Lekanne Depez, 2004; Davenport, 2005; Ihrig & MacMillan, 2015), they must inform members of an organization how they should use their knowledge in the context of the organization (Simons, 1995). The context of knowledge use within organizations—creating, capturing, sharing, hiding, transferring, leaking, and profiting knowledge—has become essential for individual improvement and organizational performance.

Different governance styles imply different views on what is ‘usable knowledge’ can cause tensions or even ‘knowledge disputes’ among stakeholders within spatial organizations. As new forms of organizations have challenged their traditional predecessors, likewise emerging, new organizational forms could question the traditional forms of governance.

Foss (2012) believes that:

The governance of knowledge raises distinct motivational, incentive and coordination problems in organizations, because of the difficulties of identifying and calculating well-defined performance measures for knowledge sharing, integration, creation, and so on, and because of the importance of stimulating not just autonomously motivated behaviors, but, more specifically, behaviors that are intrinsically motivated (and thus conducive to creativity and learning) and socially motivated (and thus conducive to knowledge sharing efforts). The goal framing perspective address different kinds of motivation, deriving from different cognitions, that are all in different ways important to knowledge governance. In particular, the perspective recognizes that undertaking different kinds of knowledge-related efforts require different motivations, and therefore different governance instruments. (p. 76, italics added)

Future knowledge governance theory and practice will benefit from closer association with cognitive science (Lindenberg, 2013) and the micro-organizational behavior literature (Foss, 2013).

5. From theory to spatial organization design

5.1 Introduction

“A man’s mind, stretched to a new idea, never goes back to its original dimensions”
(Oliver Wendell Holmes Sr.).

In 1854, producing an organizational chart was a revolutionary idea. In that year, Daniel McCallum became general superintendent of the New York and Erie Railroad Company (Chandler, 1988; Rosenthal, 2013). With nearly 500 miles of track—from Jersey City through Pennsylvania and New York to the shores of the Great Lakes—it was one of the world’s longest railroad systems, but not one of the most efficient. The essential functions of a railroad—coordinating the delivery of freight and people, repairing cars and track, and monitoring the positions of trains—were vastly more complicated over 500 miles than over a railway that was just 50 miles long. The problem was that without a proper organization, additional miles of track made the railroad company more costly to operate. The drive for ‘scaling up’—moving into a positive growth direction—led McCallum to develop «one of the era’s great low-tech management innovations: the organization chart» (Rosenthal, 2013, p. 1). Such an ‘organization structure’ is usually defined as the sum of the ways in which tasks and activities are distributed among different departments, units and roles, and how tasks and roles are coordinated. As the scale of the railroad exponentially increased its complexity, the problem was not a lack of information. The growing use of the telegraph (Standage, 1998) gave the company an unprecedented supply of nearly real-time data, including reports of accidents and train delays. Rather, the difficulty was putting that data into value. Even at that time, the issue of how to deal with datastreams, infostorms, and knowledge flows had become part of the daily work and life. The company was hit by a kind of ‘sharobesitas’ (Lekanne Deprez, 2011; Lekanne Deprez, 2014) as it was not optimally equipped to share data, information, and knowledge across multiple operational and business ‘trees’.

In his book *Too Big To Know*, David Weinberger (2011) shows that humans have been complaining about information overload for a very long period of time. Weinberger (2011) presents examples from the Roman philosopher Seneca in

5 BCE, Denis Diderot (the creator of the first modern encyclopedia) in 1755, and many more. Daniel McCallum created the first organization chart in response to the information overload problem while managing one of the longest railroads in the world. The chart shows how aligning data with operations and strategy—the quintessential modern management challenge—is “a problem that spans the ages” (Rosenthal, 2013, p. 1, *italics added*). In crafting the organizational chart, McCallum explored how to improve the way the railroad used information. Through 21st century eyes, the chart looks both antiquated and surprisingly modern. According to Rosenthal (2013), this chart was much more than a piece of paper:

Far from the static, hierarchical pyramids that we today associate with such charts, his was modeled after a tree. McCallum drew the board of directors as the roots, himself and his chief officers as the tree’s trunk, and the railroad’s divisions and departments as the branches. Critically, McCallum gained control by giving up control, delegating authority to managers who could use information in real time. He put what we would call the organization’s C-level at the ground level, supporting the railroad, not directing its operations” (Rosenthal, 2013, p. 4, *italics added*)

Chandler (1998) proclaims that what happened on the New York and Erie Railroad represented the beginnings of modern business analysis. McCallum’s policies and procedures soon spread to other railroads and with them spread the organizational chart. Because of the ‘turn-of-the-century merger movement’ (Chandler, 1998) (i.e., companies that had been run by a single owner or family combined with similar companies and forced to merge into ‘large corporations’), the old systems did not cope with the increased complexity. Consequently, the organizational chart started its successful journey through the corporate enterprise landscape. Chandler (1998) believes that:

The organization chart is a symbol of the evolution of Western industry from businesses that were fundamentally personal in nature to enterprises in which the creation of organizational capabilities became a prerequisite for survival. Its development and proliferation heralded the rise of the modern corporation. (p. 157)

Even at that time, leading industrialists (e.g., Henry Ford [Chandler, 1998])

did not see the value of these type of charts. Hierarchy-driven organizational charts have been blamed for all kinds of organizational anomalies. For example, Jaques (1998, 2002) attempted in his rigorous and empirical research to demonstrate that organizations display a hierarchical ordering of work complexity (i.e., eight levels of work) that reflects differences in human capability. In an interview with Eliot Jaques, Kleiner (2001) argues that:

At first glance, the Jaques system seems to be the most rigid form of hierarchy imaginable. In his scheme, even the largest corporation can have no more than eight management levels. There are no mixed-responsibility matrix structures or ambiguous chains of command; each person knows exactly to whom he or she is accountable. There are staff relationships but they occupy well-understood boundaries. Paradoxically, however, the day-to-day effect is the opposite of rigidity. ‘People experience it,’ says United Stationers’ Mr. Helton, ‘as the organization cares about me.’

Though you are accountable only to your boss, you can always appeal to your boss’s boss, on the grounds that you are not being developed effectively. There is no more guessing what the boss wants or lying to ‘make the numbers,’ because you aren’t accountable for your results; your boss’s accountability over the long term gives him or her a built-in incentive to keep the numbers honest and the business growing. It also diminishes micromanagement; your boss has a built-in incentive to ask you what he or she can give you to help you produce the best results. The result is a company where people trust the system and where the most tangled personnel knots naturally unravel. (pp. 8–9)

Currently, the pyramidal hierarchy organizational chart is heavily criticized for being out of sync with reality. The chart expands and new layers of management are easily added without attention to the customer or client. Delays in making decisions and taking actions and lack of accountability are archetypical of the malfunctioning of pyramidal hierarchies.

5.2 Living dangerously

Portraying an organization as a pyramidal hierarchy reduces a multi-dimensional reality into just two dimensions (Bøtter & Kolind, 2012)—level (vertical) and function (horizontal). In ‘reality’ the world is infinitely more complex and disruptive. What are pyramids (Stewart, 2009) built for?

The fundamental fact about life on a pyramid is that it is dangerous. To succeed, players must be continue moving up the pyramid. As the funnel narrows, the math inexorably requires those who fail to move up to be tossed out the side. In the end, just about everybody who plays the [pyramid] game is a loser.... The pyramid game belongs to the family of games that require players both to cooperate and to compete with one another. Success depends on apparently incompatible skills: the ability to work with other players and the ability to ruthlessly exploit (and even exterminate) the very same people” (Stewart, 2009, p. 143)

Humans or mummies? “Managers who develop pyramidal hierarchies harvest mummies” (Lekanne Deprez & Tissen, 2011, p. 30; based on: Koenen, 2011).

So why do organizations still use conventional hierarchical organization charts? An ‘organizational chart-mindset’ may be appropriate and indeed functional to certain economic, political, and social environments. It is often stated that a pyramidal hierarchy does not ‘fit’ the demands of today’s customers, clients, and civilians that experience a high degree of unpredictability and instability (Lekanne Deprez & Tissen, 2002; Hamel, 2012; Laloux, 2014; Robertson, 2015). The present is experienced to be more full of interruptions—or even disruptions (Lekanne Deprez, 2015)—than the past was. Successful organizations thrive on innovation, flexibility, adaptability, and fluidness. The very strengths of pyramidal hierarchical management systems (commanding and controlling employees and managers who directly report to the ‘leader’; the rest of the employees being organized in a pyramid structure, with those with the least thinking power at the bottom of the pyramid) become fatal flaws when agility, innovativeness, flexibility, and fluidness are required.

The end of moving boxes around on the organization chart.

Mintzberg and Van der Heyden (2000) attacked the value of the organizational chart by stating:

Just consider the popularity of organization charts, which tell us all about power and authority (namely, that organizations consist of people managing other people in hierarchical relationships) but nothing about what all this is used for. (p. 2)

“The next time you look at one of these charts, cover the name of the organization and try to figure out what it actually does for a living”
(Mintzberg, 1996, p. 61, *italics added*).

With traditional hierarchies vanishing, and new designed—and often quite complex—multi-dimensional organizational forms taking their place, people are struggling to understand how companies work. What parts connect to one another? Do any—temporal—organizational boundaries exist? How should processes and employees collaborate? Whose ideas and insights have to flow where to create value? As discussed in chapter 4 of this thesis, the organization science community is desperately searching for new ways to depict new forms of organizations.

In the early 1990s, the drive for organizations to apply superior knowledge and human judgement to create value indicated the rise of the knowledge-intensive and knowledge-enabled organization (Karreman, 2010; Alvesson, 2011; Makani & Marche, 2012). The strength of a knowledge-enabled organization is not in its constant acquisition of more of the same knowledge but rather in its ability to combine existing knowledge—whether it is in-house or possessed by a strategic partner or stakeholder—into new products, processes, and services that are likely to create value for the organization (and its stakeholders). The message is not that more knowledge is better and that larger investments in managing knowledge will result in greater benefits. Especially the value field must be carefully surveyed, charted, and then navigated to ensure that the company is moving toward increased sustainable value. Success depends on a constant, continuous process of combining and recombining knowledge into something ‘fresh’—something that customers (and the customer’s customers and other relevant stakeholders) really want

(or never knew that they wanted).

Subsequently, knowledge becomes *actionable* (Austin, 2013; Meyer, 2013) through a collaborative translation process that fits knowledge to its local context. The act of translating an idea into actionable knowledge changes the idea itself. Austin (2013) argues that “for knowledge to become accepted as actionable, it must be linked to the receiver’s conception of what is relevant and useful” (Austin, 2013, p. 29).

One has to *understand* information in order to share it. It is not necessarily easy for employees and managers to share relevant information about their ideas, insight, expert knowledge, and innovation. Some fear that they will be less valuable if they give away what they know. Even receiving knowledge ‘for free’ causes problems if it feels like an ‘admission of weakness’. For example, a ‘game-changing’ organization demands a ‘culture of helping’ (Amabile, Fisher & Pillemer, 2014) where it is a *norm* that colleagues support one another’s efforts to do the best work possible and where trust and personal accessibility matter more than the expertise of people. Workplace helping (i.e., help seeking and help giving [Grodal, Nelson & Siino, 2015]) and the amount of help that managers employees give to each other is critical for creating and operating successful knowledge-based organizations.

Sharing our *understanding* to create a shared purpose (i.e., a description of the difference an organization is trying to make in the world) and a shared vision (i.e., a vivid, imaginative shared conception–view of how the world will look once the sense of purpose has been largely realized) can move an organization into action.

5.3 Can spatial organizations be designed and exist in practice?

As the organizational chart often leaves little room for imaginative maneuvering, richer pictures (i.e., combining knowledge, technology, people, and space into various organizational arrangements) are needed: “Good organization designs are not monuments to the ages. They are a temporary shelter and shaper of the economic life within them” (Yokoyama, 1992, p. 127). During the 1980s, organizations experienced the limits of the traditional—

pyramidal—organization designs and forms. Ever since, many alternative ways of ‘organizing’ were introduced (e.g., network, matrix, cluster, circular, modular, virtual, forcefields, and so on [see chapter 4 of this thesis]). From the mid-1990s, rapid innovations in communication technology (internet, mobile phones) and digitization invaded traditional organizations. At that time, people often experienced a ‘Future Shock’ (Toffler, 1970)—too much change in too short a period of time. Many people felt like they were ‘immigrants of the present’. The external and internal boundaries of institutions and organizations opened up as never seen before. In the early 21st century, digitization of organizations, institutions, societies, and the global economy further progressed and had—and still has—a disruptive impact on work and life itself (Westerman, Bonnet & McAfee, 2014; Catlin, Scanlan & Willmott, 2015; Author, 2015). In such an ‘overconnected state’ (Davidow 2011), institutions and organizations are transforming so quickly that the environment in which they are embedded is unable to cope:“Or the reverse happens: with the increase of interconnections, the environment changes so dramatically that the institutions [and organizations] become overwhelmed by cultural lag and are unable to cope” (Davidow, 2011, p. 22).

New ways of working (Bijl, 2011; Rasmus, 2011; Gratton, 2011; Malone, Laubacher & Johns, 2011; Birkinshaw, 2013; Goffee & Jones, 2013; Laseter, 2014; Wierdsma, 2014) and new organizational models and organizational forms are associated with different strategies and environmental conditions. Organizational life is messy, a reality people often persist denying. New models and forms have emerged based on combining knowledge, technology, and people in a smart and intelligent way—focusing on digitization, multidisciplinary ‘teaming’, and iterative interactions—to create significant value for stakeholders.

Designing, organizing, and managing within emerging organizations (Perkmann & Spicer, 2014) entails adopting a mindset that views design, organization, and management as emergent, continually evolving, messy, fluid, liquid, impermanent, and essentially incomplete. In many new situations that are arising today (and tomorrow), allowing for imprecision—for ‘messiness’—may be a positive feature, not a shortcoming: “Rather than aiming to stamp out every bit of inexactitude at increasingly high cost [within research efforts], we are calculating with messiness in mind” (Mayer-

Schönberger & Cukier, 2013, p. 40).

A spatial theory of organizations, rather than a view on organizations, focuses on integrating several perspectives on space as a pre-dominant organizational design criterion in order to create ‘high performing’ organizational forms that are adaptive, fluid, and incomplete to keep pace with the increasing speed, agility, and complexity that mirrors the modern global economy. Simon (1981, p. 129) defines design as the process by which one devises courses of “action aimed at changing existing situations into preferred ones.” The design of an organization as a preferred complex system originates from combining and integrating various sources—knowledge, perspectives, visions, and purposes. As organizations face multiple environments, organization designers must avoid rigid organizational configurations and adopt collaborative approaches that rely on organizational forms that appreciate and support collaborative design (e.g., co-creation [Ramaswamy and Gouillart, 2010; Ramaswamy and Ozcan, 2014; Wierdsma, 2014], co-configuration [Engeström, 2004], and co-design [Garud, Jain, & Tuertscher, 2008; Brown, 2009]). When organizational designers experience this support, they will be able to work among multiple organizational dimensions, bringing people together from different functions, departments, and geographical locations while playing multiple roles and serving internal, external, and even mutual goals of ‘doing design’. The distinction between designers, researchers, and other stakeholders (i.e., managers, employees, customers, citizens) has blurred, resulting in the formation of joint design groups—such as teams, networks, and communities—who inscribe their own contexts into the emergent design. The distinction between these various groups of people can be considered as a continuum with many forms in-between, from learning group, teams, networks, and communities to clans.

According to Van de Ven (2011, p. 402), “producing research that is useful for theory and practice is not a solitary exercise; instead, it is a collective achievement.” That is why during the research project in Statistics Netherlands, the experience and the activities of a practitioner, who is a complete member of the Statistics Netherlands organization, made a distinctive contribution to the development of insider knowledge about this organization. An ‘insider’ is a researcher who conducts a study that is directly concerned with the setting in which they work or their community. In this case, research is conducted by

“complete members of organizational systems and communities and the insider is undertaking an explicit research role in addition to the normal functional role” (Coghlan & Holian, 2007, p. 5). This definition has been advanced by the reference to ‘deep insider’ research which has been defined as research undertaken by a person who has been a member of an organization or community under study for a minimum of five years (Galea, 2009). As an Insider Action Researcher (IAR), Frank Halmans cultivated cross-functional and interdisciplinary relationships with Statistics Netherlands (CBS) using co-design as a space of opportunity to influence the mind-sets and behaviors of management and the CBS workforce by making ‘organizational design knowledge’ more actionable (Meyer, 2013).

As Rodney Fitch, designer and chairman of the multinational design company Fitch & Co., once proclaimed, “Only one company can be the cheapest. All the others must use design” (Creasey, 2006, p. 4). Nadler and Tushman (1997) argue that ‘competing by design’ will be the most reliable source of competitive advantage: “the best designs [of organizations] draw upon the knowledge, experience, and expertise of people throughout the organization” (Nadler & Tushman, 1997, p. 230). Poorly conceived and poorly designed organizations typically divert energy and focus, causing chaos and loss of commitment of people and productivity losses. Obviously, the adage “one can’t redesign something that isn’t designed in the first place” (Rasmus, 2011, p. 1) applies to many organizational redesign efforts. As discussed, it is not just a matter of rearranging the lines and boxes of an organization chart. An organizational design represents ‘an educated best guess’ of how a given design—implemented in certain ways in a particular ‘local’ and cultural environment—will support the purpose, mission, vision, ambition, and the value proposition of an organization (and its members).

Within this context, the design challenge within this thesis is: how can we design a spatial organization in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational challenges; unlock latent value; and ultimately leads to the creation of the intended moments of value?

The design approach builds on a long-standing interest among organizational theorists in how organizations respond and anticipate to the constraints and

opportunities of space. Spatial organization design has evolved over time through field and action research. Spatial views on organizations have been around for over a hundred years. Recently, Van Marrewijk and Yanow (2010, 2010b) showed that organization space experienced a so-called ‘spatial turn’ (e.g., adding a lens that allows a researcher to develop a new view on organizations in completely new ways), zooming in on spatial aspects in and around organizations.

In this thesis, the focus is on spatial organizations’ ability to connect people, knowledge, and technology by which organizations make sense of and combine multiple spatial arrangements to create ‘moments of value’ for the various constituents in their environment.

Critical ‘value encounters’ are confrontational in the sense that new knowledge only creates moments of value when the right people, the right knowledge, and the right technology are not only knowing together—focusing on the impact of an individual and the value of the collective—but also are tuned and guided towards what can be ‘known’ as a knowledge *momentum*. This momentum is created by a unique organizational capability matching knowledge supply and knowledge demand to create three types of value that can be linked to the purpose of various spatial organization arrangements. The Dimensioning, Orientating, and Formatting (DOF) framework supports the design of organizations. It has been developed and applied to uncover what makes spatial arrangements distinctive and why these specific arrangements are an ideal setting for advancing research on spatial organizational design.

5.4 The DOF framework for spatial organization design

Research conducted by Tissen, Lekanne Deprez, Burgers, and Halmans (2008); and Lekanne Deprez and Tissen (2011) has produced a dynamic framework for developing and designing spatial organizations. This framework recognizes three spatial phases which lead to three different organizational models, which together take up the space needed to create moments of value. This is called the DOF approach to spatial organization design, consisting of Dimensioning, Orientating, and Formatting:

- Dimensioning focuses on the question of how knowledge can be better applied and exploited within spatial organization design. Dimensioning can be defined as the creation of a mental map which makes people feel comfortable ('in their minds') as to where, when, and how they can add value;
- Orientating involves the deployment of people's concentration and attention—'minds'—towards developing actionable knowledge (Johnson, 2013; Meyer, 2013) in work that meets the requirements and intention of the organization and relevant stakeholders; and
- Formatting directs people's attention to improve the productivity impact and quality of knowledge by imposing—information and communication technology (ICT) supported—standardization and modularization on mental work activities without causing a wrong-size shoe problem (Turchetti & Geisler, 2013).

These three phases of spatial organization design must be seen in relation to each other as a closed loop. Dimensioning leads to orientating, orientating leads to formatting, and back and forth (Lekanne Deprez and Tissen, 2011, pp. 32–33):

- 1 Dimensioning (knowledge perspective) focuses on the question of how knowledge can be better applied and exploited in spatial organization design:
 - a) Re-imagine mission, vision, and strategy (scenarios) of the unit through stakeholder analysis (e.g., identify current, new, and future constituents and their alignment with the goals of the unit) and map key developments;
 - b) Determine strategic knowledge domains and/or topics (Do they create value? How much? For whom?);
 - c) For each domain/topic: identify knowledge areas;
 - d) Connect knowledge areas to management intentions. Knowledge domains/topics and knowledge areas become dynamic when attached to the intentions of what needs to be achieved to realize successful performance. Intent is the underlying motivation of people to realize strategic and operational targets and objectives 'as their minds fit' with the overall setting of an organizational arrangement, knowing what people within the organization have

worked on. All these activities happen within the context of a ‘helping culture’, devoting time and attention to assist with the work of others (Grodal, Nelson & Siino, 2015). People are being comfortable seeking, sensing, and sharing knowledge flows to create moments of value. The intent answers the why and in what direction the strategic and operational objectives must be achieved, including the ability to course-correct (Shirky & Chui, 2014). Very often the course correction is more important than the initial intention.

- e) Link knowledge area/topics to type of knowledge; and
 - f) Formulate a challenge and sketch possible solutions.
- 2 Orientating (mental perspective) involves the deployment of people’s concentration and attention (‘minds’) towards developing actionable knowledge (Johnson, 2013; Meyer, 2013) in mental space.:
 - a) Orientating connects the type of knowledge – routine, learning and innovative knowledge - to the ‘mentalization’ of work (i.e., to the nature and way people employ their minds towards generating actionable knowledge);
 - b) The process of orienting aims to improve the performance of people by providing both focus as well as mental space through spatial arrangements including the ability to course correct;
 - c) The whole issue is to bring people into an organizational context (e.g., create space for them to do stuff and learn from experiences) which puts people on the right mental track, without them being distracted from it; and
 - d) For each type of knowledge the mental part (attention and concentration) and the intentional part (steering) is sketched to provide people with the right direction to put their minds to, while at the same time helping them to fill in the voids. In the end what this is really about is the creation of moments of value for their organization and for themselves.
- 3 Formatting (technology perspective) directs people’s attention on improving the productivity and quality of knowledge by imposing—technology and ICT enabled—standardization and modularization on mental work activities as much as possible without causing the ‘wrong-size shoe’ problem (Turchetti & Geisler, 2013). Organizations have to

continuously reconfigure and reorganize their activities to meet changing demands in their internal and external environments. Spatial organization theory embodies the notion that modern organizations cannot and should not be *overall dynamic* (i.e., need not be dynamic in all areas, levels, and aspects of their organizational design). The process of formatting allows modern organizations to be selectively dynamic, adopting temporary degrees of stability during volatile times, and will allow organizations to weather the storm of unpredictability. There is among researchers a diversity of viewpoints on how to design an organization to adopt new innovative processes that will generate the next generation products, services, and profits. Within this context, a format provides a specific internal and external environment fit for organizational design activities. Formatting is the process of presenting, visualizing, and capturing the valuable data, information, and knowledge in such a way that it is useful and exploitable to specific target populations in the organization. Important steps are:

- a) prioritize and visualize the available information and knowledge content (what is valuable information and knowledge);
- b) anticipate who the recipients are; and
- c) determine their absorptive capacity for relevant content.

The process works as a *roadmap*, in which dimensioning results in a ‘mental map’ of the business landscape that works as a geography of space, the process of orientating as a compass for navigating through space, and the process of formatting as a ‘drivers manual’ which adapts itself to different road conditions (‘societal and business environments’). This process of organizational design can still operate even when the original roadmap is incomplete.

The three step DOF approach results in spatial arrangements of knowledge, people, and technology that can be considered as ‘distinct’ organizational forms which exist ‘naturally’ and/or are ‘formed’ in the minds of people. This mentalizing concept (Foss & Stea, 2013; Foss & Stea, 2014; Stea, Linder & Foss, 2015) can be made explicit by means of organizational forms, in order to establish a more direct – but naturally fitting - relationship between what people ‘have on their minds’/‘inside their heads’ (e.g., various organizational forms) and their actual performance. A variety of organizational forms can be

distinguished, all depending on the preferred type of knowledge ('topics') people transact and interact, in relation to the performance which is expected and even required from them: the *modular*, *circular*, and *cellular* form. In paragraph 4.4. these organizational forms have been discussed in detail.

Spatial organizations (re)combine multiple organizational elements that collectively deviate from 'traditional frames' for organizing. Those organizational elements often keep organizations as being in a crystallized condition instead of being in a fluid state. In an earlier publication, organizations were characterized as "fluid affairs" (Lekanne Deprez and Tissen, 2002, p. 31). The design challenge for spatial organizations is to keep the arrangements liquid as longs as possible. Jelinek, Romme, and Boland (2008) believe that implementing a successful design of organizations is "necessarily messy, dynamic, iterative and responsive to circumstances, so any particular organizational arrangement is temporary, to be redone sooner or later as the undesired effects of our efforts are revealed, new needs arise, or better methods emerge" (Jelinek, Romme & Boland, 2008, pp. 321–322). Organizations only provide temporary shelter for global knowledge flows (McKinsey Global Institute, 2014), where people share, transact and interact 'topics' to create value and digital technology to further explore the 'space of opportunities'.

Dealing with rising global knowledge flows: Digitization and new organizational forms.

McKinsey Global Institute (2014) has examined that:

Digitization reduces the marginal costs of production and distribution and is transforming flows in three ways: through the creation of purely digital goods and services that are either transformations of physical flows or entirely new products, through 'digital wrappers' that enhance the value of physical flows, and through digital platforms that facilitate cross - border production and exchange. Moreover, digitization has begun to change the mix of flows. Some 'goods flows' are becoming 'services flows'.

The knowledge-intensive portion of global flows increasingly dominates—and is growing faster than—capital- and labor-intensive flows. In the past, global flows were dominated by labor-intensive

flows from low-cost manufacturing nations and commodity-intensive flows from resource rich economies. But today knowledge-intensive flows account for half of global flows, and they are gaining share. For instance, knowledge-intensive goods flows are growing at 1.3 times the rate of labor-intensive goods flows.

Governments and multinational companies were once the only actors involved in cross - border exchanges, but today digital technologies enable even the smallest company or individual entrepreneur to be a ‘micromultinational’ that sells and sources products, services, and ideas across borders. (pp. 2-3)

Each spatial organization form consists of a particular arrangement of elements. These elements are shared among specific organizational arrangements to create specific moments of value. Applying the spatial theory of organizations within Statistics Netherlands (CBS)—the Dutch organization founded with the specific purpose of collecting countrywide data and information to process and publish in official national statistics—three types of spatial organization arrangements, KPCs, KSCs, and KICs, are identified, with each arrangement designed to bring forward a specific moment of value:

- I Knowledge Product Combinations (KPC): to connect, combine, and apply common knowledge through formats and systems. The result is a series of standard moments of value;.
- II Knowledge Services Combinations (KSC): to channel existing and new knowledge into shared products and services. The result is a series of structured moments of value; and
- III Knowledge Innovation Combinations (KIC): to create innovative knowledge that drives new business development. The result is a series of shared moments of value (see: Table 4.4 of this thesis).

From a knowledge-based perspective, Figure 5.1 summarizes how a spatial theory of organizations—with the boundaries of outer, connective, and inner space—can be applied to create knowledge production. A knowledge momentum provides a ‘spark’ to connect the knowledge demand of customers, clients, and/or civilians to the knowledge supply of an organization. The knowledge flows create and capture value by connecting knowledge, people,

and technology within and between organizations. With different knowledge flows, organizations will often adopt different designs shaped by context. The three step DOF design approach results in spatial *arrangements* that can be considered as ‘distinct’ organizational forms—KPCs, KSCs, and KICs—with each arrangement designed to bring forward a specific moment of value.

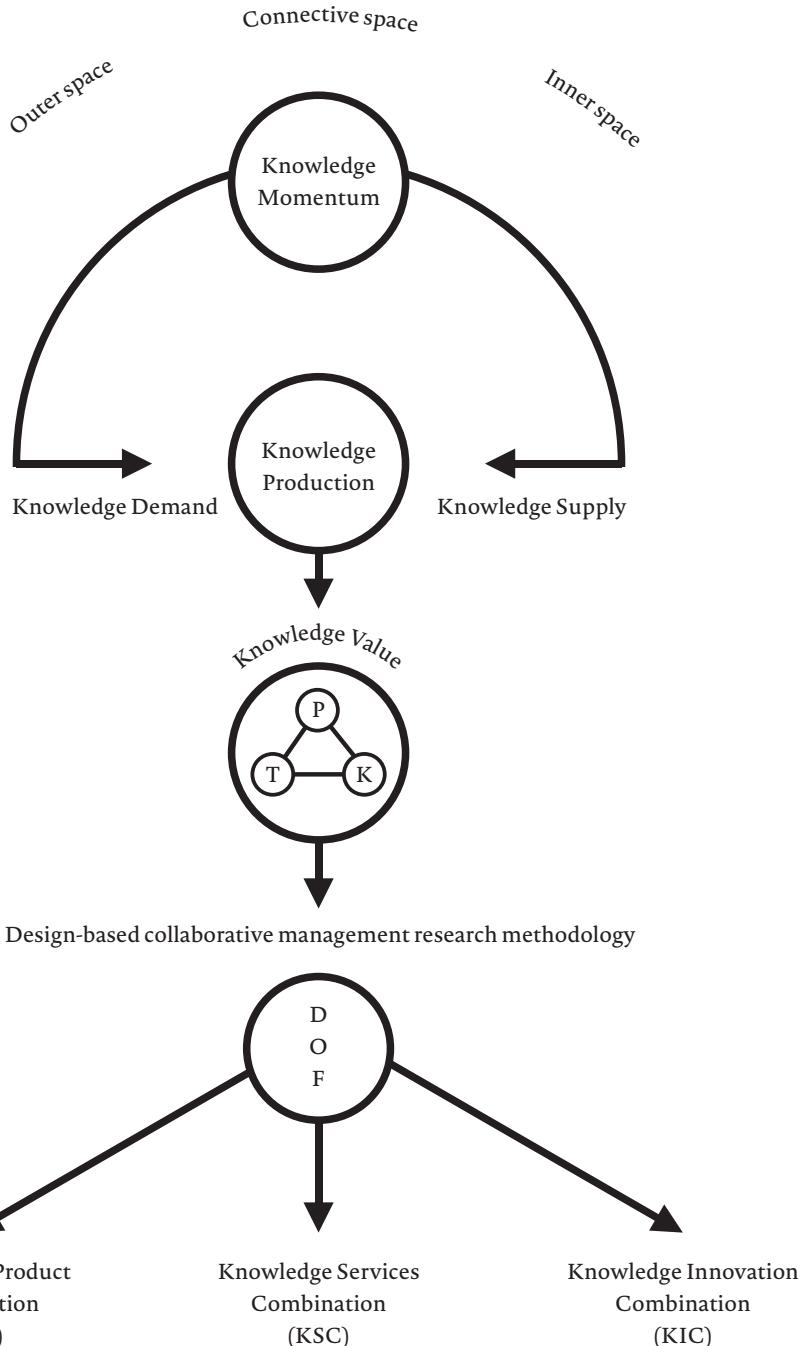


Figure 5.1. Applying a spatial theory of organizations: designing spatial organizations using design-based collaborative management research.

The goal of an industrial designer—born and raised during the Industrial Revolution—was to design ‘fixed’ organizational structures that produce mass products targeted for the mass market. In the Industrial Age—where tasks and activities were physical and precisely defined, designed, and controlled—the adage for measuring productivity of industrial workers was: “Until a human being makes a motion, nothing happens” (Larson and Zimney, 1990, p. 157 italics added). In the 21st century the very strengths of ‘fixed’ hierarchical ‘silo’ organizations have become fatal flaws when swift change and transformations are needed. Nowadays, organizational design is more concerned with incomplete design (Garud, Jain, Tuertscher, 2008), providing ‘space’ for adapting the liquid organization design to the needs and requirements of management, workers, customers, and other relevant stakeholders.

Within most current organizational forms, work has transformed to knowledge-enabled, mindful work. The emerging ‘mentalization of work’ creates ‘invisible’ knowledge-enabled tasks and activities of a rich and complex nature. This mentalizing way of working focuses on how people employ their minds²³ and/or mental states towards the best use of data flows, information flows, and knowledge flows. According to Newport (2016), mental activities performed in a state of distraction-free concentration will push cognitive abilities to their limit: “To produce at your peak level you need to work for extended periods with full concentration on a single task free from distraction” (Newport, 2016, p.44). Distinct ‘spaces’ (i.e., spatial arrangements) can be defined, developed, and implemented, enabling people to better focus their attention and concentration on what needs to be done.

Often the role of design is to make complex simple. Within a design-based collaborative management research approach, the position of an ‘inside researcher’ can be characterized as insider in collaboration with outsider (Herr & Anderson, 2005). Within this thesis, the management of Statistics Netherlands teamed up to define the practitioners problem and Frank Halmans—working full-time within Statistics Netherlands (CBS)—was appointed as an insider-researcher (Herr & Anderson, 2005). Within a design-based collaborative management research approach, the knowledge obtained

23 “A ‘theory of mind’ is formally defined as the ability to read the desires, intentions, knowledge, and beliefs of other people” (Foss & Stea, 2014, p. 105).

from the CBS case was continually cross-referenced to academic literature and fed back and forward to both theory (knowledge stream) and practice (practice stream). Advocates of design-based research claim that this can contribute to the development of organizational theory while at the same time enhancing professional practice. (Romme, 2003; Van Aken, 2005; Andriessen, 2007b; Van Aken & Romme, 2009). A researcher not only designs and tests interventions, but congruently develops knowledge about the application domain of these interventions as well as insights about the underlying generative mechanisms for change. In designing the interventions, the researcher can make use of the results from theory-based research. Often the role of design is to make complex simple. Testing of the intervention will lead to practical solutions as well as a deeper insight into the validity and viability of the theory guiding the development of the intervention.

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PART IV
ON PRACTICE

6 Applying spatial theory of organizations at Statistics Netherlands (CBS): Designing spatial organizations

6.1 Becoming and being a spatial organizations researcher

Since 1999, an extensive and ongoing cross discipline literature study regarding the origin of space and how space is and can be applied in organization science has been in progress. Initially this study focused on how space is given meaning in a variety of disciplines (geography, sociology, architecture, software, history, and so on). Selecting and capturing the main issues from this ‘body of knowledge’ has become a key activity for researchers and practitioners.

In 2002, an international publication on *Zero Space* (Lekanne Deprez & Tissen, 2002) was published. This publication addressed and discussed the need for businesses to move beyond organizational limits and eliminate boundaries and barriers to organize for success. People needed to become ‘zero-minded’ by ‘simply’ letting go of all those restricting pre-conceived ideas and notions that were dominant in the industrial economy. It is about emptying your mind about barriers and boundaries that exist. The *Zero Space* framework allowed people to create ‘mindspace’ (i.e., room to move) for leaving their comfort zones. This movement towards zero-mindedness coincided with the emerging trend towards virtualization and operating in *Zero Time* (Yeh, Pearlson & Kozmetsky, 2000), not only acting faster, but also increasing their agility. The belief among entrepreneurs, technologists, intrapreneurs, and managers started to grow that overcoming geographical, physical, and virtual boundaries and barriers was vital, not only for survival but more importantly for businesses to thrive and expand:

“Indeed, connectivity may be at the very heart of companies operating in the knowledge based economy. It has allowed people greater freedom to work when and where they want. It has helped companies extend their boundaries into areas—both business and geographic—that may otherwise remained closed to them” (Lekanne Deprez & Tissen, 2002, pp. 101–102).

At the beginning of the 21st century, most organizations were firmly rooted and even stuck in industrial patterns of structure, thought, and action,

although an abundance of new insights and new ways of doing presented themselves. Particularly in the field of organizational sciences, a tipping point seemed to have been reached where both researchers and practitioners could no longer solve performance problems and could not meet organizational challenges using the same old principles. Gary Hamel—visiting Professor of Strategic and International Management at the London Business School—reflected on this tipping point as follows: “When you go back to the principles upon which our modern companies are built—standardization, specialization, hierarchy, and so on—you realize that those are not bad principles but they are inadequate for the challenges that lie ahead” (Barsh, 2008, p. 9).

In early 2000, the first steps were taken towards developing a spatial theory of organizations (Tissen & Lekanne Deprez, 2006; Tissen & Lekanne Deprez, 2008; Tissen, Lekanne Deprez, Stormbroek-Burgers & F. Halmans, 2008; Lekanne Deprez & Tissen, 2009; Lekanne Deprez & Tissen, 2009b; Lekanne Deprez & Tissen, 2011), as opposed to ‘merely’ developing a new perspective on organizations. Many of these perspectives existed already but could not, or not unambiguously, be related to improving the performance and potential of people and organizations (Tissen, Andriessen & Lekanne Deprez, 1998; Tissen, Andriessen & Lekanne Deprez, 2000).

In 2007, an international conference entitled “An Introduction to Spatial Organizational Theory” was organized by Nyenrode Business University in Breukelen, the Netherlands (Tissen & Lekanne Deprez, 2007). During the conference the participants explored a number of new organizational forms and—more specifically—investigated, analyzed, and aimed to translate the concept of ‘spatiality’ into a generally applicable set of organizational design principles that would allow CEOs, managers, and employees to imagine, understand, create, build, and shape—global and local—organizations, to achieve more enduring performance and success in an organizational environment which was rapidly becoming less restricted by physical, virtual, mental, or geographical boundaries. The purpose of the international conference was to explore the emergence of ‘spatial organizing’ as an alternative to mainstream organizational design.

Organizational research should focus on ‘outlying cases’.

In 1992 at New York University, I visited Professor William H.

Starbuck—one of the attendees of the international conference entitled “An Introduction to Spatial Organization Theory”—who was on the verge of publishing an article with the intriguing title ‘Keeping a butterfly and an elephant in a house of cards: The elements of exceptional success’ that studies the highly successful law firm of Wachtell, Lipton, Rosen & Katz. Starbuck concluded that two elements contributed to the company’s success were ‘distinctive competences’ and ‘effective organizational design and implementation’. Even in 2015 the law firm Wachtell, Lipton, Rosen & Katz proclaims on their website (<http://www.wlrk.com/>) that ‘our distinctive structure defines our approach’. In this article, Starbuck (1993) discusses that “the drive to generalize has induced researchers to ignore or de-emphasize the properties that make organizations distinctive” (Starbuck, 1993, p. 886, italics added).

Starbuck (1993) argues that:

During the 1960s and 1970s, many researchers attempted to find generalizations about all organizations. Widespread beliefs of that period, to which I subscribed, said that social science ought to use ‘rigorous’ methods to produce generalizations of very broad applicability. Unfortunately, practical experience demonstrated that these beliefs were ill-founded. (p. 886)

These generalization-seeking studies have built up evidence that the properties shared by all organizations are superficial, obvious, or unimportant.... A second reason why shared properties tend to be uninteresting and unimportant is that organizations cannot gain exceptional success by imitating other organizations and exploiting shared properties. (pp. 887-889). But “in study after study on organizations, it turns out that few instances closely resemble the averages: Averages usually tell nothing about outlying cases such as exceptionally successful firms” (Starbuck, 1993, p. 890). Research methodologies on organization design (Starbuck, 2006; McKelvey, 2006) are generally geared to answering questions about average relationships—and that this does not produce information useful to organizations, none of which want to be average. Both authors propose that researchers should spend more time studying exceptional organizations or outlying cases to find out what enable them to excel.

The notion of ‘spatial organizing’ is expected to enable companies and their workforces to think and act beyond existing organizational boundaries and thus to perform better in complex, turbulent, agile, and dynamic environments. Following this notion, different ‘spatial arrangements’ can be constructed which constitute an optimal blend of the outer (physical), connective (virtual), and inner (mental) space of an organization.

Nijs (2014) argues the following

In highly connected environments as we are living now, environmental characteristics (of organizations) are not a given but they *emerge* and take shape out of the interrelationships of many actors over extended periods of time, actors that also influence one another in many ways. Such dynamic environments, therefore, are inherently unpredictable. (p. 37, *italics added*)

As an emerging knowledge-enabled and knowledge-intensive organization, CBS—the case study of this thesis—has developed itself more and more into an organization structured around ‘distinct units’—each unit dealing with several projects and/or processes—where employees with different competencies, capabilities, and perspectives were brought together to develop innovative concepts, policies, and services within mutually agreed upon periods of time. The danger of the emergence of distinct units is that gradually a ‘silo mentality’ (Stanford, 2007) slips into the organization. Humans tend to organize their world around them into organizational and mental ‘boxes’ (Tett, 2015). Organizational silos are departments or units that work independently of each other, resisting co-creation and collaboration with other people—from other units—of the same organization. People with a silo mentality are reluctant to share data, information, and knowledge and to make time to establish informal relationships with other members of the organization and often consider inter-department meetings or projects a waste of time.

Traveling in a mental sense.

Tett (2015) argues the following:

People who are willing to take risks and jump out of their narrow specialist world are often able to remake boundaries in interesting ways. Traveling in a mental sense, if not in a physical sense, can set

people free from silos; if nothing else because it enables them to imagine a different way of living, thinking and classifying the world. (p. 168).

Peer-to-peer interactions are consistently more open and trusting than those that involve hierarchical control. Although people in organizations work in a digitally connected world, often the reality is that it is almost impossible to know what is happening around us. Often the best sources of new perspectives and ideas are colleagues in other departments or units—by building a informal network of peers and other stakeholders—who have access to data, information, and knowledge from totally different sources or provide unique perspectives or interpretations of the existing data.

On theory

During the period of 1999–2006, the research emphasis underlying this thesis concentrated on theory building (Lekanne Deprez and Tissen, 2002; Tissen and Lekanne Deprez, 2008).

An important reason for the present decline in significance of organization theory was “that it has drifted from some of the early core domains and questions” (Miller, Greenwood & Prakash, 2009, p. 273). The development of a spatial theory of organizations will contribute to current organizational theory by reconsidering organizational design. The spatial organization design framework (see figure 5.1) has been developed from many interactive discussions; workshops within Nyenrode Business University community (see Nyenrode Working Papers: Tissen & Lekanne Deprez, 2008; Lekanne Deprez & Tissen, 2009; Lekanne Deprez & Tissen, 2009b; Lekanne Deprez & Tissen, 2011); and within the Center of Excellence (CoE) on Knowledge Organizations and Knowledge Management, which was headed by Frank Lekanne Deprez (as a part-time professor during the period of 2002–2010).

On research & practice

In 2006, Frank Halmans—at that time student of the Master’s program of Personal Leadership in Innovation and Change at Zuyd University of Applied Sciences, The Netherlands—joined the Nyenrode research team (René Tissen and Frank Lekanne Deprez). After an international conference (see above) and the first test of the operationalization of the spatial theory of organizations within CBS, the collaborative research group—René Tissen, Frank Lekanne

Deprez, Frank Halmans, and Hank Hermans with an on/off participation from many members of the CBS organization—discussed the impact of introducing the concept of spatial organizations. Within the collaborative research team of Nyenrode and CBS, the concept of designing a spatial organization ('one-size-fits-one') emerged out of internal CBS meetings, workshops and presentations, and collaborative reports (CBS 2008; CBS 2009). During the period of 2010–2015, a 'light' version of the collaborative research group (René Tissen, Frank Lekanne Deprez, and Frank Halmans) continued to meet in order to further develop the concept of spatial organizations and research the impact of spatial organization form on the division Data Collection.

As a researcher I was collecting the data and co-creating documents from the pre-research period (2005–2009), the practical research period (both pilots PDC 1 and PDC 2: 2009–2010). During the period of 2010–2015, an update of the literature on spatial organizations, a further development of the spatial theory of organizations, and the practical implications of both pilots—PDC 1 and PDC 2—on the framework (see figure 5.1) followed.

The analysis included a series of interrelated research activities:

- Discussing emerging themes as a research team in regular meetings and share the key findings with the CBS team
- Making the transcripts of the meetings, working papers, and presentations of the Nyenrode Research Group available to Statistics Netherlands.
- Collecting and co-creating the transcripts of the meetings, working papers, and presentations of Statistics Netherlands.
- Developing visuals to organize the data and information from both knowledge and practice streams.
- Making all the documents, presentations, and data from 2007 to 2012 easily accessible²⁵.
- Preparing joint workshops to communicate the spatial theory of organizations and the principles of spatial organization design organization-wide within and outside (Lekanne Deprez & Halmans, 2008) of Statistics Netherlands.

²⁵ All the relevant files are stored in a shared file on Dropbox accessible through Frank Lekanne Deprez (Nyenrode Business University) and Frank Halmans (Statistics Netherlands).

The storage and retrieval of the research material (working papers, research papers, interviews, workshops, CBS internal memos, emails, and reports) has been organized in the cloud. All relevant material (interviews, presentations, reports, internal CBS documents, etc.) has been captured and stored within one ‘shared Dropbox’ file (which is active today).

6.2 Statistics Netherlands (CBS)

As early as in 1899, the Dutch government decided to found an organization with the specific purpose to collect countrywide data and information to process and publish in official national statistics. Today the organization is called ‘Statistics Netherlands’ or in brief ‘CBS’. Its workforce involves well-educated professionals, located both in the center and in the south of the country.

People Analytics

In 2014, the average operational workforce fell by 3%, from 1,833 to 1,777 FTEs. At the end of 2014, Statistics Netherlands had 1,991 employees of whom 62% were 50 years of age or older. The average age of the employees continued to rise, from 50.5 years at the end of 2013 to 50.7 at the end of 2014 (year-end 2000: 44.8 years). It is expected that a total of 275 (or about one in seven) employees will leave Statistics Netherlands between 2015 and 2018 as they reach the state retirement age.

From the beginning, its mission has been to compile and publish independent, undisputed, and consistent, up-to-date statistical information relevant for everyday practice, for policymakers, as well as for scientific research. Whenever there is an issue in today’s news, the organization is ready to provide reliable data and background analyses on a multitude of societal aspects, from macro-economic indicators such as economic growth and consumer price indices to the income spreads of individual people and households. In addition to its responsibility for official national statistics, Statistics Netherlands also has the task of producing European community statistics. Statistics Netherlands’ statistical programs (the long-term statistical program and the annual work program) are set by the Central Commission for Statistics. This is an independent commission that watches

over the independence, impartiality, relevance, quality, and continuity of the statistical program. The director-general decides autonomously which methods to use to develop these statistics, and whether or not to publish results. In 2014, the director – general Tjin-A-Tsoi (NRC Handelsblad, 2014) proclaimed that the Statistics Netherlands must be able to prevent external parties from ‘lying²⁶ using our own statistical data’. How to deal with the common practice ‘to lie with statistics’ will be one of the focus areas for the coming years. The problem is not with the statistics. It is with people’s inability to interpret statistics accurately and get away with it.

Statistics Netherlands ranks among the first to integrate the use of computers and internet into its statistical processes especially in the way that they collect and process data. Its famous Blaise System, developed in the 1980s, is now regarded as the de facto standard for computer assisted data collection in the world. Today, all major statistical agencies in Europe, the United States, Canada, Australia, and New Zealand use the system. On January 3, 2004, Statistics Netherlands became an autonomous agency with independent legal status. No longer does a hierarchical relationship exists between the Minister of Economic Affairs and CBS. However, while the minister remains responsible for setting up and maintaining an adequate system for the provision of government statistical information, the government remains as having a supervisory responsibility for what Statistics Netherlands does, the legislation it requires, and for supplying budgets.

After being a department of the Dutch Ministry of Economic Affairs, Statistics Netherlands became a self-operating organization in 2004. Its new status as an autonomous agency and new management in 2004 contributed to the perception that a whole new—but at the same time—realistic way of redesigning the organization was needed, without the continuous need for adjustments arising from traditional restructuring and/or reorganization initiatives. One way of achieving this was introduced by the—then newly appointed—director-general who wondered whether it would be possible to

²⁶ The concept ‘lies, damned lies, and statistics’ was popularized in the United States by Mark Twain (among others), who attributed it to the 19th century British Prime Minister Benjamin Disraeli (1804–1881): “There are three kinds of lies: lies, damned lies, and statistics.” However, the phrase is not found in any of Disraeli’s works and the earliest known appearances were years after his death. Other coiners have therefore been proposed, and the phrase is often attributed to Twain himself. In 1954, Huff published a popular book entitled *How To Lie with Statistics* summarizing many quotes and cases regarding the alleged ‘abuse’ of statistics.

design 'the new organization' from a human-centric perspective.

The director-general raised the question of whether it would be possible to design a truly supportive organization, instead of an impeding or inhibiting one. Was it possible to counterbalance the current ‘mechanistic’ and hierarchical managerial mindset— inherent to the dominant type of work being conducted at CBS? Was it possible to offer the CBS workforce a different organizational context that engaged them to perform, instead of ‘push them’ towards results? One thing was clear: the new organization should be stable wherever possible and be dynamic wherever needed. The two premises should not be mixed as this would easily lead to another ‘reorganization’. At that time, CBS suffered from a ‘change fatigue’ (Beaudan, 2006). It was time to recognize that different organizational structures could and should exist under an overall corporate umbrella, and beyond the current existing divisional structure (see figure below). Although different in content and culture, the divisions within CBS were similar to each other in structure.

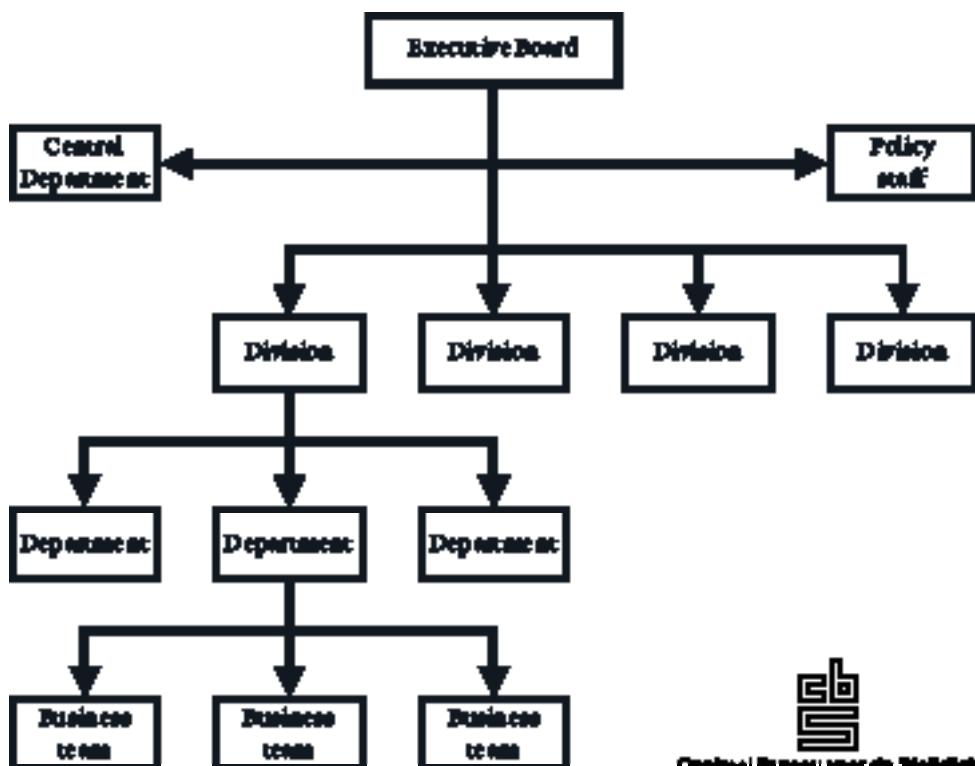


Figure 6.1. Organizational structure: Statistics Netherlands.

The ‘new organization’ should thrive on improving its intrinsic strength. Although CBS is dependent on the outside world to endorse its work, it is not dependent on the world to trust, acknowledge, and improve the potential and performance capabilities of its workforce. Coincidentally, these ‘design principles’ corresponded with the notions laid out in ‘spatial design theory’, which the director-general, encountered in late 2007. At that time, The director-general saw the potential of applying the spatial theory of organizations within CBS. It was decided that Frank Halmans, the manager of the internal contact center to apply and test the theory and supporting methodology in a ‘laboratory setting.’ Supported by the team from Nyenrode Business University (Prof. dr. R.J. Tissen and Frank Lekanne Deprez) and Zuyd University (Hans Koolmees and Frank Lekanne Deprez), Frank Halmans started in 2007 to build a Statistics Netherlands team to imagine, design, and realize a new organization ‘prototype’ around the Data Collection unit, without testing and implementing this ‘mental prototype’ in real life.

6.3 Towards a design-based collaborative management research approach for designing spatial organizations

In 2006, Frank Halmans (Statistics Netherlands) joined The Nyenrode research team as an *insider-researcher* to transfer the collectively generated insights, ideas, formats, framework, recipes, concepts, and arrangements (i.e., developing ‘mental prototypes’ of elements of a spatial organization derived from the spatial theory of organizations) into practice. As the existing organizational form of Statistics Netherlands had outlived its organizational purpose, Statistics Netherlands—specifically the Data Collection unit—was willing to act as a pilot organization for developing and applying the concept of a spatial organization. The development of a spatial theory of organizations and its applicability within an existing organizational environment was part of an ongoing practice-driven process, where initial insights, ideas, formats, frameworks, recipes, concepts, and arrangements were eliminated (but often at a later stage reentered again), multiple new idea proposals were developed, and prior ideas were successful ‘killed’ (Kahn & Katzenbach, 2009), reintroduced, enhanced, and revised (Robinson and Schröder, 2005; Foster, 2007; Gaspersz, 2008; Deichmann, 2012; Hill, Brandeau, Truelove and Lineback, 2014).

The critical issue regarding spatial organization design was that the theory both needed to be further developed while at the same time it had to deal with issues and artifacts that might, but did not yet exist—as is inherent in the notion of space. Within this design-thinking and design-doing process, artifacts are often intentionally incomplete (Garud, Jain and Tuertscher, 2008) in order to keep the design fluid (Lekanne Deprez and Tissen, 2002) and liquid (Lekanne Deprez and Tissen, 2011; Bauman, 2014; Kociatkiewicz and Kostera, 2014; Wierdsma, 2014) as long as possible. Clegg and Baumeier (2010) believe that modern organizations are becoming increasingly liquid towards individuals (e.g., short-term contracts, flex-workers, temp workers) and individuals are becoming increasingly liquid towards organizations (e.g., talented people keep engaged as long as they can develop themselves, otherwise they move on). Members of organizations have to cope with the liquidification of all organizational systems and outcomes: “A degree of ‘solidification’ of a newly designed organization—by means of its form—is at some point in time required” (Lekanne Deprez and Tissen, 2011, p. 21).

Within the design-based collaborative management research approach, a varying number of insights, ideas, formats, frameworks, recipes, concepts, and arrangements are generated and connected to real life organizational problems and challenges. Most of them are systematically and collaboratively evaluated and ‘killed’ until only a few remain. The biggest barrier to innovation is not the capability to generate a lot of ideas, but how to select and then ‘kill’ the bad ones.

Are you killing enough ideas?

Kahn and Katzenbach (2009) believe that:

Whether in transforming a company’s innovation practices or in maintaining them over time, one of the most revealing indicators of effectiveness is the number of losing ideas. This may at first seem counterintuitive, if the goal is to take ideas to market. However, a high number of losing ideas indicates that the informal and formal aspects of innovation are working well together. It shows that the enterprise is creatively generating enough ideas, evaluating them to predict which will be successful, then applying internal discipline to drop support for those that won’t work while shifting time, money, and attention to driving the best into the market. By contrast, when there is an ineffective

balance between formal and informal structures, it often shows up as an inability to manage bad ideas effectively. After a formal decision has been made to advance some ideas but not to pursue others, the company expends considerable effort to plan the next steps for the winners. But no one thinks actively of planning next steps for the losing ideas, to put them to rest, free up their supporting resources, and (ideally) identify and share any lessons or insights gleaned from the experience. (p. 3, *Italics added*)

Often a solution emerged as a mixture of formats, ideas, and so on. This iterative, non-linear, more organic way of research does not imply that design thinkers, researchers, and practitioners alike are disorganized or undisciplined. It implies that design thinking is fundamentally an exploratory process where creative collaboration follows its own schedule that involves passionate discussions, arguments, constraints, and clashes and killings of ideas. This particular ‘way of working together’ requires a large investment in building relationships, trust, time, and energy among its members travelling such an unpredictable and challenging path.

6.4 Methodology

The research presented in this thesis was conducted during the period of 2006–2012. In order to generate results that are relevant for theory as well as practice and that have the potential of making real impact, researchers and practitioners have adopted a collaborative approach (Costley, Elliot and Gibbs, 2010) to understand the fundamental challenges and problems of Statistics Netherlands. For the purposes of this thesis, a (design-based) collaborative management approach has been selected. It is a dynamic and collaborative process where a participants’ understanding of a problem or challenge shifts during the design process. Following a non-linear, organic, iterative design process, the three stages of design-based research are:

- designing the solution and/or challenge concept (steps 1–3);
- testing the solution and/or challenge concept (steps 4–8); and
- developing design knowledge (steps 9–10).

These ten steps are combined (Andriessen, 2007, 2007b; Goldkuhl, 2013)

within the context of designing spatial organizations (see figure below).

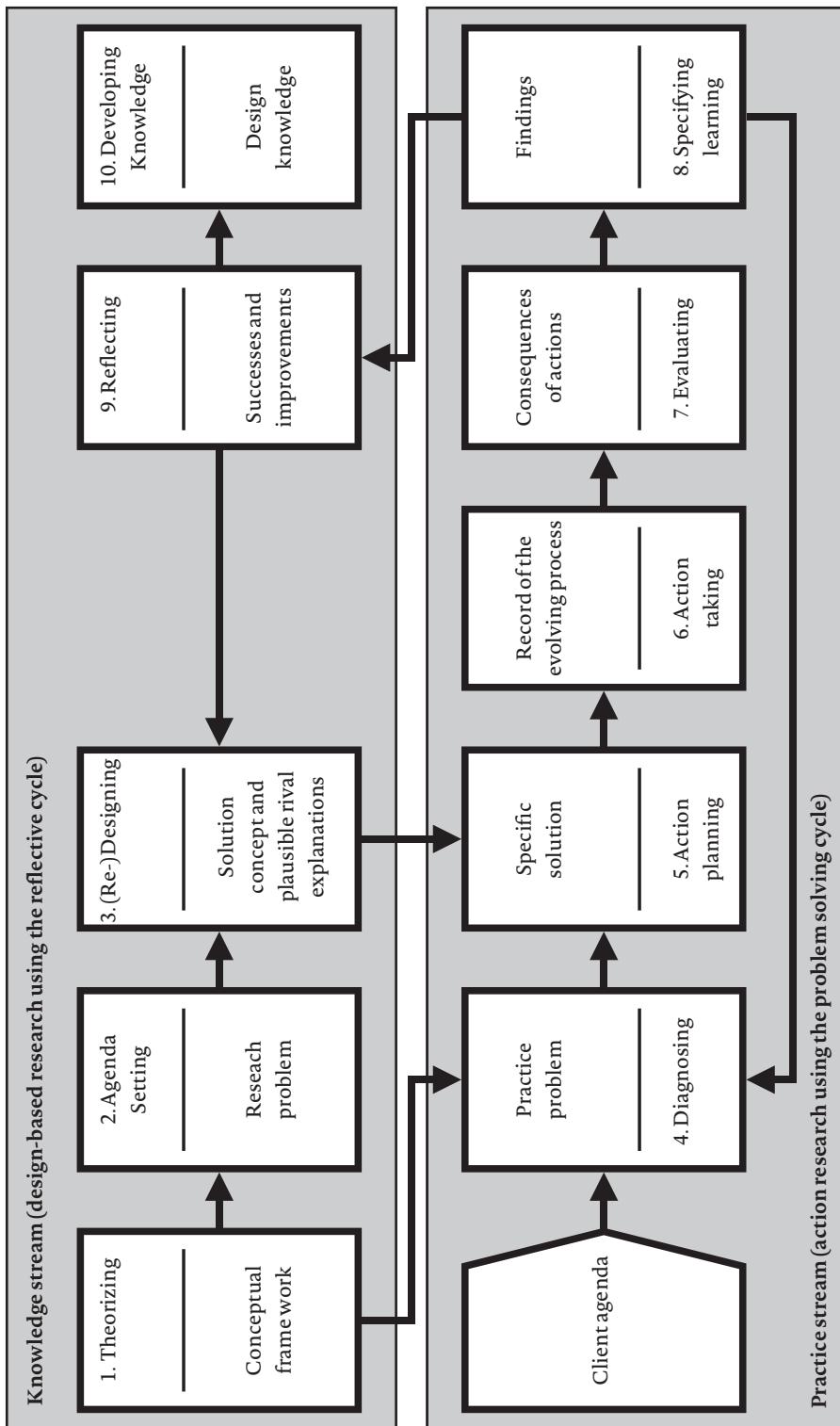


Figure 6.2. Research methodology of a design-based collaborative management research (adapted from Andriessn, 2007b, p. 94).

Different stakeholders in the design activities—researchers, designers, managers, employees, customers, clients, partners, and so on—are participating in the various design activities and contributing to the knowledge stream and the practice stream (Andriessen, 2007b):

- The objective of the *knowledge stream* is to develop generalizable knowledge that can help create desired situations, preferably in a way that contributes to theory; and
- The objective of the *practice stream* is to contribute to the practical concerns of people in problematic or challenging situations, by solving particular problems or realizing opportunities in specific circumstances and creating healthy organizations.

The ten steps (see figure 6.2) will be discussed below.

Step 1: Theorizing.

As discussed in chapter 2, a spatial turn within contemporary organizational theory represents an important move towards closing the gap between theory and practice or—according to Lewin (1943)—to making theory more practical. Tissen and Lekanne Deprez (2008); Tissen, Lekanne Deprez, Burgers, and Halmans, (2008); and Lekanne Deprez and Tissen (2009, 2009b; 2011) introduced a spatial theory of organizations within the knowledge stream (see figure 6.2) in order to generate knowledge for designing organizations. Van Aken (2013b) asserts that:

In the *practice stream* one operates in the swamp of practice on a specific example of the type of field problem one wants to address, interacting with the various local stakeholders as they are solving their specific problem. In the *knowledge stream* one operates on the high ground of generic theory to generalize the findings of the various individual case-studies through careful cross-case analyses. Interacting with other researchers and with practitioners interested in developing generic theory one tries to establish what is case-specific on the one hand and what can be learnt from these cases for use in other settings on the other” (Van Aken, 2013b, p. 10)

A spatial theory of organizations focuses on integrating several perspectives on space as a pre-dominant organizational design criterion in order to co-

create ‘best-performing’ organizational forms. By adopting a future orientation, a spatial theory of organizations will involve co-creating²⁷ and testing ‘prototypes’ of new organization forms. Those ‘spatial’ organizational forms are adaptive, fluid, and incomplete to keep pace with the increasing speed, agility, and complexity that mirrors the modern global organizational landscape.

Step 2: Agenda Setting.

Within this context, our **research challenge/problem statement** became: how can we design a knowledge-intensive organization²⁸ in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational opportunities and unlock latent value that ultimately leads to create moments of value?

The research agenda has been the starting point for our research efforts and discussions with organizations.

Step 3: (Re)designing.

Researchers need to operate more collaboratively to generate knowledge that supports the practice of designing modern organizational forms. Congdon, Flynn and Redman (2014) argue the following:

There’s a natural rhythm to collaboration. People need to focus alone or in pairs to generate ideas or process information; then they come together as a group to build on those ideas or develop a shared point of view; and then they break apart again to take next steps. The more demanding the collaboration task is, the more individuals need punctuating moments of private time to think or recharge. (p. 52)

The design-based collaborative management research methodology within this thesis focuses on the dynamics of collaboration between practitioners and

²⁷ The ‘co’ in creation defines the people (i.e., stakeholding individuals [Ramaswamy and Ozcan, 2014]) that are involved in the co-creation research process. ‘Creation’ refers to the process of “integrating different resources from different actors in order to actualize their value potential” (Saarijärvi, Kannan and Kuusela, 2013, p. 6).

²⁸ At the start of this research project we used the concept ‘knowledge-intensive organization’ instead of spatial organization.

academic researchers and between insiders and outsiders to facilitate the generation of actionable knowledge that meets the requirements of both practitioner and academic communities. A design team will develop the initial solution or challenge concept. This team consists of academics and practitioners and includes a mix of knowledge, expertise, and experience in the area of organization design, knowledge management, general management, and human resources management. The crucial thing about design is that it deals with organizational forms that are not yet in operation and with artifacts that might but do not yet exist. One must be able to specify the desired future situation with some degree of precision. What needs to be thought out and done to design an organization that is fit for the future?

Management practice shares an important characteristic with scientific discovery. Both are made better by application, testing, and refinement (Ford, Duncan, Bedeian, Ginter, Rousculp, and Adams, 2003; Lundberg, 2004). Quality research in the way that businesses are (and should be) designed ‘to run’ is generally directed towards those questions of management and organization that are ‘bigger’ than ‘hit and run’ solutions to immediate problems. The greater the degree of perspective-taking between managers and researchers is (Ford , Duncan, Bedeian, Ginter, Rousculp, and Adams, 2003), the greater the use will be of actual research to influence management practice (Hodgkinson, Herriot, Anderson, 2001; Baldridge, Floyd and Markóczy, 2004; Ivancevich, Duening and Lidwell, 2005; Beech, MacIntosh and MacLean, 2010; Jarzabkowski, Morhman and Scherer, 2010; Knights and Scarbrough, 2010; Nicolai and Seidl, 2010; Mohrman and Lawler, 2011; Birkinshaw, Healey, Suddaby and Weber, 2014). Perspective-taking, however, is not the automatic result of interaction. The perceived usefulness of research requires more than jointly defining and discussing topical issues. Perspective-taking should begin with the recognition that not all researchers should attempt practice-relevant research and not all organizations should sponsor it. Useful research cannot be produced for organizations, but must be generated with them. Theory, no matter how rigorous and vigorous, will not count unless there is a collaborative relationship between researcher and client (manager, professional, or employee); nor will theories be sufficiently robust without the client’s contribution. Thus practice and theory are indivisible. Neither can fully exist and flourish without the other (Bennis, 1985).

Within this context a long standing debate exists on the relevance and soundness of academic research products in the field of organization and management. Rynes, Bartunek, and Daft, (2001); Baldridge, Floyd, and Markoczy (2004); and Van Aken (2005) discuss some early concerns about why academic organizational research is not widely used. As long ago as 1978, Susman and Evered (cited in Rynes, Bartunek and Daft, 2001, p. 340) remarked:

There is a crisis in the field of organizational science. The principal symptom of this crisis is that as our research methods and techniques have become more sophisticated, they have also become increasing less useful for solving practical problems that members of organizations face. (p. 582)

The current concern for relevance is not only reflected within the organization and management research community (Van de Ven & Johnson, 2006; Daft & Lewin, 2008), but also in the area of management education (Augier & March, 2007; Schoemaker, 2008; Mohrman and Lawler, 2011)—where authors make the case that business schools are detached from the real world of managerial practice—and of management itself (Birkinshaw, Hamel and Mol, 2008; Grant, 2008; Khurana and Nohria, 2008; Jacobs, 2009; Hamel, 2009; Mohrman & Lawler, et al., 2011; Hamel, 2012; Birkinshaw, 2013; Mintzberg, 2013; Volberda, Van Den Bosch and Mihalache, 2014). In contrast, even modern business practice shows that management should be encouraged to fundamentally ‘reboot’ itself, by questioning the structures, systems, tools, and ‘mind sets’ within which they have operated since the 20th century (Hamel, 2012; Birkinshaw, 2013). Birkinshaw, Healey, Suddaby and Weber (2014) argue the following:

Obviously, design approaches have a long history in management and organization research. But progress has been slow on many fronts (Daft and Lewin, 1990; Dunbar and Starbuck, 2006). I think we need to push much harder with the logic that the decisive test of research is not necessarily description, explanation, or even the prediction of abstract variable relations. Rather, the acid test for our discipline should be the ability of our research to reliably inform the active design of artefacts that ultimately yield new and socially valuable organizational processes and forms. How is it that mainstream management research has had so

little to say about how to intervene in some of the most significant organizational events of our time, not least the great recession? Perhaps the simple answer is that we have stopped trying to answer questions about organizational design and rarely undertake the type of experimentation that Julian [Birkinshaw] outlined. It is time to restart. (p. 48)

According to Daft and Lewin (2008), there are two kinds of relevance. Academics often think of relevance as meaning the practical value for 'end users' such as managers, employees, or customers in organizations, but knowledge is also relevant to one's own and other academic sub-communities. There are many approaches (Van Aken, 2005) to improve the relevance of academic management research:

- improving communications and knowledge circulation between academics and practitioners;
- intensifying researcher-practitioner interaction for a better understanding of field problems and their possible solutions;
- producing knowledge that can be transferred to contexts, other than the one in which it was produced; and
- including more prescriptive (e.g., solution-oriented or design-oriented) knowledge into the academic products.

Van Aken (2005) proposes that knowledge produced by academic management research can be descriptive as well as prescriptive:

In the first case [descriptive] a given organizational phenomenon is described and possibly explained in terms of independent variables. Generally, the development of descriptive knowledge is theory-driven, focusing on existing situations. The development of prescriptive knowledge, on the other hand, is rather field-problem driven and solution oriented, describing and analysing alternative courses of action in dealing with certain organizational problems. The thesis advanced here is that the relevance of products of academic management research may be improved by also including prescriptive, or solution-oriented knowledge.... The terms 'solution-oriented' or 'design-oriented' are used, which is more in line with the nature of researcher-practitioner relationship in the field of management. (pp. 21-22)

While single-case studies can richly describe the existence of a phenomenon, multiple-case studies typically provide a stronger base for theory building (Yin, 1994; Yin, 2002). The testing phase of this research effort starts with step four.

Step 4: Diagnosing.

An important phase in the practice stream involves diagnosing the practice problem and/or opportunity²⁹. Here it must be noted that the problem of a case in the practice stream is different from the research problem in the knowledge stream. Andriessen (2007, p. 6) states that:

The practice problem is a problematization of the situation in a particular case for which the solution concept is a possible solution. The practice problem calls for a specific solution that can solve a particular problem, while the research problem asks for a solution concept that is applicable in a range of situations. At this stage, it is important to check whether the practice problem matches the application domain for which the solution concept is designed. (p.6)

The collaborative research team uses the conceptual framework of designing spatial organizations—knowledge momentum, design-based collaborative management research approach, DOF, and spatial arrangements (see figure 5.1)—to structure an intake interview with the manager of the subject organization in order to diagnose the situation and determine the clients' agenda. At this stage, it is important to check whether the practice problem matches the application domain for which the solution concept is designed.

Step 5: Action planning.

In each case the action-planning phase involves identifying specific

²⁹ Coghlan and Brannick (2010) prefer to use the concept 'issues' instead of the word problem or opportunity. For example, framing proposed research initiatives in the context of addressing problems or opportunities carries some inherent risks:

Framing an issue as a problem may influence who gets involved in problem resolution. It may be that organizational members embrace problems with a sense of loss, wondering about the organization's ability to reach a satisfactory resolution and often preferring to remain somewhat detached and uncommitted. The action research project may be challenging traditional procedures and thinking.... It may be that thinking in terms of opportunities cultivates a risk-taking culture, while thinking in terms of problems cultivates a risk-averse culture. (p. 54)

requirements and continuing to develop a specific design. The aim is to develop a tailor-made solution to the problem and/or opportunity at hand, based on the solution concept. The starting premise is that the researcher (or research team) and the client organization conduct collaborative research which—more than other forms of contact with practitioners—is seen as ensuring the alignment of researchers' and practitioners' interests in management and organizational research.

Step 6: Action taking.

In the action-taking phase, the collaborative research team implements the specific design and presents the results to the client. Usually the explicit deliverable is a report or a mind map describing the applicability of the approach and the benefits generated for the client. Design is about the process of making complex issues simple or doing something new and/or different. It's about 'design thinking' (Martin, 2009; Kimbell, 2012 Nixon, 2013; Nijs, 2014; Kolko, 2015) and 'design doing' (Fraser, 2006; Kimbell, 2012). During the implementation process, the collaborative research team collects research data using interviews, interactive dialogue sessions, workgroup sessions, and documentary analysis.

Insider action research: Being 'native.'

According to Van de Ven (2011), "producing research that is useful for theory and practice is not a solitary exercise; instead, it is a collective achievement." (Van de Ven, 2011, p. 402, *italics added*). That is why during the research project in Statistics Netherlands, the experience and the activities of a practitioner—who is a complete member of the Statistics Netherlands organization—made a distinctive contribution to the development of insider knowledge about this organization. An 'insider' is a researcher who conducts a study that is directly concerned with the setting in which they work or their community. In this case, research is conducted by "complete members of organizational systems and communities" and the insider is undertaking an 'explicit' research role in addition to the normal functional role" (Coghlan and Holian, 2007, p. 5). This definition has been advanced by the reference to 'deep insider' research which has been defined as research undertaken by a person who has been a member of an organization or community under study for a minimum of five years (Galea, 2009). In

this context the action researcher is conceptualized as the ‘friendly outsider’ (Coghlan, 2003; Coghlan, 2007; Costley, Elliott, and Gibbs, 2010).

Here the action researcher is a ‘complete member’ of the organization and not one who joins the organization temporarily for the purpose of the research. Insider research is characterized by the researcher being immersed experientially in the situation. Brannick and Coghlan (2007) have defined inside researchers as those undertaking research in and on their own organization while a complete member. Insider research typically is disqualified because it is perceived not to conform to standards of intellectual rigor because insider-researchers have a personal stake and substantive emotional investment in the research setting. Furthermore, they are ‘native’ to the setting—being too much involved while not attaining enough distance and objectivity necessary for valid research. However, Brannick and Coghlan (2007) believe that this type of research is “not problematic in itself and is respectable research in whatever paradigm is undertaken (p. 72)”. But the insider-researchers need to be aware of the strengths and limits of their ‘pre-understanding’; the demands both roles—organizational roles and researcher roles—make on them; deal with organizational politics (who are the major players and how they can be engaged in the research process); and be aware of their own personal objectives (e.g., development of their career).

Step 7: Evaluating.

An assessment of the outcomes of the actions will be taken. The collaborative research team evaluates the process and results of the project with the client. This step involves a critical analysis of the outcomes in the light of the theoretical framework in the knowledge stream and the practical impact that was realized.

Step 8: Specifying learning.

At the end of each case, the collaborative research team evaluates the project to pinpoint the lessons identified and transform them into the lessons learned regarding the implementation process. The practice stream ends at step eight. After this final step, the research is continued within the knowledge stream reflecting on the implications of the case for the solution concept or challenge.

This is the next step.

Step 9: Reflecting.

The next step is to reflect on the results of a particular case using within-case analysis (Eisenhardt, 1989; Yin, 1994; Eisenhardt & Graebner, 2007) in terms of the success of the solution concept (and the possibilities of improving it through redesign). Most cases—which often can be considered as an iteration (Mohrman & Lawler, 2011; Snippe, 2012; Hill, Brandeau, Truelove and Lineback, 2014) of the previous cases—led to alterations of, or additions to the ‘original’ solution concept. The goal is to design a ‘working prototype’ (Ries, 2011; Nixon, 2013; Hill, Brandeau, Truelove and Lineback, 2014) or an iterative ‘working model’ of the organization design. The designing act of creating prototypes often generates new knowledge through critical feedback.

Nixon (2013) believes the following:

A prototype is a conceptual or mocked-up version of what could be. It should be imperfect, in rough draft form, and cause people to poke at it and ask questions that the organization would never arrive at by remaining within known confines and constraints. A prototype’s purpose is to reveal mistakes, gaps in thinking, and inefficiencies... One of the most important outcomes of developing prototypes is to critically and constructively embrace failure and mistakes. (p. 25)

The collaborative research/implementation team will test each iteration accordingly.

Step 10: Developing new knowledge.

The final step is to do a cross-case analysis (Eisenhardt, 1989, Yin, 1994; Yin, 2002) over the iterations of the ‘working prototypes’ to identify the indications and contra-indications of the solution concept, as well as the underlying generative mechanisms for change. Ideally, steps 3 to 10 are repeated several times with new cases until the point of theoretical saturation is reached (Eisenhardt, 1989; Yin, 1994; Yin, 2002).

This approach is not without its pitfalls. Andriessen (2007); Pries-Heje and Baskerville (2008); and Mohrman and Mohrman (2011) have identified a number of pitfalls:

- The complexity of organizational forms, in terms of both the number of elements, actors, and relationships and their dynamic nature, poses a challenge for researchers whose methodologies have only slowly evolved to be able to deal with ‘complex systems’. Practitioners look for tools and interventions that make a difference in solving problems and providing solutions—actionable approaches that do not come couched in terms of variables and causal relationships abstracted from practice (Mohrman and Mohrman, 2011);
- The idea of a solution concept may give the impression that there exist general solutions that are valid in every situation. It produces a set of tested options for certain management and organizational problems and challenges. A good design is not necessarily successful in every context;
- During the research process, minor improvements to the ‘tool/approach’ are made. Within each case study, a ‘different’ version of the tool/approach will be applied;
- There is a danger that the objective to create an explicit solution concept may result in the use of an expert-driven approach in situations where a more participative approach would be more effective;
- The involvement of ‘real’ organizations is necessary, requiring considerable investment of time and attention of various people within an organization. This also applies for the researchers. Many design-based research efforts are collaborative and attempt to develop mutually beneficial relationships between researchers and organizations (Mohrman and Lawler, 2011);
- The (heuristic and technological) rules resulting from this research approach may be mistaken for instructions that simply need to be followed and lead directly to the desired outcomes; and
- The focus on the development of a specific solution concept creates the danger of pigeonholing, which is a concept that is illustrated by the adage “give a small child a hammer and soon everything needs

hammering”.

In the next paragraph the focus is on how this design-based collaborative management research approach has been applied within Statistics Netherlands.

6.5 Research findings

6.5.1 Pre – research: The story so far...

In 2007 an international conference entitled “An introduction to spatial organizational theory” was organized by Nyenrode Business University in Breukelen, the Netherlands (Tissen and Lekanne Deprez, 2007). During the conference the participants³⁰ explored a number of new organizational forms and—more specifically—investigated, analyzed, and aimed to translate the concept of ‘spatiality’ into a generally applicable set of organizational design principles that would allow CEOs, managers and, employees to imagine, understand, create, build, and shape global and local organizations to achieve enduring performance and success in a business environment which was rapidly becoming less restricted by physical, virtual, mental space, and/or geographical boundaries.

After this conference, prof. dr. R.J. Tissen and Frank Lekanne Deprez (Nyenrode University) and Statistics Netherlands teamed up to conduct a design-based collaborative management research effort. Frank Halmans—at that time a student of the Master’s program Personal Leadership in Innovation and Change at Zuyd University of Applied Sciences, The Netherlands and working at Statistics Netherlands—joined our research team. Frank Halmans was fascinated by the seemingly built-in potential of the concept of spatial organizing. He ‘tested the waters’ of applying this concept within the organization. He held—and to this day holds—a management position in,

³⁰ The attendance list included Hans Bodt, ORBIS/Maastricht Hospital; prof. dr. Raghu Garud, Pennsylvania State University; dr. Sumita Raghuram, Pennsylvania State University; Frank Lekanne Deprez MSc, Nyenrode Business University; prof. dr. René Tissen, Nyenrode Business University; prof. dr. Bill Starbuck, University of Oregon; Frank Halmans MSc, Statistics Netherlands; and Hans Koolmees, Zuyd University of Applied Sciences.

namely, Statistics Netherlands.

In 2007, the limitations of the overall ‘one-size-fits-all’ philosophy of the current organization of CBS became evident. In 2001 the first adjustments to this structure—originated in 1999 using a ‘blueprint approach’ to organizational design—were made resulting in a series of ‘smaller reorganizations.’ Reorganizations were seen to be important as they could keep the organization fit and on the edge. However, many more adjustments of the initial structure followed. The outcome was satisfactory, but never challenging enough. In addition, the organization increasingly saw itself confronted with changing and complex demands for reliable statistical information; a changing outlook of the workforce in which a substantial decrease in low-skilled work occurred because of automation; and an increasingly aging workforce. During the period 2001–2007, many small adjustments of the initial organizational design followed. An even more substantial call for ‘tweaking’ the organization structure occurred in response to the shift to redesign work to become ‘dominantly knowledge-based’ at a much higher level than before. Early on, the director-general and managers Hank Hermans and Frank Halmans of CBS portrayed their organization as being a knowledge-based organization lacking the capacity to turn existing knowledge into fully operational value propositions.

In this respect Frank Halmans tested the early adoption of the spatial theory of organizations to overcome the perceived gap between what CBS thought it had in terms of knowledge and the actual value derived from it. The initial results of his research efforts were published in a master thesis (Halmans, 2008).

6.5.2 Early research findings

Introduction

The cases in this chapter represent the results of the collaborative effort of Nyenrode Business University and Statistics Netherlands conducting design-based collaborative management research. The cases provide a valuable and usable ‘actionable knowledge base’ for comparing the collaborative practices and research roles employed and of the adequacy of the theories and

methodologies practiced. These insights are used for the formulation of practical recommendations.

At the start of our research effort, our overall research challenge was: How can we design a knowledge-intensive organization³¹ in such a way that this design effort helps to overcome organizational hold backs and pull backs and/or to fulfill organizational opportunities and unlock latent value that ultimately leads to create moments of value?

Before any ‘real’ research project could be started, the director-general wanted to explore whether the current state of the spatial organization theory enabled CBS and Nyenrode to put this theory into ‘real’ practice. Frank Halmans—manager of the contact center of CBS—was invited to conduct a feasibility study to determine the research project’s potential for success. He had to apply and test the theory—and supporting methodology—in a ‘laboratory setting’ within CBS. Frank’s team was invited to design and realize a ‘mental prototype design’ of the ‘new’ organization around Data Collection, without actually implementing the design. Frank’s task was clear, but complex. He was requested to project the spatial design theory on a clearly defined component of the existing organization (i.e., Data Collection), but the different parts of Data Collection were geographically scattered all over Statistics Netherlands (Voorburg and Heerlen). At that time, The data collection function within Statistics Netherlands was distributed among three thematic divisions (economic and business statistics; national accounts; and social-economic and spatial statistics). Each division had its own department dealing with data collection. After the formation of Data Collection, the data collection activities of these divisions were transferred to the new Data Collection organization (PDC).

Within CBS, Frank Halmans was joined by Hank Hermans—manager of Data Collection. His goal was to organize and run the ‘virtual’ organization Data Collection including a diversity of outputs, outcomes, interests, and ‘bosses.’ They (i.e., the CBS team [Frank Halmans and Hank Hermans]) set out to reshape all ‘separate’ data collection activities within CBS to ‘one department of Data Collection’ with one dominant outcome in mind: the new organization should not only focus on people expected performance, but also

³¹ At the start of this research project we used the concept ‘knowledge-intensive organization’ instead of spatial organization.

be ‘inviting’—attracting engaged employees who were highly dedicated to and absorbed in their work (Kahn, 1990; Blomme, Kodden and Beasley-Suffolk, 2015) and willing to learn and improve themselves and their performance levels. The CBS research team was convinced that the spatial design theory incorporated the foundations for designing a modern organization by ‘forming’ different spatial arrangements depending on the specific combinations of knowledge, people ,and technology instead of being ‘structured’ as a pre-defined ‘one-size-fits-all’ organization.

For Statistics Netherlands, collecting reliable data and information to provide statistics is an important component of the overall statistical process. Both primary and secondary data need to be collected. Primary data collection consists of asking companies and citizens directly for information by internet, by phone (called cati), paper forms, and face-to-face interviews (called capi). In secondary data collection, information about companies and citizens is taken from official sources, for example those of the tax authorities, social insurance organizations, or government agencies and offices. As a consequence of the thematic structure of the CBS organization existing in 2007—which involved three divisions ('social-spatial', 'business economic', and 'macro-economic' statistics)—the units supporting data collection activities were distributed. Internal knowledge on data collection was fragmented, synergy effects were difficult to realize, and data collection processes were not uniform and therefore less efficient because of overlaps and inconsistencies.

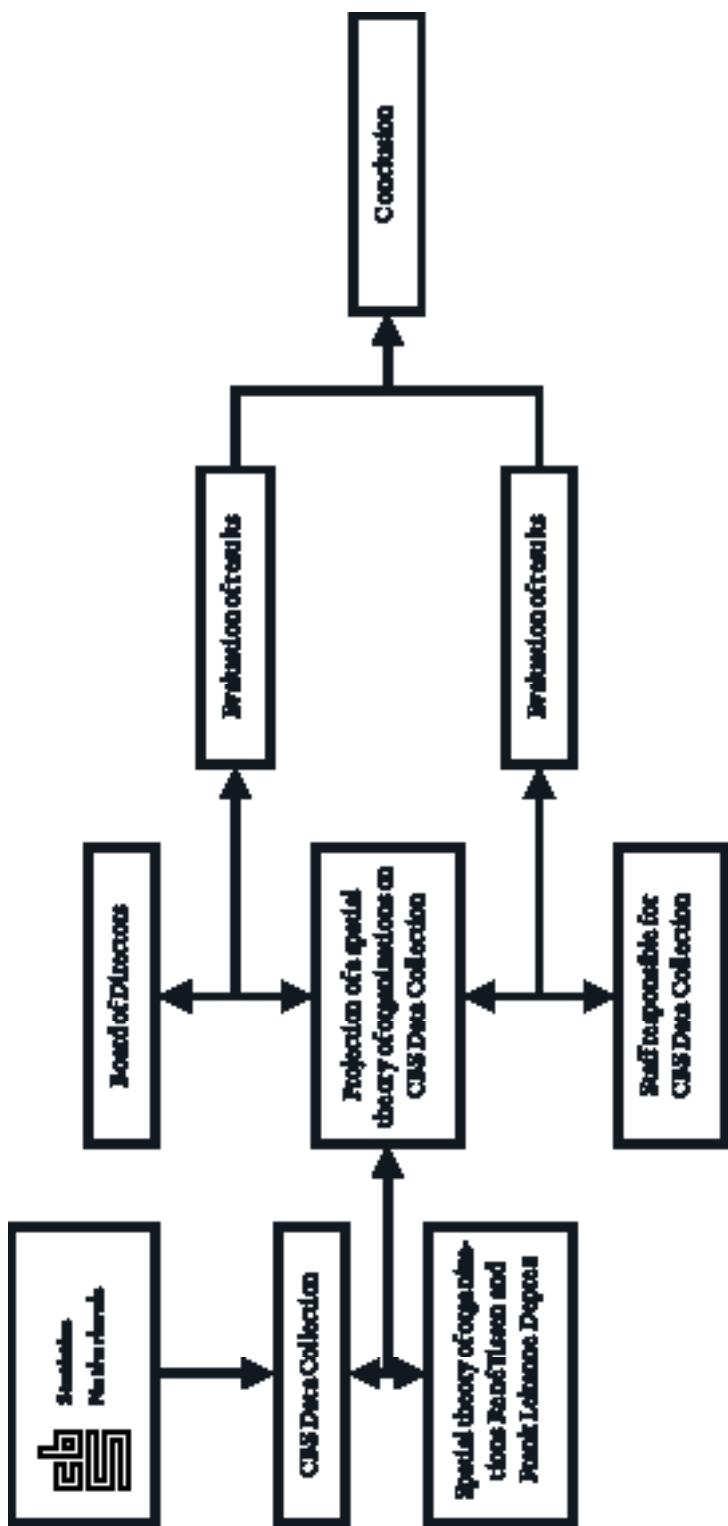


Figure 6.3. Application of the spatial theory of organizations at Statistics Netherlands.

The CBS team started to reexamine the mission of Data Collection as a starting point to formulate the ‘intent’ of high performance of the new unit. Intent is the underlying motivation of people to realize strategic and operational targets and objectives, ‘as their minds experience fit’. Intent is the motivation to act. It is a powerful internal driving force that urges people in the direction towards doing some things and ‘skipping’ other things. They realized that it is this intent that helps people to better focus their minds on what needs to be done. The CBS research team’s intention was to create the best output and outcome for employees and their clients, customers, and other relevant stakeholders: “When the organizational redesign of a company matches its strategic intentions, everyone will be primed to execute and deliver them” (Aronowitz, De Smet and McGinty, 2015, p. 2).

The mission statement of Data Collection (CBS, 2011) was:

At the request of and for the use of its customers, CBS Data Collection collects high quality input for the production of statistics; by collecting reliable data, using professional and flexible staff, in an effective and intelligent way, with a minimum burden for the public, business and government. (p.3)

It became manifest that the strategic intent (i.e., the driving force of an organization [Hamel and Prahalad, 1989; Ice, 2007; Mantere and Sillince, 2007]) could not be formulated unless the core knowledge requirements were identified.

In the meantime, a Statistics Netherlands *management agenda* emerged that included topics such as:

- organizing all collected data as an input for the statistical process; and
- creating higher quality of service with less resources—and less waste—than what happens in the decentralized structure.

During the initial workshop sessions, the Nyenrode research team introduced the DOF principles of spatial organization design (Dimensioning, Orientating and Formatting: see 5.4 of this thesis) aimed at creating spatial arrangements of knowledge, people, and technology that can be considered as ‘distinct’ organizational forms. These organizational forms can be made explicit by

developing specific organizational arrangements, in order to establish a more direct—but naturally fitting—relationship between what people ‘have on their minds’ (i.e., working within outer [physical], connective [virtual], and inner [mental] space) and their actual performance.

Although mission statements³² can be drafted from the top down, they often run the risk of remaining vague and intangible, while the intent with which to direct performance can only be formulated once an organizational context is ‘demarcated’. Then, the intent will serve as a reflection of inner performance potential within CBS and thus of indicating potential improvement opportunities. The CBS team took a closer look at spatial design theory and decided to use DOF principles of organizational design to get started.

Design step 1: Dimensioning

During the dimensioning process a knowledge map is drafted which consists of all those critical knowledge domains and knowledge areas that are relevant to the purpose of Data Collection. A knowledge domain is a collection of knowledge (of crucial, specific, or basic need) that is considered as a key lever for delivering quality work that contributes to the realization of the organizational objectives.

Within the overall process of Data Collection, four key knowledge domains were identified:

- Policy includes the frameworks to steer, determine, direct, and realize the statistical process as a whole. The products of Policy include strategies, standards, rules, relationship management, agreements, capacity management, and budgets;
- Survey Design provides meta-information for the way content is and should be generated, organized, and distributed. Typical survey design products are formats, models, regulations, indicators, and descriptions;
- Direction offers steering information which draws the attention and concentration of people towards effectively implementing the statistical process in real time. Direction products are time schedules, quality norms, result descriptions, progress reports, quality reports,

³² The importance of mission statements and the actual purpose of a mission statement in relation to creating a (shared) vision have extensively been discussed in the academic literature (Bart, 2001; King, Case and Premo, 2012; Mackey and Sisodia, 2013).

- and improvement and adjustment plans; and
- Implementation delivers products to comply with the agreed output. Products of implementation are datasets, statistical products, and descriptive meta-data.

In turn, these knowledge domains can be broken down into knowledge areas. A knowledge area is a collection of knowledge (needed, specific, or crucial) that can be enriched and handled to achieve its intent simply by ‘mixing’ the right kind of people—with the right mindset—with the right kind of technology. Knowledge domains and knowledge areas are integrated within a knowledge map that displays a *visual representation of an organization’s knowledge sources* (APQC, 2015).

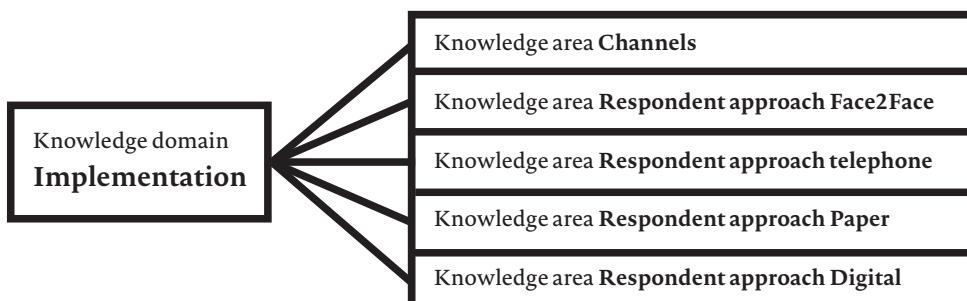
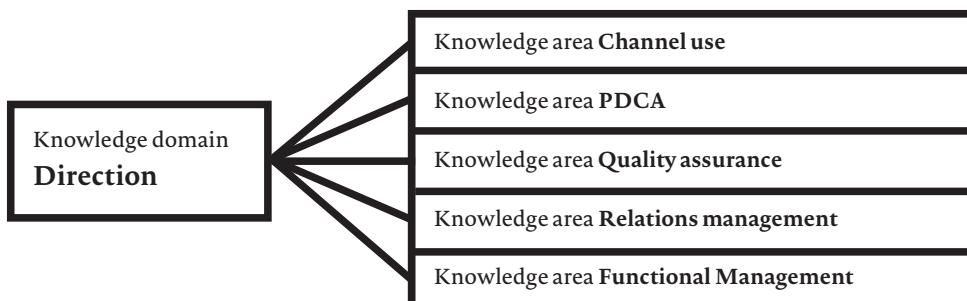
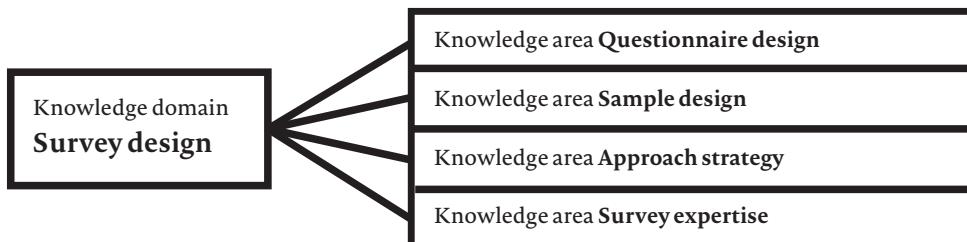
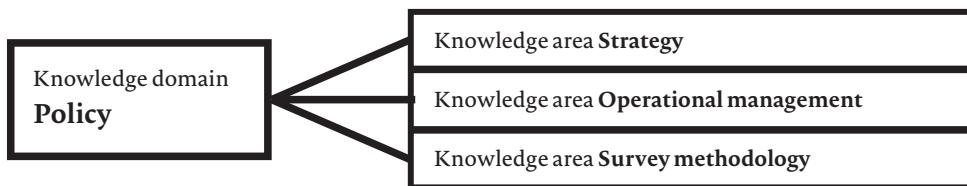


Figure 6.4. Knowledge map of Data Collection.

A clear intent provides management and employees with a ‘collective direction’—shared broadly within the organization—on how the organization wants to achieve goals and/or plan activities. Once it is clear which knowledge areas are important for realizing goals and/or plan actions, specific intentions can be linked to the way in which these areas should be ‘enriched’ to add value. This value-creating process is driven by formulating the intent which articulates how the organizations’ resources and deep understanding will be leveraged and its impact on the nature of the work. Whereas strategic and operational objectives are content-based, ‘intent’ is used to direct and guide people’s performance towards what they (collectively) stand for and are best at in their work. The latter can be visualized through defining clear challenges and mutually agreed upon goals for the managers and employees to direct their ‘minds’ to in order to realize the intent. As organizational members make sense of what is going on both within the organization and in the external environment, they are able to create value and to capture some of the value they collectively generate. By collective sensemaking (Dixon, 2014), the members of the CBS organization prevent a loss of shared sense of direction from happening. At that time, the tools to capture that value were not in place within CBS. Moreover, using ‘Industrial Age measures’—such as efficiency and cost reduction—often misses or disregards the value generated by the collective intelligence or collective genius (Hill, Brandeau, Truelove & Lineback, 2014) within a unit (Malone, Laubacher, Dellarocas, 2010). Malone (Kleiner, 2014)—head of MIT’s center for collective intelligence—defines collective intelligence as groups of individuals acting together in ways that seem intelligent to an observer: “In other words, intelligence is not just something that happens inside individual brains. It also arises in groups of individuals” (Kleiner, 2014, p. 2).

The tables below present the knowledge areas of each knowledge domain, with the corresponding management intentions, the nature of the required knowledge, and the challenges for managers and professionals. In the management challenge, the various issues—that emerged on the management agenda—were integrated. For instance, the efficiency aim should be—partly—reached by standardization of processes.

Table 6.1. Knowledge domain: policy

Knowledge domain: Policy			
Knowledge area	Management intention	Nature of knowledge	Management challenge
Strategy	Determination of scope of the collection, steering and realization of the statistical process	Instructive	Minimum survey burden for the public and businesses within the scope of the purpose of the survey
Operational management	Realization of goals within the determined scope of capacity and budgets	Instructive	Realization of efficiency goals
Survey methodology	Decision-making on data collection method	Instructive	Collecting reliable data with minimum survey burden for the public, businesses, and government

See Appendix B for the Tables 6.2–6.4 of the knowledge domains: Survey design; Direction, and Implementation

The tables provide awareness to members of CBS to prevent distractions to occur within their work spaces by focusing the attention and concentration on what really matters within a knowledge domain. Furthermore, it will keep people away from all those distractions which are less relevant or even irrelevant as they are not included in the key organization processes as specified within the management intention. Thus, the tables also act to provide ‘inner space’ to free the minds of people to actually do what really matters in a smarter way than before. A set of activities will likely attract attention if it is relevant and the output and outcome make sense. Since attention is a finite source within the emerging world of mentalization of work, distractions—such as information overload, sharobesitas (Lekanne Deprez, 2014), and misconception of multitasking—present a real danger to

our ability to focus, concentrate, and to retain what has been accomplished instead of “doing more with mattering more” (Zack, 2015, p. 102).

Design step 2: Orientating

The collaborative research team quickly saw the potential impact of these knowledge domains on the actual performance of people. They believed that modern work was not just about ‘getting things done,’ but doing it in an attentive, concentrated, and valuable manner. Modern work is all about mental focus and attracting and catching people’s minds (Goleman, 2013; Valliere and Gegenhuber, 2013; Levitin, 2014; Horn, 2015; Zack, 2015). An undisciplined mind is a noisy, confusing, and busy mind. Humans try to understand the world by constructing models in their minds. These models are simpler than the reality they represent and are therefore incomplete (Johnson-Laird, 1983; Chermack, 2003). Wiig (2004) shows that many of the mental models are also reference models. The mental models encode situations that we know from personal experiences, that we have learned from other sources, or that we have generated in our own minds from thought experiments and speculation, goal-oriented reasoning, or ‘just thinking’ about something. Hence, mental models can reflect reality or imagined situations. Beyond mental models, people possess other kind of mental constructs such as facts; perspectives; concepts; truths and beliefs; judgements and expectations; methodologies, and know-how. Without applying mental discipline to direct our attention (Biro, 2007, Goleman, 2013; Valliere and Gegenhuber, 2013), our mind is ‘overloaded’ (Levitin, 2014; Zack, 2015) with distracting thoughts, making it difficult, if not impossible, to notice what is actually happening therefore creating a workforce of ‘overwhelmed’, hyper-connected employees appealing for a ‘digital detox’ (Lekanne Deprez, 2014).

The collaborative research team (Nyenrode and CBS) jointly continued with step 2: the process of orientating improves the performance of knowledge workers by providing both focus and inner space through spatial arrangements. The latter not just allows for a more free flow of knowledge, but more importantly for the free flow of minds (Hooker and Csikszentmihalyi, 2003; Gardner, 2004). The whole issue was to bring people into an organizational context which would put people on the right mental track, without them being distracted from it. To gain control over work life, ask who controls the context: “If you can’t tell someone how to think then you have to learn to manage the

environment where they think. And make it a place where they want to come every day" (Schmidt and Rosenberg, 2014, p. 20).

This way of organizing work was in contrast with practice within CBS. Statistics Netherlands basically allows people to have an open mind for everything and to react to all that comes across their path. However, for some people deliberate awareness and attention (i.e., 'being here now' and holding an open frame of mind by noticing moment-to-moment change) provides an effective context that enables people to be *mindful* on the job without being overwhelmed (Langer, 2015).

The collaborative research team seized the opportunity arising from spatial design theory to focus the minds of people, by separating their attention and concentration concerning three types of knowledge flows:

- Routine knowledge (production, implementation, channels, and so on);
- Instructive knowledge³³ (increasing productivity, optimization of data collection processes, and so on); and
- Innovative knowledge (redesigning approach methods, innovation of survey design, and so on).

Routine Knowledge

Working in the contact center for outbound data of Statistics Netherlands involves conducting telephone surveys. Because of the underlying statistical methodology, it is important that the interviewers ask questions verbatim. Conducting these interviews does not create a 'flow experience' characterized by being completely engaged and are highly dedicated to and absorbed in their work. At that time, the 'inner space' for the workforce was limited. Scripts were used to focus and guide their attention and concentration. At the internal helpdesk of the inbound center, successful performance started with the ability of workers to convert questions of respondents into standard questions which could be answered uniformly and were in accordance with the agreed policy principles. Here, too, the inner space for personal initiative was limited. Workers used real time decision documents to do their work. Similar arguments could be given for the workers that handle and distribute input data and for the employees that handle face-to-face interviewers. The

³³ Within this thesis 'instructive knowledge' is also known as 'learning knowledge'

collaborative research team decided to clarify the intention of producing routine knowledge as efficiently as possible, by using the example of a road map. The route to the destination is marked in bold red, while all sidetracks (or even all other information on the map) were left out. Because this other information was no longer provided, the design made sure that the attention and concentration of workers was less distracted. The table below describes how the processes of focusing the attention and concentration can be applied to the routine knowledge requirements of Data Collection.

Table 6.5. Focusing attention and concentration for routine knowledge.

Focusing attention and concentration for routine knowledge		
Mental Organization	Aimed at	Organization design CBS Data Collection
Attention and concentration	Knowledge productivity	Numerous rules Numerous procedures Harmonization to reach a high level of automation Autonomous groups Develop a killer capability
Steering	Efficiency	Working terms based on “money-trade” Type of contract Short performance assessment cycles and reviews Performance incentives: Immediate rewards

Learning Knowledge

Of course, some of the knowledge involved in routine data collection has a degree of learning connected to it. This particular learning process involves all questions and circumstances that occur in the day-to-day practice of data collection, which can be improved through single loop learning (Argyres and Schön, 1978)—both in terms of quality as well as efficiency. The result of these personal learning activities should be shared and distributed in the teams - or even above team level - so that explicit actionable information and knowledge

could be fed back, fed up and fed forward³⁴ (Hattie and Timperley, 2007) into the organization (i.e., into other spatial arrangements). This warranted a separate arrangement, solely dedicated to learning and supported through a more focused use of standardized technology platforms such as the intranet, SharePoint, and virtual thematic communities.

Table 6.6. Focusing attention and concentration for learning knowledge.

Focusing attention and concentration for learning knowledge		
Mental organization	Aimed at	Organization design Data Collection
Attention and concentration	Effective collaboration	<p>Workers are responsible for output (via work agreements)</p> <p>Workers are responsible for collective final result</p> <p>Use of SharePoint (i.e. a collaboration and document management platform)</p>
Steering	Improvement and efficiency	<p>Steering towards ‘mature’ tasks</p> <p>Alerting to role and purpose of own task in the overall context</p> <p>Output that complies with customer expectations</p> <p>Assessing—and be open to—proposals for improvement</p> <p>Providing room for discussion to adjust procedures (lower accountability)</p> <p>Monitoring and adjusting exchange/alternation/rotation of tasks (variation and ‘cross pollination’)</p>

Innovative knowledge

To stimulate ongoing innovation in ‘survey expertise’—which evolved work activities beyond ‘regular learning’—the collaborative research team

³⁴ Effective feedback must answer three major questions: “Where Am I going? What are the goals (feed up); How am I going? What progress is being made toward the goal? (feed back); Where to next? What activities need to be undertaken to make better progress? (feed forward)” (Hattie & Timperley, 2007, p. 86).

discussed the need to create an arrangement, which would attract the interest of those workers who were ‘in’ for something new and/or different. Employees engaged in innovation processes should be supported with a shared spatial context that gives them a great deal of inner, connective, and outer space to increase their personal development and team/unit performance. Such a shared innovation space would both need to allow for a great deal of mental freedom and at the same time emphasize the ultimate purpose of the arrangement—its intent—to come up with innovations benefiting the process of Data Collection as a whole: “When people are free to do as they please, they usually imitate each other” (Hoffer, 2008, p. 25).

Within this arrangement, the progress from design thinking to design doing (Lekanne Deprez & Tissen, 2009b) is crucial. One needs a culture of permitting new services to be internally developed and then beta-tested with ‘willing’ internal and external stakeholders. Although design thinking is a process for creating new choices and taps into intuition as well as rational thought (Brown, 2009; Kimbell, 2011; Kimbell, 2012; Nijs, 2014; Hill, Brandeau, Truelove and Lineback, 2014; Kolko, 2015), ‘design doing’ enables people to follow their passions and put much mental and physical effort into it—and often in their ‘free time’. The arrangement should ‘pamper’ these individuals. Flexible working hours should be allowed for working home, virtual and physical access to network meetings , and so on. The underlying notion to stimulate this type of innovative work behavior was to guide people towards the ‘right’ direction and to put their minds to tackle work with less distraction while at the same time supporting them to fill in the voids. Members of the CBS organization want to be able to successfully use data in more innovative applications across Statistics Netherlands and develop a ‘culture of contribution’ (Hecksher, 2007) and ‘a culture of mutual collaborative help’ (Amabile, Fisher and Pillemer, 2014) where they will experience that they are special and create and capture value.

Table 6.7. Focusing attention and concentration for innovative knowledge

Focusing attention and concentration for innovative knowledge		
Mental organization	Aimed at	Organization design CBS Data collection
Attention and concentration	Focusing	Making available 'sources' of knowledge
Steering	Innovation	Confrontation with challenges for which there are no solutions within the existing structure Prevention of unnecessary distraction by other matters Stimulation, challenge Pressure cooker sessions Outside the box-thinking

Design step 3: Formatting

Bringing different people—with a diversity of mindsets (Surowiecky, 2004; Page, 2008; Dweck, 2014; Keating & Heslin, 2015)—into different organizational arrangements raises the issue: “What could further support the CBS workforce from being distracted in what matters most for achieving the expected performance?”

The collaborative research team believed that a different perspective on information and communication technology (ICT) for building—and establishing—a more trustworthy and valuable relationship between people and performance was evident. Statistics Netherlands was—and still is—a knowledge-based, people-centric, ICT driven organization. However, most of its captured value is situated in and depending on an effective, efficient, and agile use of the CBS ICT platform. In practice, the required functionalities of the ICT platform were not always clear cut. The potential impact of ICT on supporting the value-creating activities within Statistics Netherlands is strongly connected to a successful formatting phase of the spatial organization design approach. Formatting includes providing ongoing degrees of standardization of all knowledge-based work (routine, learning, and innovation), by providing compelling formats, procedures, templates, scripts, algorithms, rules, and regulations to managers and workers. The principal function of the formatting step is focusing employees on their value-creating

activities.

In practice, the ‘required’ type of knowledge makes it easier to focus attention and concentration, particularly when digital collaborative ICT tools are available. They allow modern organizations to be selectively dynamic (Lekanne Deprez and Tissen, 2009) inviting managers and workers to realize their intention through their work. At CBS, data collection systems are linked via an Enterprise Service Bus (ESB) to guide and facilitate knowledge sharing. Data and information flow freely between individuals, groups, and teams within and outside the organization. Customer relations management (CRM) fulfills an important role in the design, planning, direction and distribution, implementation, and exploration of ‘formatted’ knowledge. A CRM package is employed (i.e., it includes several formats) to make real time information easily retrievable and of high practical value, accessible for managers and employees.

Earlier the Blaise system was referred to as a software system developed for supporting computer-assisted surveying. For workers within the contact center Blaise provides ‘scripts’ which guide interviewers through the entire interview process. Their attention and concentration in doing so is directed by an integrated ICT solution, called the Cati Management system, a component of Blaise. The use of Cati has an important effect on the quality of data and thus on the quality of the concluding statistics. The table below provides some additional examples of how ICT is used to improve the overall performance of Data Collection.

Table 6.8. The impact of the ICT platform on the performance of Data Collection.

The impact of the information and communication technology (ICT) platform on the performance of Data Collection			
Type of knowledge-based work	Aimed at	ICT product	Technological design
Telephone interviews with persons	Knowledge productivity	Blaise	Compulsory use of IT that supports workers so that they can work better.
Directing survey process	Improvement and efficiency	SharePoint	Compulsory use of network IT to steer knowledge sharing based on technological design.
All	Knowledge sharing	CRM	Supporting network IT: knowledge sharing for real time information should contribute to effective thus better working.
Innovation of survey methods	Creativity	Platforms	Possibility to work when and where the worker wants (on-site) creates space for people who are expected to be creative—creativity is not a nine to five job.

One of the other advantages of the spatial design theory is that it allows ICT to be aligned with the delivery of the products, services, and processes. Increasingly, management must be capable to identify, understand, implement, and value technology throughout Statistics Netherlands. Different organizational arrangements require specific technology to be able to increase their performance. The current information technology infrastructure of the present organization is still restrictive to exploit knowledge that has to be shared horizontally. In a horizontal network, employees share a social and organizational context, establishing formal and informal personal relationships that support the exchange and exploration of knowledge between units to create value—and capture some of the produced value. Much of the most valuable information and knowledge within Statistics Netherlands is difficult to access because it is organization specific (i.e., often situated within individual employees and/or specific units). The challenge is

to break down the silo mentality—a compartmentalized view of how the organization operates where people are reluctant to share knowledge, to connect to other units, or to collaborate for mutual benefits (Stanford, 2007) and remove barriers.

6.5.3 Initial steps towards the collaborative research Program Data Collection
Within Data Collection, work activities are mainly based on routine knowledge. The intention is to achieve maximum levels of efficiency as reflected in gaining optimal knowledge productivity. The collaborative research team decided that a ‘modular arrangement’ (see paragraph 4.4) should be the best form to encapsulate the attention and concentration of managers and professionals towards its intent. Such a modular arrangement supports people more naturally to realize the intent of their work than regular routine-based structures—such as the classic hierarchical pyramid—allow for. On the other hand, the arrangement that is to provide learning support can best be organized in a circular way (see paragraph 4.4). Such an arrangement encourages the exchange and flow of data, information, and knowledge. Finally, because of the high degree of inner space required and the nature of the knowledge used in the area of survey expertise, a cellular arrangement (see paragraph 4.4) can potentially enhance the innovative capability of Data Collection.

These arrangements imply that in modern organizations work is—and should—no longer be arranged by function, but by knowledge area. Within Data Collection, the existing task groups are rearranged into ‘knowledge-based groups.’ Whereas the common factor that binds people to performance in task groups is centered around results, the common factor in knowledge-based groups is based on bringing together people with a similar mindset in handling comparable types of knowledge, using similar types of technology. Collaboration involves two or more people working together so they are able to accomplish collectively what they could not accomplish separately.

While applying the DOF approach to Data Collection, the collaborative research team wanted to know more about the role and position of management in the spatial design theory. For example, would there be a—new—role for managers, similar to the one most managers were used to, or would it be an entirely different one? And what would happen to the traditional

hierarchy which was so much a stabilizing factor in the current organization? Will a manager become a team leader that supports the creative collaboration of diverse people from different units? The collaborative research team agreed that hierarchy was an important vehicle in all decision-making processes. Furthermore, as long as there was no workable alternative to structure the power to decide, this would probably not be challenged. Does management create ‘spaces’ where employees are willing to contribute their best ideas, concepts, and scripts because they experience that they are not only part of a group, team, or unit but also valued by and valuable to the group, team, or unit? To determine whether a spatial design of Data Collection can reshape the existing structure, a number of hierarchical issues needed to be addressed:

- The design supports the horizontal flow of knowledge—involving knowledge feedback, feed up, and feed forward—which creates value to the whole process of Data Collection;
- In an hierarchical organization, some knowledge areas are clustered, while others most definitely are not. For example, in Data Collection, integrating ‘development,’ ‘design,’ and ‘central implementation’ under the responsibility of one manager implies that one and the same person would be responsible for both the development of new methods as well as their acceptance; and
- In the current organization the management role often involves a solid knowledge base of the specific knowledge areas involved. As technologies and markets are changing rapidly, managers have to adapt—or even reinvent—theirselfs. Especially ‘deep knowledge’ (O’Dell and Trees, 2014) (i.e., organization-specific knowledge of products, services, and specialized processes) that cannot be insourced from outside has become an important valuable knowledge source.

These issues above refer to a different perspective on hierarchy and on the position, strengths, and weaknesses of managers and employees. One drawback of the existing functional groups clearly involves the lack of horizontal flow of data, information, and knowledge. Data, information, and knowledge flow vertically, through managers issuing instructions and exerting controls. In contrast, in knowledge-enabled groups, people foster all kinds of data and information flows, provided that they share a similar ‘knowledge background’—by collective sensemaking (Dixon, 2014)—and retain a knowledge sharing attitude. Consequently knowledge groups are less

dependent on hierarchy (i.e., on managers making decisions ‘for them’). Does reshaping Data Collection also involve the need to let go of managers and change the management culture? At that time, a typical CBS manager was not only responsible for the employees that worked in his/her unit, but also supposed to understand the topics that his/her unit dealt with (i.e., increasing its span of content by understanding various topics). The gap (perceived and actual) between managers and employees becomes more narrow in favor of a higher level of autonomy for both. This implies that there are more degrees of freedom for managers and workers to think and do what is necessary in view of the overall intent of a particular arrangement.

In the future, managers and professionals ‘work together’—co-create, co-design, and collaborate—creating collective ways of working. In addition, spatial design theory allows for the better use of technology in guiding and facilitating processes of horizontal knowledge exchange, thus making the use of technology an indispensable one to improve the performance of individuals as well as of units.. At CBS, this way of technology integration already takes place via the DTAP method (development–test–acceptance–production).

Modern managers hold a value-creating instrument of power which employees often do not possess: the identification, realization, and control of the intent—from which spatial arrangements derive their existence and purpose. This type of ‘support’ allows managers at the same time to design, develop, and run their organizations to focus on the whole as a portfolio of arrangements with which they can professionally and mentally ‘play around’ with. In practice, this means that spatial arrangements require a form of knowledge governance that stimulates members of a specific arrangement wanting to share their data, information, and knowledge and exploring and liberating their ideas, recipes, concepts, frames, and so on for collective exploitation. The question of whether a spatial design of Data Collection will actually work in practice is therefore highly dependent on the way the remainder of the existing organizational structure is ‘reshaped’ and can be theoretically linked to a traditional organizational chart.

6.5.4 Feasibility study for starting the Pilot: Data Collection 1 (PDC1)

Further expanding the Program Data Collection, the director-general and the CBS research team decided that before elements of the spatial design theory could be tested in real life (i.e., within Statistics Netherlands), a feasibility study should be conducted. Within the CBS research team, Frank Halmans—as an insider-researcher—took the lead and both started the feasibility study—in corporation with the Nyenrode team—and gained support from the Works Council within Statistics Netherlands. As an insider-researcher, Frank Halmans was a ‘complete member’ of the organization. Frank Halmans was undertaking an ‘explicit research role in addition to the normal functional role’ (Coghlan and Holian, 2007, p. 5).

Could the claim of spatial design theory be substantiated that the new ways of organizing would not need a ‘traditional linear, rational reorganization’? Will members of Statistic Netherlands embrace the spatial design activities that provide the conditions—and language—to a genuinely self-initiated and self-governing need for personal and organizational development? Any planned change program brings about the formal ‘turmoil’ and bureaucratic procedures of a formal reorganization process. These characteristics of a ‘formal and rule based’ organization were embedded in the governance structure of Statistics Netherlands.

The collaborative research team was aware that—in spite of all the public spin around change—many people have in the course of their working life developed a strong dislike (resistance and change fatigue) to reorganizations—and for all the right reasons. Most of the change programs are ‘catch up programs.’ For example, 70% of change programs fail to achieve their goals, largely due to employee resistance and lack of management support. It is also known that when people are allowed to truly invest in change, it is 30% more likely to stick (Ewenstein, Smith and Sologar, 2015). When change programs are imposed from ‘above’ (i.e., top management), the solution space is limited by the mindset and ‘tone’ at the top. So why upset people?

Challenging this ‘command and control mentality’ of managing within Statistics Netherlands immediately sounded like a 1960s variant of the call for more democracy supporting a free-for-all cultural approach to people and work. Albert Einstein once remarked that “we can’t solve problems by using

the same kind of thinking we used when we created them. We need a new mindset to solve them.” Does such a shift require an entirely new type—or even generation—of managers? At that time (2007–2008) neither the CBS team or the Nyenrode team thought so. If new organizational thinking was based upon people’s regular ways of working with knowledge, this should also apply to the current base of managers. It was all a matter for managers to realize that their added value did not only lie in better management, but also in organizing the context for people in a different way. Once management understood this, it would become far more easy to support their organizational units and be able to introduce different spatial arrangements (modular, cellular, circular) for different people. It’s like one of the managers uttered when applying the spatial theory of organizations spatial design theory to Data Collection

According to a business unit manager at Data Collection: “As a result of the spatial organization we have apparently achieved a better balance between the conditions for performance, and the responsibility for performance management (Scholtes, 2008).”

Is this a piece of cake? Not so in actual practice. The urge of many managers to redesign their organizations by simply redrawing the organization chart was a strong one. This practice also occurred in CBS as Halmans (2008) —the manager of the internal contact center of Data Collection—stated the following:

Although we realized that according to the concept we were supposed to address conditions for performing well first of all, again and again we ended up discussing the translation of each condition into functions and formal organization structure, instead of focusing on describing the conditions for good performance

These managers are well aware that modern workers need some degree of stability and security to be able to do their work well, normally provided by the old ‘blueprint approach’.

Job descriptions—essential parts of any formal organizational structure—may not be the perfect tool, but they do provide practical boundaries for people. Researching boundaries within and between organizations involves—

just like space—something that often cannot be seen (Tissen and Lekanne Deprez, 2008). But drawing boundaries is a political act. To include and thus exclude; to join and still separate; and to be inside versus outside all refer to a mechanism that governs what goes on ‘inside’ the boundaries: “Reasoning on the basis of ‘enhanced performance’ gives progressive insight a chance, because one places no restrictions on oneself beforehand. By thinking along the lines of enhancing performance, new insights are gained” (Van der Veen, 2007a).

The director-general of Statistics Netherlands (Van der Veen, 2007b) has stated that within the context of the added value of spatial organization design

Redesigning an organization does not originate from a new structure, but from improving its performance. The mindset embedded within the spatial design theory presents a conceptual and practical way of thinking that matches the development approach to performance we have adopted. For management, it offers a framework for the design and redesign of their units. For our people, it provides a more natural setting or framework in which performance improvement is not only more readily accepted as the way to go, but perhaps also easier to understand and to realize. Because of their design, spatial arrangements inform workers almost as a matter of course as to what is expected of them. In the case of ‘intangible’ knowledge processes, this can certainly have an added value for knowledge-intensive organizations like Statistics Netherlands.

The early findings of this research project focused on the unit Data Collection including the results of the feasibility study regarding the usability of the concept ‘spatial organizations’ within Statistics Netherlands.

The key lessons learned were:

- 1 Organizational design approach: Arrange the organizational form last, not first. Avoid being caught up in blaming or justifying the organizational design in place. The key message must be: whether or not the present organizational structure served its purpose and whether or not it is time for a new perspective;

- 2 **Collaborative research.** It was decided to start a virtual, collaborative pilot platform ('an experiment') that gave space to the employees and management to make it possible to form a collaborative research group. Imagining and delivering an effective and adaptive spatial organization design requires a collaborative research effort that brings together practitioners and researchers. Both need to be able to reframe organizational challenges, opportunities, and problems through imagining alternative design configurations that make a difference. During the development and design phase, appreciate and embrace the *imperfection* (George and Bock, 2012) and *incompleteness* (Garud, Jain and Tuertscher, 2008) inherent in design thinking—and doing—experiments. The researcher often acts as a 'bricoleur'—a flexible and responsive agent willing to deploy whatever research strategies, methods, or empirical materials are at hand, to get the job done. Research elements "are selected based on contextual factors, such as local constraints on knowledge production, practical value, and their potential for generating novel insights" (Boxenbaum and Rouleau, 2011, p. 281); and
- 3 **Develop a change platform.** Real change never ends; change is happening all the time: anywhere, anyway, and anyhow. In order to adapt to their internal requirements and the demands of a changing external environment, Statistics Netherlands wanted to develop a capability to see and exploit opportunities to deliver new services and address opportunities and threats swiftly. The spatial theory of organizations and the early findings of the Data Collection experiment provided a promising 'change platform' (Lekanne Deprez and Tissen, 2009; Hamel and Zanini, 2014) to refer change as 'normal' and not as a 'not invented here' catch-up program that is often too little, too late.

A rude awakening: Change is about people and they will astonish you.
Fishman (1997) believes that:

Sometimes change is presented as a remarkably bloodless activity: establish a vision, craft a strategy, design a program and paint by the numbers... We interrupt this program to deliver a dose of reality: it doesn't work that way. In the real world of change, leaders desert you, your staunchest allies cut and run, opposition comes from the places

you least expect, and your fiercest opponent can turn out to be your most vital supporter. In other words, when emotions run high and the stakes are even higher, people act like people. (p. 66, italics added)

- 4 Formulating strategic intent. The CBS team started their activities by first re-examining the mission of Data Collection as a starting point to formulating the ‘intent’ of high performance organization. The strategic intent—or organization’s driving force—informs and shapes how an organization defines itself and determines its distinctiveness. It quickly became clear that the current mission statement needed an update. Furthermore, it was evident that the strategic intent could not be formulated unless it first became clear what the core knowledge requirements of the Data Collection unit were.
- 5 From structured to arranged; from function-based to knowledge-enabled. Reshaping Data Collection puts the spatial theory of organizations into practice. The notion that the concept of space can be of use as a fundamental building block of organizational design is currently leading to new insights into the way organizations can perform better. Most present organizational forms are designed to fully occupy the available inner (mental) space of managers and workers, instead of engaging its selective use. Within the area of managing, organizing, and designing spatial organizations, the objective became to reframe an organization less as ‘structured,’ but more as ‘arranged.’ Organizational spaces can be identified and used to connect knowledge to thinking, in such a way that workers can add better value ‘simply’ because the nature of knowledge fits—maybe even ‘naturally’ fits—their mental way of doing. According to Lekanne Deprez and Tissen (2011) such spaces can, however, be organized in a distinctly guided fashion, by means of ‘spatial arrangements’ (Lekanne Deprez and Tissen, 2011 in which:

An intelligent combination of like-minded people, shared knowledge and dedicated technology, brought to value by means of distinctly separate but connected organizational forms, which direct, guide, and support the focus, attention, and concentration of organizational members towards the optimal use of their minds with regard to

performance improvement creating standard, structured, and shared moments of value. (p. 4, adapted)

- 6 According to Schmidt and Rosenberg (2014), it is impossible to tell a person how to think. Instead one can organize the organizational space (outer, connective, and inner) where people think and make it a workspace where they want to work and live every day.

On their journey towards a more agile knowledge-intensive organization (i.e., a spatial organization), Statistics Netherlands will be confronted with design flaws that will prove to be not only costly but could also endanger the future orientation of the whole organization. Introducing and incorporating new productive work experiences require employees, management, a works council, and other relevant stakeholders to act in specific ways when only partial or piecemeal information, facts, knowledge, strategies, and visions are available. This uncertainty often fosters organizational forms that are pervaded with unpredictable and disagreeing issues creating a feeling of emergent messiness (i.e., delivering a design that is unpredictable, spontaneous, and ever shifting). That is why imagining and delivering an effective and adaptive spatial organization design requires a collaborative research effort that brings together practitioners and researchers. Both practitioners and researchers need to be able to reframe organizational challenges, opportunities, and problems through imagining alternative design configurations that make a difference.

2007 - 2008

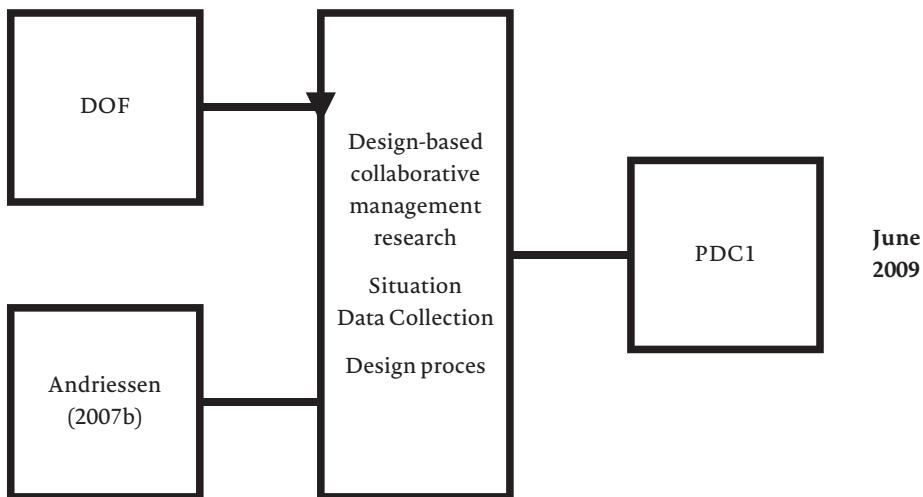


Figure 6.5. Early research and the start of pilot Data Collection 1.

The figure above summarizes the flow of this research project so far. During the early research phase of the ‘experiment’ within Statistics Netherlands, the focus was on theoretically (‘mentally’) testing and improving the DOF design method and introducing the design-based collaborative management research approach based on the Andriessen (2007b) within Data Collection. In early 2009, the first Pilot Data Collection (PDC1) was initiated. Hank Hermans became sector manager of Data Collection and owner of realizing this pilot.

6.5.5 Pilot Data Collection 1 (PDC1)

On February 15, 2009, the Pilot Data Collection 1 (PDC1) started. The director-general of CBS seized the opportunity to move his organization forward without having to file a formal request for a reorganization.

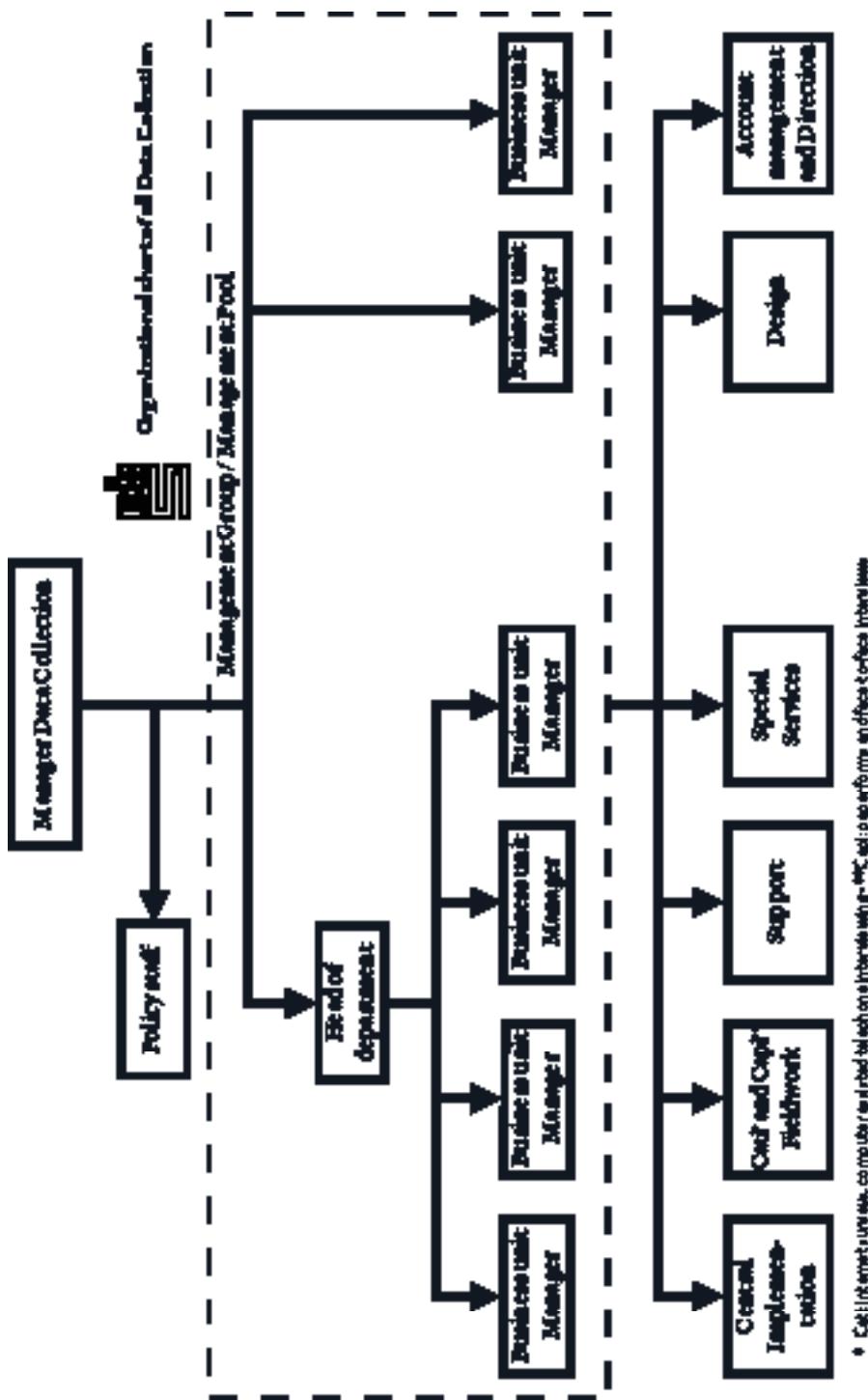
At an early stage (see above: paragraph 6.4), the collaborative research team had shared the ideas of spatial organization theory and the concepts of designing spatial organizations with the director – general, managers, employees, and the works council.

The most important design principles within this spatial organization design approach were:

- Determine what is needed to develop good performing units/organizations; and
- Create, through a mix of knowledge, people and technology (Lekanne Deprez, 2003, p. 20), a spatial arrangement that fits its purpose instead of holding on to ‘one-size-fits-all approach.’

After embedding the results of the feasibility study and finishing the Program Data Collection, the Pilot Data Collection 1 was able to start in early 2009. During the Program Data Collection, all Data Collection activities and processes situated in Heerlen and Leidschenveen were integrated into one Data Collection organizational form (see figure 6.6).

Although all managers were part of a temporary ‘managers pool’/managers group that focused on fostering a shared responsibility for all sectors, the formal integration process was represented as a ‘traditional’ organizational chart with ‘familiar lines and boxes’ (see figure below). Figure 6.6 shows that six business units were part of the management pool reporting directly to Manager Data Collection.



* Organizational chart of all Data Collection activities and processes within Statistics Netherlands (manager Data Collection, head of the department, a management group of six business unit managers (forerunners), and policy staff).

The overall research question to be addressed by the collaborative research team was: “How can we design a knowledge-intensive organization³⁵ in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational opportunities and unlock latent value that ultimately leads to create moments of value?”

The emerging field of service design (Zomerdijk & Voss, 2010; Kimbell, 2011; Nijs, 2014; Gruber, de Leon, George & Thompson, 2015) provided several design options to improve the quality, friendliness, and speed of the service encounters with internal and external clients and relevant constituencies. Within the Program Data Collection, the activities and processes were organized into Knowledge Service Combinations to channel existing and new knowledge into collective products, processes, and services. The dominant design principle was: ‘organize for knowledge.’

For Data Collection the following Knowledge Service Combinations (KSCs) were defined (see figure 6.7).

³⁵ At the start of this research project, we used the concept ‘knowledge-intensive organization’ instead of spatial organization.

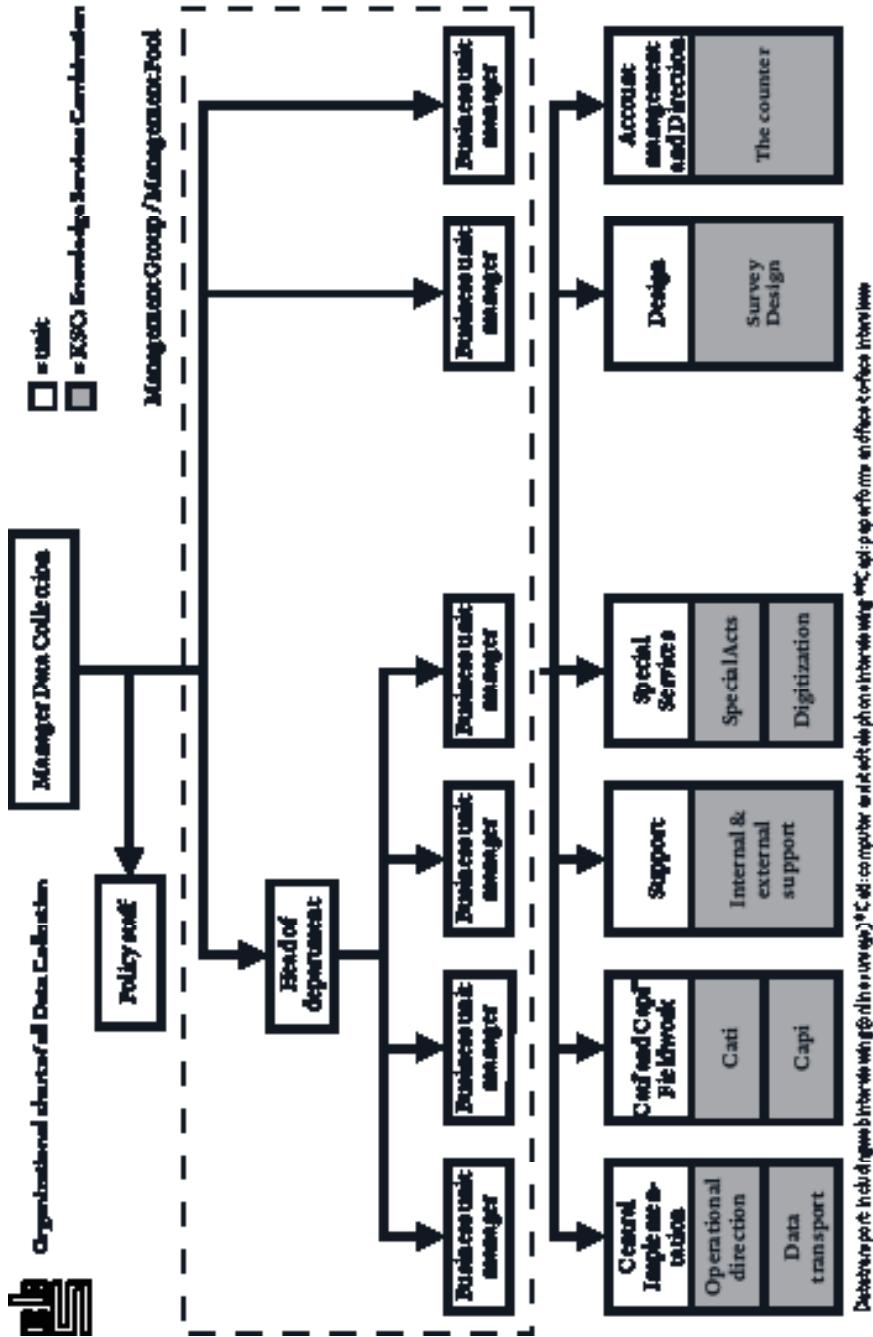


Figure 6.7. Organizational chart of all Data Collection activities and processes within Statistics Netherlands (manager Data Collection, head of the department, six business unit managers [forerunners], policy staff and 10 Knowledge Services Combinations).

As a pilot project, PDC1 was a small scale ‘experiment’ conducted in order to evaluate feasibility, time, and cost in an attempt to predict the implications of such a spatial arrangement within Statistics Netherlands. During the course of the PDC1 and PDC2 projects, all employees and managers of Data Collection were formally located in their ‘original units’ (i.e., they kept their formal position before the integration occurred) and became working in a ‘shadow organization’ (see figure below).

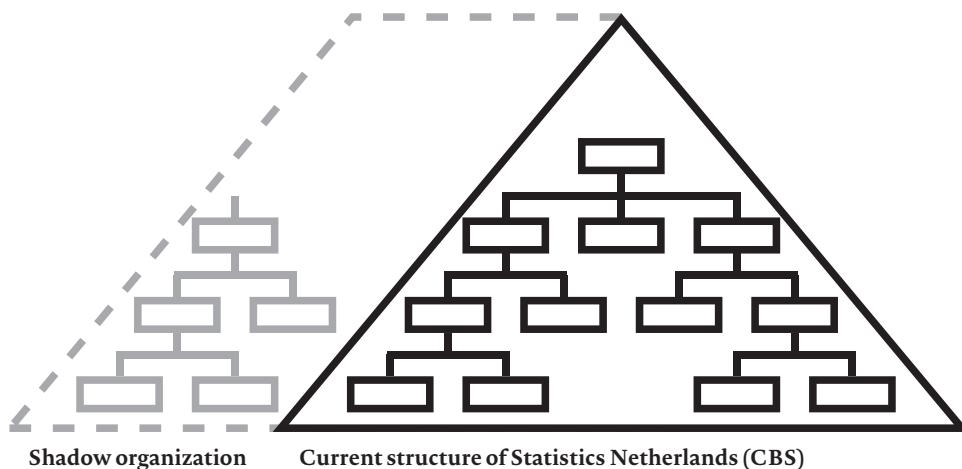


Figure 6.8. The ‘shadow organization’ of PDC1 and PDC2.

Another important requirement for starting the pilot projects was that at any time CBS guaranteed, in the event of that a pilot project did not work out, that participants could return to their original job positions within CBS. Even one could return to the ‘old way of working’ if the pilot proved to be a fiasco. This requirement was an important condition for the works council of Statistics Netherlands to give a ‘go ahead’ to the experiment and initiate both pilot projects. During the start of PDC1, it was predicted by the collaborative research team that in the case that both pilots proved to be successful, Statistics Netherlands would gradually emerge into a ‘temporary organization (Kenis, Janowicz- Panjaitan &Cambré, 2009; Bakker, 2010)’ —as a ‘conglomerate of emerging pilot projects.’

Design-based collaborative management research approach (ten steps)

Within PDC1 the design-based collaborative management research approach (ten steps) has been applied (see figure below).

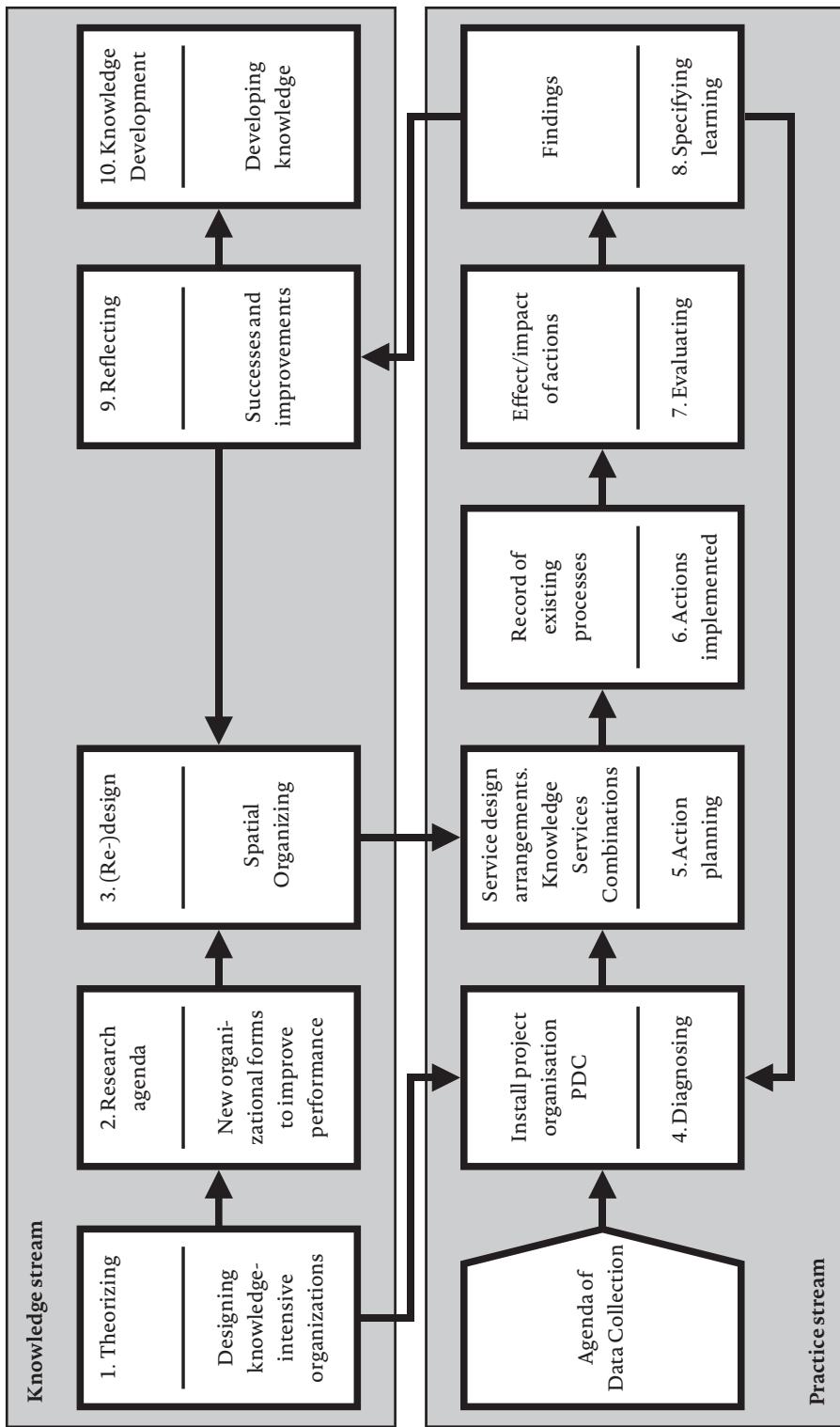


Figure 6.9. Design-based collaborative management research approach (ten steps).

1 Theorizing

One of the lessons learned from the early research phase was to reframe a knowledge-intensive organization design less as ‘structured’, but more as ‘arranged,’ and less as ‘formal based’, but more as ‘informal.’ To support this reshaping process from structured to arranged, the collaborative research team has developed the following table:

Table 6.9. From structured to arranged.

Structured	Arranged
Provide formal rules and regulations regarding what to do and how to act	Provide physical, virtual, and mental space to act
Design formal organization based on functions and boundaries	Design formal and informal organization based on connecting people in the best possible, ‘knowledge context’ to work together (unbounded)
Focus on selecting and improving the underdeveloped, personal competencies of people	Focus on improving the potential and further strengthen the capabilities of people
Focus on results	Focus on strategic intent, potential, improvements, and results
Change is accomplished by planned change leading to reorganizations that last until the next reorganization	Change is accomplished by development and increasing the learnability of the organization to become agile, liquid, fluid, and adaptable
A structure requires people to stay between the lines (and dots) of an organizational chart	An arrangement requires people to define the intent of their unit and act according to the mutual agreed objectives. Organizational members are expected to contribute to and adapt to contextual changes by positioning themselves in the ‘white space’ (Rummel & Brache, 1991)

During the Program Data Collection, the strategic intent of Data Collection could only be formulated if the core knowledge requirements for Data Collection were identified. During the feasibility study the following research issues were addressed.

- Redefine the mission statement; specify the new strategic intent of the Data Collection organization;
- Apply the three DOF phases of spatial organization design: Dimensioning, orientating, and formatting;
 - Dimensioning: Identify core knowledge domains and key knowledge areas within the Data Collection.
 - Orientating: Once the relevant knowledge areas were identified, specific intentions could be linked to the way in which these should be ‘enriched’ to add value. The whole issue of orientating was to bring people into an supportive organizational context which put people on the right mental track, without them being distracted.
 - Formatting: The collaborative research team seized the opportunity arising from the spatial theory of organizations to focus the minds of people, by matching their attention and concentration to three types of knowledge flows (routine, instructive/learning, and innovative). During the early research phase, the routine knowledge areas within Data Collection were embedded with ‘modular arrangements’; instructive knowledge/learning knowledge was embedded into circular arrangements and innovative knowledge into cellular arrangements. During PDC2, improved theoretical models for these arrangements were further developed.

Table 6.10. Sample of knowledge domain policy: knowledge area, management intention, nature of knowledge, and the management challenge within Data Collection (See Table 6.1 for a complete overview of this knowledge domain).

Knowledge domain: Policy			
Knowledge area	Management intention	Nature of knowledge	Management challenge
Strategy	Determination of scope of the collection, steering and realization of the statistical process.	Instructive	Minimum survey burden for the public and businesses within the scope of the purpose of the survey.

2 Research Agenda

The Nyenrode Research Group continued to work on the research question: what kind of organizational form—‘arrangements’—will be ‘best’ for Data Collection by identifying and matching the knowledge supply and the knowledge demand of the integrated unit and create a knowledge momentum to deliver higher quality of—new—services. The analysis included a series of interrelated research activities:

- Discuss emerging themes as a research team in regular meetings and share the key findings with the CBS team;
- Make the transcripts of the meetings, working papers, and presentations of the Nyenrode Research Group available to Statistics Netherlands;
- Collect the transcripts of the meetings, working papers, and presentations of Statistics Netherlands;
- Develop visuals to organize the data and information from both knowledge and practice streams;
- Make all the documents, presentations and data from 2007 to 2012 easily accessible³⁶; and
- Prepare joint workshops to communicate the spatial theory of organizations and the principles of spatial organization design ‘organization-wide’ within Statistics Netherlands.

3 (Re)designing

During PDC1 all data processes of Data Collection were integrated. The DOF approach to spatial design was applied and unique Knowledge Services Combinations (KSCs) were developed (see figure 6.7). The management agenda of Statistics Netherlands—located in the practice stream (see figure 6.9)—emerged and included topics such as:

- organizing and integrating all collected data as an input for the statistical process into one division;
- designing a new organizational form that matches the generated strategic intentions; and
- creating higher quality of service and adding value with less resources—and less waste—than currently occurs in the decentralized business unit structure.

³⁶ All the relevant files are stored in a shared file on Dropbox and are accessible through Frank Lekanne Deprez (Nyenrode Business University) and Frank Halmans (Statistics Netherlands).

4 Diagnosing

The practice problem and/or opportunity is a specific problem and/or opportunity area in a particular case for which the solution concept or a challenge can be a possible, where there is not yet a proven solution available. Within PDC1 the practice challenge was to integrate all of the data collection processes and start the spatial organization design process by applying DOF.

5 Action Planning

Within the practice stream, knowledge domains and knowledge areas were identified (see figure 6.7) and Knowledge Service Combinations were developed.

The emergence of Knowledge Services Combinations within Statistics Netherlands.

Within Statistics Netherlands, the emergence of Knowledge Service Combinations (KSCs) promises to be a better way to organize ‘from within’ to match the common Product/Market Combinations (PMCs)—the ‘outside in’ results from the organizing process. On basis of the product description, target population, and marketing intelligence data for each product, there are basically four ways to grow the business—via existing and/or new products and in existing and/or new markets (i.e., a matrix of four product–market combinations).

A Knowledge Services Combination is arranged according to similar types of knowledge areas (routine, instructive/learning, and/or innovative). Some knowledge areas will be part of several services. A specific combination of knowledge areas and service delivery makes up a unique spatial arrangement, creating for internal and/or external clients/customers a valuable experience (e.g., acquiring knowledge, interaction with the service offering, and so on).

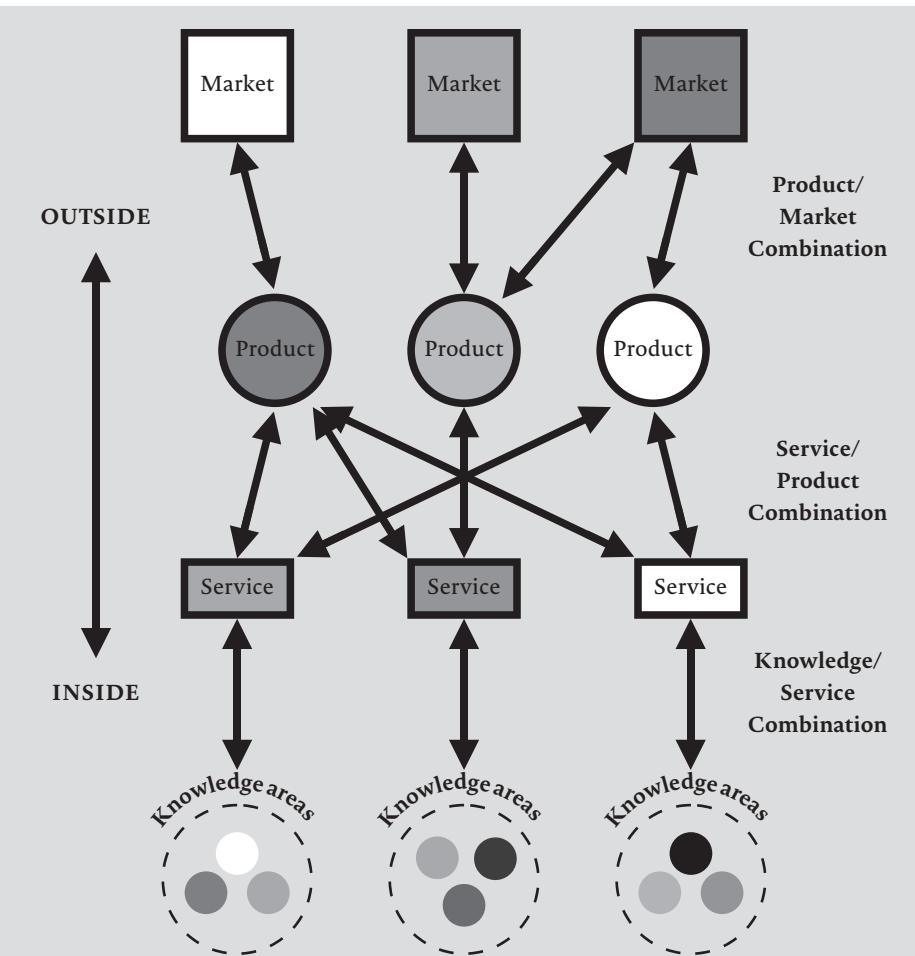


Figure 6.10. Markets, products and services. The emergence of Knowledge Service Combinations.

Within Statistics Netherlands the management structure originally was based on processes. Process-based management often improves the efficiency, quality, and speed of existing activities and policies ('doing things better') and was focused on optimizing the *span of control*. However, having identified all the processes, the next management question was: how do we integrate all these processes in an organizational structure? During PDC 1 and PDC 2, the collaborative research team introduced an organizational 'form' based on knowledge flows to enable non-routine, creative activities to emerge and focus on improving the *span of content* to create value.

6 Actions Implemented

The activities and processes within Data Collection are integrated and Knowledge Services Combinations are defined. The following positions have been established: manager Data Collection, business unit managers ('forerunners'), policy staff, and 10 Knowledge Services Combinations (see figure 6.7). The six business unit managers participated within several spatial organization design sessions. During these meetings the following issues were addressed:

- *Human Resources Management:* What are the capabilities, competencies, and responsibilities of the managers and professional knowledge workers within an integrated Data Collection organization? As a knowledge-intensive public sector organization, Statistics Netherlands is characterized by a bureaucratic organization, top-down management style, and an engaged and loyal workforce. Statistics Netherlands is concerned with how the mission, vision, and ambition aligns with the personal values and interests of its workforce. Introducing a more agile knowledge-intensive organizational design (i.e., spatial organization) raises some issues about the quantity and quality of management, employees, and their organizational readiness for change.

Most of the current Human Resources systems, programs, and initiatives were not designed to support, organize, and manage the knowledge-based workforce. For example, one of the ideas was to introduce incentives for sharing knowledge—exchanging information and knowledge between individuals and groups/teams/networks/platforms. These incentives must be part of the HR performance cycle (e.g., capturing the amount of presentations to colleagues, mentoring newcomers, contributing to the group/team/network/platform performance, and so on). A model should be developed in which employees can experience and monitor what they contributed to the knowledge basis of Data Collection and gain the benefits; and

- *Information and Communication Technology (ICT):* ITS is the internal information and communication technology (ICT) provider for Statistics Netherlands. Recently an organization-wide IT architecture was developed. Information and communication technology has the

potential ability to improve the service productivity—by making services straightforward and keep things simple—and knowledge worker productivity (Ramirez and Steudel, 2008; Martin, 2013; Arsalan; Dahooei and Shojai, 2014) within and between divisions. Within Statistics Netherlands there is evidence that ICT leads to improved productivity, higher job satisfaction, and more innovation. Consequently, information technology is swiftly becoming ‘human-tech-knowledgy’.

The introduction of new ICT always strikes a delicate balance between usability and security. For security reasons, Statistics Netherlands often uses so called ‘NASA-proof ICT systems.’ Specifically, the systems used within Statistics Netherlands must be secure and risk free. As a result, Data Collection has to work with ‘older’ technology, since hardware and software should be tested to consider possible information and cyber security risks. Often, there is a ‘short delay’ before new hardware and software can be introduced within Statistics Netherlands. The recent implementation of Service Oriented Architecture (SOA), intranet, SharePoint, and web-enabled tools has created multiple common platforms to share knowledge and improve decision making processes within and between units.

7 Evaluating

The evaluation of PDC1 focused on three questions:

- a) Does the pilot project provide a good platform for implementing a new organizational form and improving personal and organizational capacity development of Data Collection? Employees throughout Data Collection—and Statistics Netherlands—were involved into the ‘co-creation’ of the spatial organization design. Within various workshops the ‘prototypes’ of the various spatial arrangements were discussed iterating between information and knowledge exchange and solution generation. The members of the collaborative research team—responsible for the knowledge and practice streams—assembled to review the ideas and suggestions from the participants to create a more ‘arranged organizational form’ that fits the needs and demands of internal and/or external organizational environment;
- b) Do the results of PDC1 justify the further development of a Division

Data Collection? During the development of Pilot Data Collection 1, the knowledge areas connected to specific services have advanced into spatial arrangements. In the ‘old world’ a new organization design had a beginning, middle, and an end. Spatial organization design implies a design process that is much more iterative, fluid, and messy. The workforce of Data Collection was consulted in a non-linear, iterative design process to shape their units by enhancing their interfaces with other internal and external units; and

- c) Finally, the question was raised: Why did members of the Management Team (MT) Data Collection not tell the ‘same story’ to their employees? Several employees were confused. Did management really understand the transition from functions to knowledge areas themselves? Consequently, a joint session among the Management Team and the various members of several task groups was organized to exchange views on this issue. For example, issues—such as what constitutes spatial design, how to develop a spatial organization design, and so on—were discussed. Furthermore, to facilitate the implementation process, the current organization was allowed to insource an additional headcount. Also, the representatives of the various task groups were invited to participate into the internal sounding board to co-create the spatial design of Data Collection.

8 Specific Learning

Practice stream (see figure 6.9)

- During the organizational development process the CBS workforce did not experience any fear or insecurity due to the fact that PDC1 was organized as a ‘shadow organization.’ The new organizational arrangements within Data Collection provided the workforce temporary shelter to create ‘mental space’ to generate new ideas and concepts for new statistical products and services.
- Within the public services organizational landscape (‘servicescape’), it is possible to design and implement a new organizational form without a formal request for a reorganization of the current organizational structure.
- The spatial arrangements create a platform for knowledge sharing and interactive access to data, information, knowledge, and

expertise. Such an arrangement delivers swift solutions to problems and/or opportunities. Furthermore it provides a platform to connect KSCs to Product Market Combinations (PMCs) where internal units and external organizations collaborate in shared design efforts, but compete in services and products.

- As design is happening all the time at different speeds, at different scales, and in different parts of the organization, all particular organizational spatial arrangements—well or poorly designed—are temporary (Bakker, 2010): “Designers fail because they don’t know when to stop. The trick in designing is to stop while the design still has life. Life persists when designs are underspecified, left incomplete, and retain tension” (Weick, 2004, p.43, *italics added*).

Knowledge stream (see figure 6.9). The Pilot PDC1 as such brings about many new ways of experiencing work—working within a ‘shadow organization’, forming unexpected collaborations, sharing virtual workspaces, and so on.

- Instead of managing by span of control, managers experience the tension and challenge to manage by *span of content*. For a team manager, the span of content (i.e., the amount of different subject areas and key knowledge areas situated within a team) will become an important indicator for being a competent team manager within Data Collection.
- A mixture of Knowledge Service Combinations challenges new design thinking that leads to innovative Product Market Combinations that will improve the ‘Quality of Thinking Life’ of the workforce, clients, and other relevant stakeholders.

9 Reflecting

The management of Statistics Netherlands believed that the results of steps 7 and 8 justified the startup of PDC2 within Data Collection.

10 Knowledge Development:

During this Pilot (PDC1), the collaborative research team has gained new knowledge applying the design-based collaborative management approach (see figure 6.9). The overall goal of PDC1 was to design a ‘working prototype’ of a spatial organization design for Data Collection.

Within each pilot, the spatial arrangements emerged through various iterations (Mohrman & Lawler, 2011; Snippe, 2012; Nijs, 2014; Hill, Brandeau, Truelove & Lineback, 2014) of the ‘original’ design concept.

As a working prototype (i.e., a conceptual or mocked-up version of what could be) it should be incomplete (in ‘rough draft form’), inviting people to challenge the current MVD (Minimum Viable Design³⁷). Each iteration of the working prototype will be ‘tested’ by the collaborative research team, management team, and a selection of the workforce of Statistics Netherlands. For the next pilot—PDC2—steps 3 to 10 (see figure 6.11) must be repeated several times with new ‘cases’ until the point of theoretical saturation is reached (Eisenhardt, 1989; Yin, 1994; Yin, 2002). The collaborative research team regularly monitors the progress of each ‘case’ and reports the alterations or additions to all the stakeholders involved (see for example: Halmans, Tissen, Hermans, Sinkeldam, Kok & de Waard. 2008; Lekanne Deprez & Halmans, 2009).

6.5.6 Pilot Data Collection 2 (PDC2)

Each pilot operates as a distinct ‘experiment’ that serves as an extension—and not a replication—of the organizational design of PDC1. The design-based collaborative management research approach provides enough ‘research space’ to explore and challenge the fluid boundaries of the organizational spatial design of PDC1. Combining the results from the evaluation of PDC1 and the continuous desk research around the spatial theory, no additional information was added to Step 1, Theorizing—the spatial theory of organizations was still applicable—and Step 2, Agenda (see figure 6.11 below).

³⁷ Adapted from Ries (2011).

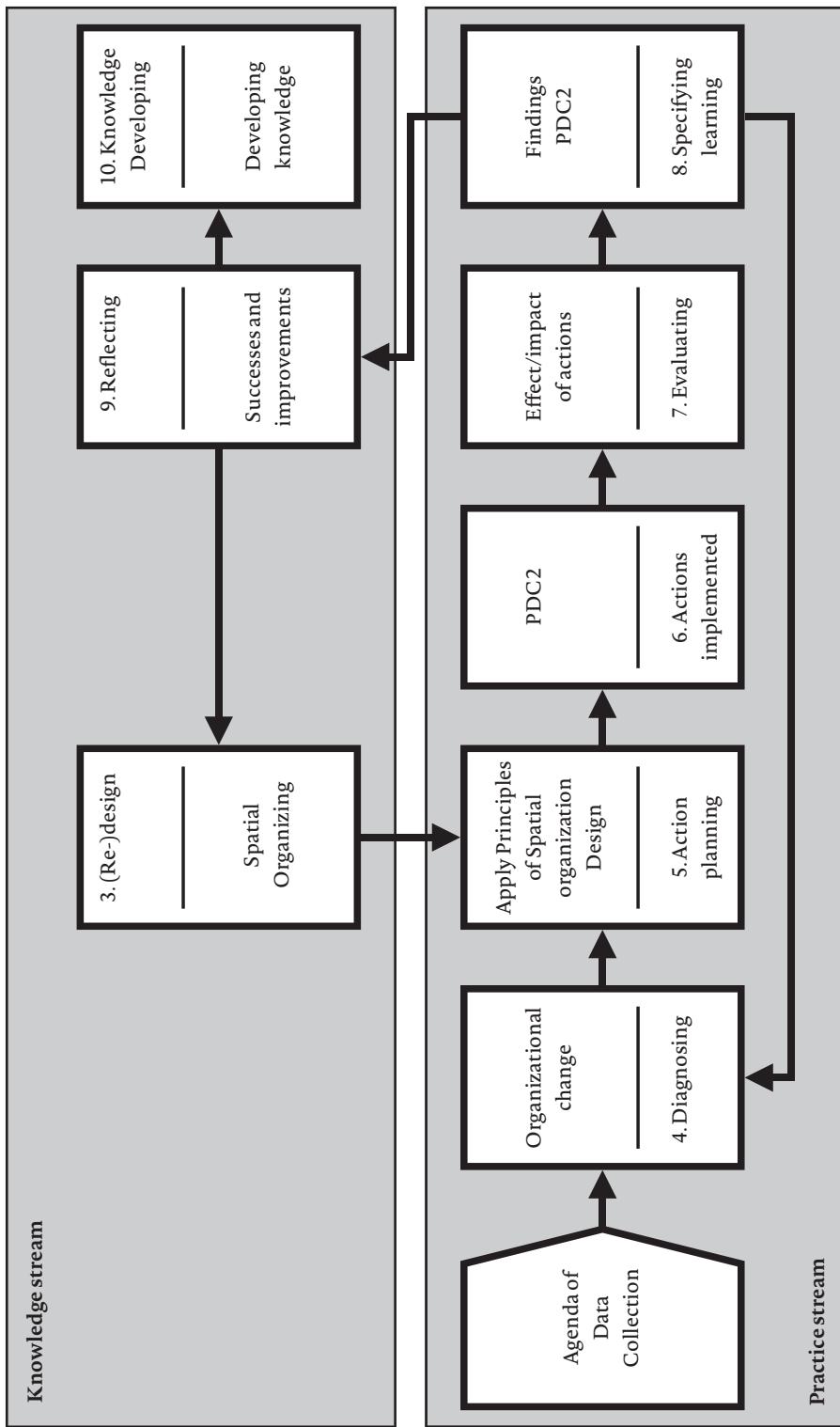


Figure 6.11. Pilot Design-based collaborative management research: PDC2.

1 (Re)designing

During this pilot, the collaborative research group stimulated the participants to continue according to the philosophy and phasing of an iterative spatial design process: ‘imagine it, prototype it, do it, test it, improve it, and reimagine it.’ Representatives of the stakeholders were participating in the transition from focusing on functions towards identifying knowledge domains as the main elements of organizational design. As such, the organizational form of Data Collection was continuously ‘emergent’ (Garud, Kumaraswamy and Sambamurthy, 2006; Perkmann and Spicer, 2014). The principle of reversibility—being capable of re-establishing the ‘original’ organizational shape after a failed organizational development endeavor—was gradually departed. From a managerial governance point of view, a Knowledge Services Combination was the smallest building block than can be ‘arranged’ into ‘task groups.’ In 2011 (CBS, 2011) the following organizational form was developed (see figure below).

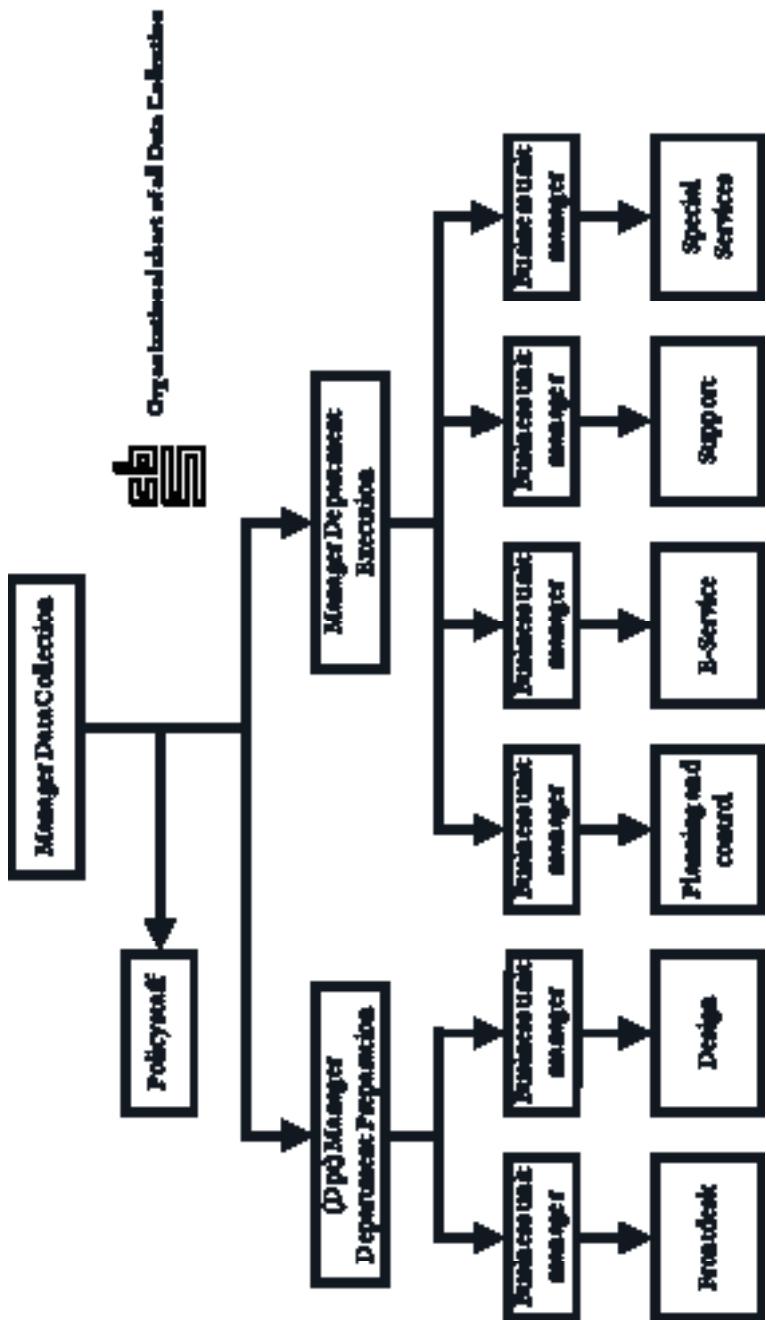


Figure 6.12. The organization of Data Collection in 2011.

Data Collection

The policy staff is centralized within Data Collection. The board consists of a director and a deputy director, who is also responsible for both preparation (and implementation).

Preparation offers the link between internal and external customers/clients and the department execution is responsible for implementing the survey designs. It is responsible for customer relations, survey design, and preparation of data collection activities. Execution performs all data collection activities. For example, this includes internet surveys, computer assisted telephone interviewing (cati), face-to-face interviewing, data entry of surveys on paper, and respondent services (e.g., a helpdesk). Preparation is responsible for realizing efficient solutions for data collection assignments and the department of Execution for production processes that fits the management intentions (e.g., efficiency, service quality).

Table 6.11. Pilot Data Collecting 2: Department, Business unit, and Knowledge Services Combination.

Department	Business unit	Knowledge Services Combination
Preparation	Frontdesk	Account management
		Consultancy
	Design	Questionnaire design
		Sample design
		Education of interviewers
	Planning and control	Survey coordination
		Monitor and analyze
		Process management
		Business information management
Execution	E-Services	Data collection preparations
		Electronic data collection
		Business information management
		Devices services
	Interviewing	Cati interviewing
		Capi interviewing
		Business service
	Support	Customer contact center
		Data entry
		Interoffice telephone center
	Special services	Special acts
		Field Service business surveys

2 Diagnosing

Within Statistics Netherlands, implicit and tacit knowledge is often not formally documented, communicated, transferred, stored, narrated, or

shared. Sometimes implicit knowledge is not recognized as valuable knowledge by an employee or manager. Some cognitive thinking processes are so deeply buried ('deep knowledge') that even the experts and practitioners are totally unaware of them (Leonard, Swap & Barton, 2015). As a business unit manager, the span of different content areas could be so overwhelming that he/she will experience a severe case of information overload which deteriorates the performance of the person and/or of the unit. As such, the span of content (i.e., the amount of different subject areas and key knowledge areas that are located within a team) became an important governance issue.

As the organization of Statistics Netherlands as a whole—and specifically Data Collection—was on the verge of moving from one fundamental organizational structure to another, the CBS research group communicated to the Nyenrode Research group that a platform for 'handling' such a 'change process' was missing. Within Data Collection organizational members became aware that change cannot be implemented through hierarchy because the employees and managers with the 'right,' deep, smart knowledge of what needed to be changed are often not part of 'top management networks.' There was a need for an 'organizational change capability' by building a change platform (Hamel & Zanini, 2014)—one that allows the workforce of Data Collection to initiate change, suggest solutions and new challenges, and generate new options for services, products, and processes.

3 Action Planning

As planned, the temporary organization (Kenis, Janowicz-Panjaitan & Cambré, 2009; Bakker, 2010) of Data Collection was evaluated after several months. During the pre-research phase and both pilots (PDC1 and PDC2), the emergence of a 'shadow organization' was an important condition for applying the spatial organization design approach. Although a temporary organization has a limited life span—and it often involves organizational tensions between the 'temporary and the permanent'—the spatial organization design approach proved to be an effective and inspirational way for shaping the new Data Collection organization.

By interviewing the management, workers, and the internal customers, specific information was collected about the performance of Data Collection. The interviews with the employees and managers were

conducted during lunchbreak – sessions, sounding board meetings and roundtable sessions. The generated ideas and concepts proved to be valuable input for several – more formal – workshops that were organized to discuss the progress of the emerging Data Collection organization within Statistics Netherlands. The manager Data Collection and several business unit managers shared these concepts with several internal and external clients of Statistics Netherlands to jointly imagine the expected organizational form and performance of Data Collection for the coming years.

Especially two results had an impact on reshaping this organization. The first was related to the span of content for managers and the second dealt with need to organize and improve customer contacts from a customer's point of view:

- a) The experiences with span of content lead to an adjustment to the rules of designing spatial organizations within Statistics Netherlands. Until that moment The Knowledge Services Combinations (KSCs) were clustered based on processes. However, it is not the processes that should be spearheaded, but knowledge should be in the lead. For an effective decision making process within a temporary work organization, managers at Statistics Netherlands need specific knowledge—content and capabilities—about the services their units deliver now and could co-create with a client/customer in the future.
- b) Applying the spatial organization design approach—using an iterative process of ‘imagine it, prototype it, do it, test it, improve it, and reimagine it’—management and the CBS professionals teamed up to craft the ‘design of the future’ and let the new Data Collection division emerge. A new unit was created, called the frontdesk (Halmans, 2010).

The approach of shaping and reforming the pilot organization Data Collection was adopted by the CEO and the board of directors of Statistics Netherlands. The opportunity of employing a temporary pilot organization as a way to ‘tweak’ the organization towards ‘a new organizational form’—according the needs, wants and requirements—to improve the performance of Data Collection turned out to be a successful strategy. Shortly after the pilot organization of Data Collection was approved by the board, other

divisions within Statistics Netherlands also started applying the concept of a temporary pilot organization. In 2014, the approach of applying pilot organizations as a way to reshape (a part of) the organization was formally adopted. In a covenant (CBS, 2014) between the CEO and the works council, the approach was formalized (and formatted). It is now entitled: a Temporary Work Organization (TWO).

4 Action Taking

Based on the experiences and insights of the pilot project PDC1, a new pilot emerged: PDC2. At the start of this pilot, a new business unit was formed: the Frontdesk. This unit would be responsible for customer contacts. To provide clarity on whom to contact in case of an issue on whatever subject related to Data Collection, each customer/client was connected to a dedicated account manager. The most experienced and smartest consultants from Data Collection—holding ‘deep smart knowledge’ (Leonard, Swap and Barton, 2015) on data collection processes—were situated at the Frontdesk (Halmans, 2010). The reallocation of smart CBS workers aroused a discussion among managers on the reallocation of ‘their’ knowledge areas. Moving ‘deep smarts’ experts meant that the knowledge area of a specific unit was transferred. Some units were ‘not amused’ because they had to let go of some of their ‘key players and/or high potentials’. Furthermore, Knowledge Services Combinations (KSCs) were clustered in a different way. Instead of process-based, the design rule for forming new units was: cluster a KSC based on similar type of knowledge—routine, instructive/learning, innovative. For example, cati and capi³⁸ were integrated and all the KSC’s that needed a manager with an ICT background were organized within one unit.

Finally, the first draft version (CBS, 2011) of the mission, ambition, strategy position, and organization design of the Division Data Collection had been released.

5 Evaluating

The results of the PDC2 were integrated into the final version of the mission, ambition, strategy position, and organization design of the

³⁸ Primary data collection consists of asking companies and citizens directly for information by Internet, phone (called cati), paper forms, and face-to-face interviews (called capi). In secondary data collection, information about companies and citizens is taken from official sources.

Division Data Collection (2012).

6 Specific Learning

Knowledge stream

Both the concept of span of content versus span of control and the need to build a change platform became part of the knowledge stream.

7 Practice stream

Many suggestions on how to improve the process of implementing spatial organization design (e.g., the role and position of management, increasing systematic involvement of employees in the organization design process, the impact of a temporary pilot organization in Data Collection—and organization-wide—were proposed, rejected/accepted, and implemented.

8 Reflecting

The primary test of sound organization design is the degree to which it enables the current work activities to be executed; emerging trends and potential disruptions that may affect the service delivery of CBS to be identified; and personal and organizational goals to be accomplished. Poor execution of the spatial organization design principles can lead to ‘poor design.’ Knowing how to organize and design the execution process—and related developments—over time is an important ‘organizational capability.’ Incapable organizations are unable to adapt to transformations in their external and internal environments (Garret, 2000). If not, they are in danger to under-perform and become inept of delivering current and future products and services.

9 Developing Knowledge

An insider-researcher’s view on spatial organization design:

Within the collaborative research team, Frank Halmans worked as an insider-researcher. Insider-researchers have a unique position to do research with a valuable mix of practical and theoretical knowledge. In this case, the ‘inside CBS job’ of the process of collaborative management research has been conducted by a full member of work community of CBS. For Frank Halmans, it was sometimes hard to separate his role as a manager from his researcher role (Costly, Elliot, Gibbs, 2010). Most participants within PDC1 and PDC2 saw Frank Halmans as their ‘colleague’ rather than

a researcher. As an insider-researcher, it is a risk to become too involved ('over-involved') with the participants/colleagues. Sometimes Frank Halmans faced some challenges while researching in the same organization as where he works (Unluer, 2012; Costley, 2012). During the pilot PDC1 and PDC2, the insider-researcher experienced role duality (being a researcher and a colleague) and some minor role conflicts (doing research work and supporting participants to get their work done). The success of both pilots may be in some part due to insider-researchers' ability to 'read' and understand the organizational culture within Statistics Netherlands, solving imminent political issues with humor and ingenuity. After all, the insider-researcher has to justify his results to both managerial and academic colleagues which are often considered to be worlds apart.

From the beginning of this journey 'into space,' the internal researcher and the director of the division had several sessions with the collaborative research team to discuss the key elements of the spatial design approach. One of the early sessions (2008) saw the birth of the concept 'Knowledge-Service-Combination' (KSC). The internal researcher also explained the new way of initiating an organizational design to the business unit managers of Data Collection. As an advisor on topics about organizational issues, the internal researcher had a prominent role in shaping the new Division.

After the first phase of the Pilot Data Collection (PDC1), the organization's performance was evaluated. One of the weaknesses of a temporary organizational form is the likely habit of people to disqualify the new organizational design as a justification for bad functioning of a unit, even if the real cause was 'poor execution.' The question, "Is it about poor design or is it poor execution?" was frequently asked by the insider-researcher.

Finally, as managers often see new ideas or concepts as an option to solve one (or more) current problems and/or challenges, it was important to provide the workforce of Data Collection (and Statistics Netherlands as a whole) enough safety and outer (physical), connective (virtual), and inner (mental) space to reimagine the current structure of the divisions without following the procedure of filing for a formal request for a reorganization.

The ‘pros’ of embarking on a journey towards a new organizational form through temporary pilot organizations were evident. It inspired other divisions to adopt this part of the spatial organization approach. Up until now (July 2015), the other ‘golden nuggets’ of this approach (e.g., identify key knowledge areas, combine these areas into KSC, and so on) were not yet adapted and/or explored.

6.6 Next steps

On January 1, 2012, the birth of the Division Data Collection (DDC) became a reality. Division Data Collection was formally acknowledged as a ‘separate’ division. The director Division Data Collection became part of the Management Team of Statistics Netherlands (CBS, 2011; CBS, 2011b). DDC has an important role in supporting the following Divisions:

- Economic and business statistics and national accounts (EBN)
- Social-economic and spatial statistics (SER)

Each year, the Division Data Collection conducts about fifty projects. Thirty projects are part of the Standard Regular Program of Statistics Netherlands. Within the remaining twenty projects, the Division Data Collection acts as a third party partner.

After finishing PDC2, a ‘light’ version of the collaborative research group (Frank Lekanne Deprez and prof. dr. René Tissen representing the Nyenrode Research Group and Frank Halmans representing Division Data Collection) continued to

- advance the spatial theory of organizations, and
- improve the spatial organization design approach.

Within the knowledge stream (see figure 6.11), the collective effort was focused on advancing the spatial theory of organizations. Especially, the concept of Knowledge Services Combination has evolved into three types of spatial organization arrangements, with each arrangement designed to bring forward a specific moment of value (standard moments of value, structured moments of value, and shared moments of value). In paragraph 5.4 and chapter 7, the first results of these ‘design thinking activities’ are presented. Within the practice stream (see figure 6.11), it is expected that the projected growth of third party

activities of Division Data Collection (and Statistic Netherlands) will trigger the ‘light’ version of collaborative research team on exploring how to make different types of value (standard, structured, and shared) ‘real’ for the various external customers/clients and other stakeholders. Within Nyenrode, the focus of the research team will be to develop and craft a spatial organization—a so-called ‘collaboratory’—where organization design is regarded as a joint process of co-creative discovery (Saarijärvi, Kannan & Kuusela, 2013; Ramaswamy & Ozcan, 2014).

PART V

CONCLUDING REMARKS, LIMITATIONS, AND
ORGANIZING BEYOND THE FOURTH
DISCONTINUITY

7 Conclusions, limitations, and the next organizational space

7.1 Conclusions

Design is above all relational. It is something that everyone does every day (Pink, 2005). Murdoch (2006) believes that:

Moreover, spaces are made of complex sets of relations so that any spatial ‘solidity’ must be seen as an accomplishment, something that has to be achieved in the face of flux and instability. Space is made and it is made relationally. This means that space and place have *no determining structure*; rather, structure is an effect of relations” (p. 26, *italics added*).

One of the key objectives of design is to make the complex simple. This goal is in agreement with Albert Einstein’s advice to practitioners to “make things as simple as possible, but not simpler.” In practice, however, the process of organizational design is often treated as a ‘simple’ extension of regular day-to-day work.

Dealing with everyday problems: Complicated versus complex

Nijs (2014) notes a difference between working with complex problems and working with complicated problems: The design approach of imagineering is developed to cope more effectively with complex problems, problems such as organizational change and transformation and problems in the context of strategic thinking and acting. In coping with complicated problems, problems that are tough but not necessarily involve many perspectives and relationships or interactions, the mechanistic, linear logic can be still more effective. It is because of the growing complexity in society that more problems on the management table become complex in nature and as such ask for a complexity-inspired design approach.(p. 342, *italics added*)

Within this context, McChrystal, Collins, Silverman, and Fussel (2015) assert that things that are complicated may have many parts, but those parts are joined, one to the next, in relatively simple ways: The workings of a complicated device—like an internal combustion engine—might be confusing, but they ultimately can be broken down into a series of neat and tidy relationships. Complexity, on the other

hand, occurs when the number of interactions between components increases dramatically—the interdependencies that allow viruses and bankruns to spread. This is where things quickly become unpredictable (p. 57)

Furthermore, “the reality is that small things in a complex system have no effect or a massive one, and it is virtually impossible to know which will turn out to be the case” (McChrystal, Collins, Silverman & Fussel, 2015, p. 59, *italics added*).

Every time a company switches direction, it alters its organization design to deliver the hoped for results (adapted from: Aronowitz, De Smet & McGinty, 2015, p.1), thereby leaving designers, managers employees, and other relevant stakeholders mostly in the dark about how their organizational design should be arranged. They often find it difficult to acknowledge that ‘new’ organization design activities often result in a “failure of imagination and a tendency to reproduce the past” (Collopy, Boland & Van Patter, 2005, p. 7). Although organizations vary greatly in people’s capabilities, purpose, objectives, and design, ‘one-size-fits-all’ and/or ‘one-best-way-of-organizing’ and other linear and mechanistic prescriptions for creating organizations are still common within organization research and practice. Because none of the organizations want to be average, researchers and practitioners should spend more time studying and designing exceptional organizations to find out what enable them to excel (Mohrman & Lawler, 2011). Most innovative organizational designs happen when diverse people interact based on mutual trust, mutual respect, and mutual influence (Hill, Brandeau, Truelove and Lineback, 2014), challenging each other and integrating their thoughts, concepts, and ideas. People involved in developing some new organizations often recall afterwards that the final result appeared ‘out of the blue.’

Conclusion 1: Both a spatial theory of organizations and the process of spatial organization design are still in their early stages of development. Spatial views on organizations have been around for over a hundred years, but spatial organizations are still considered as of implicit concern of organization theory and practice within the academic population. This thesis aims to establish relevant connections between:

- a) Academics and practitioners: by forming a collaborative research team (Nyenrode Business University and Statistics Netherland) conducting

- design-based collaborative management research; and
- b) Theory and practice: by developing both a spatial theory of organizations and a framework for applying the spatial theory in practice conducting a design-based collaborative management research effort within Statistics Netherlands.

Conclusion 2: *The spatial design of Data Collection organization is an example of an ‘extreme single-case’ pilot study and as such it has become a source for both advancing the spatial theory of organizations and the practice of designing spatial organizations*

Research question on practice: How can the study of spatial organizations in practice be the source of advancing the spatial theory of organizations? The final results of the pilots PDC1 and PDC2 within CBS using a spatial organization design approach didn’t appear completely ‘unpredicted’, but included some real complex ‘organic’ design challenges. For researchers to produce knowledge that can create new organization designs, one needs to study organizations that remain outside the realm of regular expectations such as outliers (Aguinis, Gottfredson and Joo; 2013; McGrath, 2013; Kinni, 2014) or ‘extreme cases’ (Starbuck, 2006, p. 149)—those that are experimenting fearlessly with new approaches or achieving unique and superior outcomes (Starbuck, 1993; Romme and Endenburg, 2006; Bakker, 2010; Bijl, 2011; Rasmus, 2011; Alberts, 2012; Sheridan, 2013; Fabernovel, 2014; Hill, Brandeau, Truelove & Lineback, 2014; Ismail, Malone & Van Geest, 2014; Laloux, 2014; Schmidt and Rosenberg, 2014; Thiel, 2014; Worley, Williams & Lawler, 2014; Birkinshaw, 2015b; Economist, 2015; Nandram, 2015; Puranam & Håkonsson, 2015; Puranam & Håkonsson, 2015b; Robertson, 2015). Unique, individual ('single') cases are needed in order to discover and learn which design principles 'work' for a specific organization ('one-size-fits-one'). Within this thesis, the origin, shaping and spatial design of Data Collection organization is an example of an ‘extreme single-case’ pilot study within an institutionally complex context—Statistics Netherlands (CBS).

The current interest in ‘new ways of organizing’ encourages an increasing awareness of ‘new’ ways of designing organizations. Within this thesis, the shift from place-bound towards space-bound organizations (see figure 0.1 and table 4.3) has created ‘space’ for designing spatial organization forms. Traditionally, organization design has been focused on creating relatively ‘fixed’ mechanistic organizational arrangements in stable environments, while organic, knowledge-based, spatial arrangements require more ‘fluid,’

liquid organizational arrangements in complex environments. This research effort within CBS—advancing research conducted by Tissen, Lekanne Deprez, Burgers, and Halmans (2008) and Lekanne Deprez and Tissen (2011)—has produced an important source for advancing the spatial theory of organizations, specifically a theoretical framework for developing and designing spatial organizations leading to three different spatial organization arrangements. Each spatial arrangement delivers a specific moment of value (see conclusion 3 below).

From a research point of view, the DOF (dimensioning, orientating, and formatting) design method (see paragraph 5.4) is embedded within the design-based collaborative management approach. These three phases of DOF are both iterative and recursive. They are iterative because in practice each phase is often repeated during the process of an organizational design effort. Each iteration is recursive because it represents changes learned from reflecting on the output and outcome of the previous iteration. The number of iterations needed to create a specific spatial arrangement will depend on the complexity of combinations of the smallest building blocks—knowledge areas/domains.

After finishing the pilot projects, the increased importance of third party activities within the Division Data Collection, the collaborative research team dreamed up the concept of knowledge momentum. A knowledge momentum is seen to be the trigger (or ‘spark’) between the supply of knowledge and the demand of knowledge. This opens up unprecedented possibilities for co-creating sessions to build on each other’s ideas, to co-create valuable knowledge, and to design and deliver new products and services. CEOs, director-generals, team leaders, and other members of the CBS workforce ‘only’ need to create and sustain a space with a psychologically safe environment where they feel sufficiently contained (i.e., a psychological ‘inner space’ where people feel safe, strong, and ingenious), thereby giving people the chance to debate, experiment, iterate, debrief, fail, learn, and start the process over again. In such a psychological climate, members of DCC will be able to create more value as a unit—‘collective value’—than any one individual would contribute. The challenge is to build capabilities on how to co-design an organizational form that challenges the workforce of the Division Data Collection to demonstrate ‘their full selves’ at work, making decisions by mutually helping (Grodal, Nelson and Siino, 2015) each other without compromising, therefore making space for heated but constructive discussions that amplify differences as opposed to minimizing them. Especially organizational

design solutions can be interpreted, understood, and shaped in a number of different ways, leading to several—often complex—alternative design prototypes or Minimal Viable Designs (MVDs).

Conclusion 3: Different spatial organization arrangements create specific moments of value

In order to benefit from the knowledge momentum (i.e., by creating a unique organizational capability that matches knowledge supply and knowledge demand), the original Knowledge Services Combination concept has evolved into three types of spatial organization arrangements. Each arrangement is designed to realize a specific *moment of value*—standard moments of value, structured moments of value, and shared moments of value (see paragraph 4.4 and paragraph 5.4):

- 1 Knowledge Product Combinations (KPC): to connect, combine, and apply routine knowledge through formats, frameworks, scripts, and systems. The dominant design principle is organizing with information and communication technology (ICT). The result is a series of *standard moments of value*.
- 2 Knowledge Services Combinations (KSC): to channel existing and new knowledge into shared products, services, and processes. The dominant design principle is organizing with knowledge. The result is a series of *structured moments of value*.
- 3 Knowledge Innovation Combinations (KIC): to generate innovative knowledge to co-create new products, services, and processes. The dominant design principle is organizing with people. The result is a series of *shared moment of value*.

Table 7.1. Spatial arrangements.

	Knowledge Product Combination (KPC)	Knowledge Services Combination (KSC)	Knowledge Innovation Combination (KIC)
Purpose	To connect and expand routine knowledge into products and services through formats and (automated) systems.	To organize and optimize existing knowledge into co-created services	To create innovative knowledge that generates new products, services and processes
Time Principle	On plan/schedule	On demand	On chance/opportunity
Design Principle	Organize for technology	Organize for knowledge	Organize for people
Dominant Management Principle	Span of control	Span of content	Span of mind
Moments of Value	Standard moments of value	Structured moments of value	Shared moments of value

Below are examples of the three different spatial arrangements (i.e., KPC, KSC, and KIC) within Statistics Netherlands. They originated out of many constructive debates within the ‘light’ collaborative research group (Frank Lekanne Deprez, René Tissen, and Frank Halmans) during the period 2012–2015. This group has agreed to continue to meet annually and discuss the impact of current and future examples of spatial organization arrangements.

Knowledge Product Combinations (KPC)

Within Statistics Netherlands, the spatial arrangement Knowledge Product Combinations (KPC’s) represents ‘data sets’ that are being produced by putting together ‘proven knowledge’ and adding activities that will enrich the complete set. The data sets CBS delivers require primary data but most sets contain both

primary and secondary data⁴⁰. In addition, Statistics Netherlands has resource files enclosing a lot of information about the population of the Netherlands (e.g., income, health care costs, and so on). As a result, this information may be linked to data sets which have been obtained through primary observation. For example, the telephone interviewing process is a standard method in which human action is completely driven by existing standards and scripts. New surveys only have different subjects, but the way members of the CBS organization create their ‘standard moments of value’ within a KPC is guided.

Knowledge Services Combinations (KSC)

The spatial arrangement Knowledge Service Combinations (KSC’s) is useful for small groups/teams/networks of people. They work on various products and services, but it is their goal to deliver a service which adds specific value to the product and service the customer/client requires. For example, Data Collection has a small team of five people that possesses ‘deep’ theoretical and practical knowledge on sampling design. This team applies this ‘knowledge-base’ to design samples for primary data collection in such a way that the customer information needs will be satisfied.

Another team has specific knowledge about how to turn information needs into a set of ‘right questions’ in questionnaires. They add value to the product because they design questionnaires in a way that they take into account possible effects of questions. To follow-up questions, they create an environment in which sensitive questions (about drugs, sex, and so on) are being asked.

When Statistics Netherlands acquires a new assignment to collect data for a specific survey, a group of knowledge workers will flock together and design a solution by developing a dedicated questionnaire and sample designs. Both will fit customer needs on the specified output and approach strategy. These elements—which are combined for this specific assignment—create a structured moment of value in order to realize the customer demand.

Knowledge Innovation Combination (KIC)

The WEC data collection expertise center is a virtual organization where people of different disciplines and different knowledge areas co-create new theoretical concepts about data collection activities. These concepts are being tested in pilot

⁴⁰ Primary data collection consists of asking companies and citizens directly for information by Internet, phone (called cati), paper forms, and face-to-face interviews (called capi). In secondary data collection, information about companies and citizens is taken from official sources.

surveys. After a lot of iterations ('imagine it, prototype it, do it, test it, improve it, and reimagine it'), proven concepts are being distributed and shared with other National Statistics Institutes (NSIs) from all over the world.

Besides these three examples, Statistics Netherlands continues to invest in creating partnerships with other National Statistics Institutes to collaborate on designing new concepts on data collection and/or the processes of making statistics. International work groups all over the world think about diverse issues and subjects (e.g., the administrative burden). The three examples indicate that the three spatial arrangements (see figure 7.1) have found their 'space' within the Division Data Collection.

Conclusion 4: Introducing the spatial perspective on designing organizations increasingly focuses on theory-driven, emergent design where organizations are formed—not structured—and are temporary in nature. The DOF method for designing spatial organizations combines three perspectives: Dimensioning (knowledge perspective: knowledge flows, knowledge areas), Orientating (mental perspective: concentration, attention), and Formatting (technology perspective: digital standardization and modularization). The method has been embedded within the design-based collaborative management research approach. In practice it was important that both PDC1—Pilot Data Collection 1—and PDC2 —Pilot Data Collection 2—were emerging within a temporary 'shadow organization' to create inner, connective, and outer space for the further development of spatial arrangements. The collaborative research team has 'tested' the spatial theory of organizations by conducting research within two pilot studies: PDC1 (Pilot Data Collection 1) and PDC2 (Pilot Data Collection 2). During this research effort it became clear that there were several iterations needed. Each iteration involves the process of testing ideas and exploring what they would really be like in practice (i.e., imagine it, do it, prototype it, do it, test it, improve it, and reimagine it').

Conclusion 5: An insider–researcher potentially creates unique longitudinal research results. An insider–researcher enables the collaborative research team not only to identify new examples of KPC's, KSC's and KIC's within CBS after the research project had formally ended in 2012. Also, such a relationship involves 'ample space' for critical feedback and constructive debates about further advancing the spatial theory of organizations and research approach used

within this thesis for spatial organization design activities.

7.2 Limitations

This thesis was subject to several limitations. First of all, this study is predominantly based on in depth analysis of some early research work and two pilot studies that have been conducted in one specific organization: Statistics Netherlands. Although the results of the pilot study indicate that it is possible to emerge into a spatial organization—‘single-case’ studies are indeed limited in generalizability. However, within this thesis it was a deliberate research strategy to create an ‘outlier’ within the CBS organization (‘one-size-fits-one’) to validate the spatial theory of organizations through a specific research approach and by ‘testing’ the applicability of DOF design method conducting two iterative pilot projects (PDC1 and PDC2). Both the research approach and the design method need to be tested in different organizational environments.

Second, in the past, influential thinkers as diverse as Anthony Giddens (2000) and Manuel Castells (2000) have offered their own distinctive contribution on the importance of space in contemporary life. These publications represent an irreversible change in the way the relationship between place and space is, namely as a spatial turn (Foucault, 1986; Sydow, 2002; Warf & Arias, 2008; Döring & Thielmann, 2008; Van Marrewijk & Yanow, 2010) that indicates how space in many different disciplines (e.g., anthropology, sociology, and religion) has come to play a proactive role in ‘opening up’ the physical world people live in. However—as was stated in chapter 2—space has largely been a neglected and ignored phenomenon in organizational studies.

Thirdly, organization design has proved to be a complex topic within organization science. Miller, Greenwood, and Prakash (2009) have indicated that most practical organizational design problems do not relate in any obvious way to today’s most favored organizational theories, such as organizational ecology, institutional theory, transaction-cost economics, and network theory: “It is true that our existing [organizational] theories do not lend themselves easily to the study of [organizational] design” (Miller, Greenwood & Orakash, 2009, p. 278). Within the spatial theory of organizations, an

emerging attempt is made to systematically focus on the intersection of knowledge, people, technology, organizations, and space. Spatial organization theory invites researchers and practitioners to act beyond existing—organizational—boundaries and limits by combining the knowledge-based perspective on organizations (knowledge momentum), spaces (inner, connective, and outer), and bringing knowledge, people, and technology together in such a way that it relates to spatial organization design efforts using the DOF design methodology —embedded in a design based collaborative research methodology—to ‘form’ three types of spatial arrangements each delivering a specific moment of value.

8 Spatial organizing beyond the fourth discontinuity.

Organizational designs are fit for the future if they survive and replicate under the circumstances of their environment. In our interconnected, turbulent world—where individuals, organizations, and nations need to reinvent themselves or they will be obsolete—disruption is everywhere. Even if the most reliable and respected organization with established product portfolios and services does everything right, there is still a chance of losing its leading position or even collapse.

There is a time to be born and a time to die—The Byrds, 1965.

Recently, Daapp, Hamilton, West, and Bettencourt (2015) have examined a comprehensive database of more than 25,000 publicly traded North American companies, from 1950 to 2009, to derive the statistics of firm lifespans. Based on detailed survival analysis, they show “that the mortality of publicly traded companies manifests an approximately constant hazard rate over long periods of observation. This regularity indicates that mortality rates are independent of a company’s age. We show that the typical half-life of a publicly traded company is about a decade, regardless of business sector” (Daapp, Hamilton, West & Bettencourt, 2015, p. 1). The business case of ‘disappearing firms’ (Stubbart & Knight, 2006) has been made many times. For example, Reeves, Levin & Ueda (2016) have investigated the longevity of more than 30,000 public firms in the United States over a 50 year time span. Public companies have a one in three chance

of being delisted in the next five years: “That’s six times the delisting rate of companies 40 years ago” (Reeves, Levin and Ueda, 2016, p. 48). And this ‘rise of mortality’ applies regardless of size, age, or sector.

When the ‘future outlook’ of an organization becomes the present (i.e., becomes ‘real’), it often bears little resemblance to how the ‘reinventors/management team’ had imagined it. Anything settled seems vulnerable for disturbance and/or disruption. Consequently, organizations must rejuvenate, reshape, redesign, and/or ‘respace,’ or even disrupt themselves (Lekanne Deprez, 2015) to sustain or—indeed—to survive. Nowadays, the concept of ‘disruption’ is often misinterpreted. According to Lepore (2014); Van der Rhee (2015); King and Baatartogtokh (2015); and Adolph and Greenwood (2015) disruption—‘disruptive innovation’—has probably become one of the most overused and misunderstood words in the business lexicon today. People use the term disruption—‘disruptive innovation,— in a number of different ways and ‘it’s getting sloppy’ (K@W, 2015). The father of the theory of disruptive innovation, Harvard Business School professor Clayton Christensen, has offered many responses to the criticisms (Christensen, Raynor & McDonald, 2015; Economist, 2015; K@W, 2015; Van der Rhee, 2015), but the fact remains that too often a rapid, innovative revolutionary change in an industry is confused with disruption.

Are true industry disruptions rare?

Adolph and Greenwood (2015) believe:

They [disruptions] happen when a technological or business model innovation thoroughly changes or obliterates existing business models and their associated capabilities systems. Disruptions create situations in which every company has to reexamine its capability boundaries, or risk losing its livelihood. In the music business, the introduction of the compact disc in the early 1980s was a breakthrough innovation that led widespread evolutionary changes throughout the industry. But it was not disruption; it did not fundamentally change the prevalent talent development, promotion, and physical distribution-based business model. Most of the companies that were prominent before the compact disc held on to their positions and practices after it was introduced. The introduction of digital music files in the mid-1990s, on the other hand, was disruptive. It utterly changed business models, capabilities systems, and supplier-buyer relationships throughout

the industry. Internet-enabled innovations have driven many similar disruptions, in businesses as varied as book retailing, journalism, and on-demand dispatch and use of taxis and limousines. (p.6)

Adolph and Greenwood (2015) underline that knowing the difference between disruption and evolution (Hodgson, 2013) has significant implications for the growth strategy, capabilities system, and business model of an organization. What most industries experience as disruption is typically not a sudden change from one source, but the accumulated impact of a range of interacting factors. If you want to be prepared for disruption, it is critical to understand the more gradual, evolutionary, prevalent, and multifaceted dynamic that underlies it: a phenomenon called dematurity. Sviokla (2014) emphasizes that dematurity is what happens to an established industry when multiple companies adopt a host of small innovations in a relatively short amount of time. Those seemingly trivial moves combine to rejuvenate the old mature industry and make it young again: “One can think of dematurity as a crescendo of mini-disruptions that add up to great effect” (Sviokla, 2014, p. 1 *italics added*).

But how do spatial designed organizations cope with environmental turbulence and complexity? Within this thesis, organizational space is organized through spatial arrangements⁴¹. Within such a spatial arrangement, the relationship between the three key areas, people, knowledge, and technology (see figure 8.1), are critical for ‘respacing’ to sustain or—indeed—to survive. To integrate the three key areas a spatial organization needs to focus on three relationships.

- 1) People–Technology
- 2) Technology–Knowledge
- 3) Knowledge–People

41 According to Lekanne Deprez & Tissen, (2011) a spatial arrangement is: An intelligent combination of like-minded people, shared knowledge, and dedicated technology brought to value by means of distinctly separate but connected organizational forms. These forms—arrangements—direct, guide, and support the focus, attention, and concentration of organizational members towards the optimal use of their minds with regard to performance improvement creating standard, structured, and shared moments of value. (p. 4)

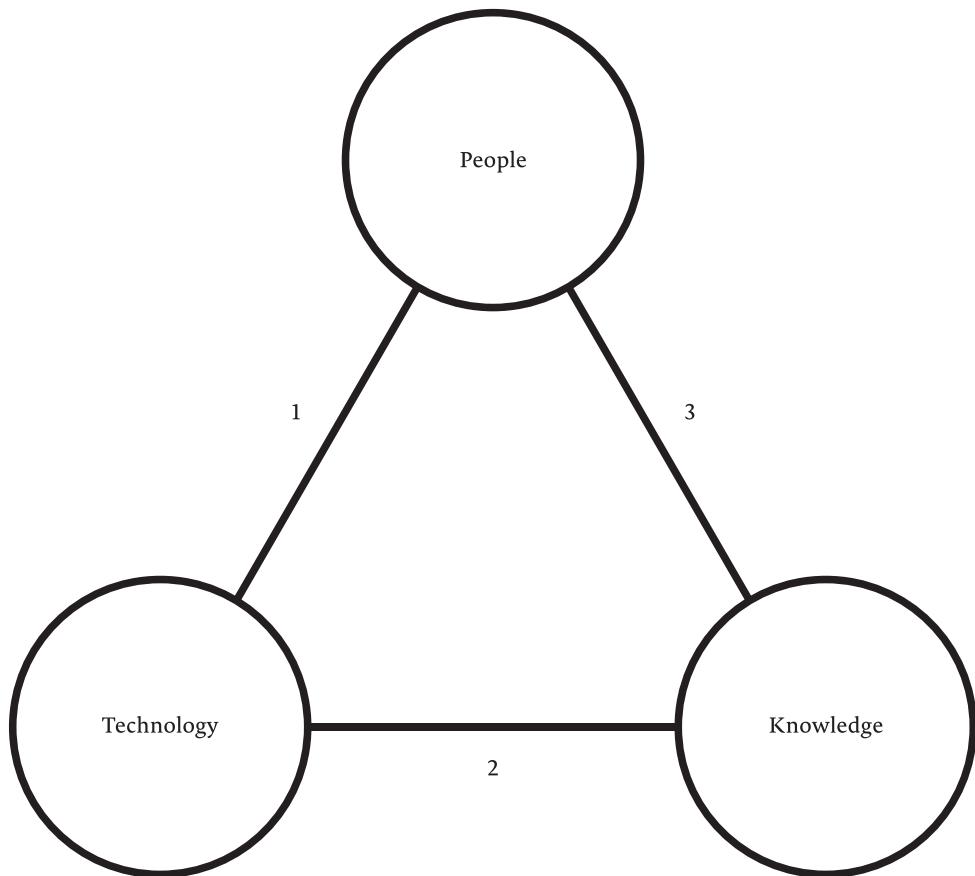


Figure 8.1. The people–technology–knowledge triangle.

1) People–Technology

The relationship between people and technology has been discussed by Mazlish (1993) in his seminal publication *The Fourth Discontinuity* in which the author has challenged the assumed separability of humans from machines. The title of his publication finds its inspiration from an article by the psychologist Jerome Bruner in the *American Psychologist* from 1956. Bruner argued that Western thinkers have created a unified view of nature (and damaged our belief in human uniqueness) by eliminating three apparent discontinuities in our naïve perception of the natural world, replacing them with continuities (Donald, 1994). Moreover, Mazlish examined the way in which humanity has constantly struggled with the boundaries of its identity,

especially “the way humans define their existence and being” (Tissen, 1995, p. 5).

According to Mazlish (1993), the first discontinuity was challenged during the Copernican revolution—in the 16th century—that removed humans from their position at the center of the physical universe—with the Earth rotating around the Sun and not the other way around. A second discontinuity to be challenged was the belief that human beings were different from animals. The Darwinian evolution ‘dethroned humanity’ (McCarty, 2014). Charles Darwin proclaimed that humanity was not superior to the animal world because human beings had evolved from lower species. The third discontinuity questioned the absolute divide between the conscious and the sub-conscious. Sigmund Freud showed that humans are not even masters of their own mind—being psychological and physiological creatures that are not always in conscious control. For the fourth discontinuity to be challenged, Mazlish extended this way of thinking into the realm of technology: the apparent discontinuity between humans and machines: “Humans still feel separate from, and superior to, their machines; we classify them as objects of lower order” (Donald, 1994, p. 368).

Mazlish claims that this fourth discontinuity must also be abandoned, emphasizing the continuities between humans and machines. A spectrum will exist with people at one end and machines at the other. There will be no absolute divide between humanity and artificial intelligence, so it becomes no longer realistic to think of ‘humans without machines.’ Leonard (2015) indicated that the focus must shift from artificial intelligence (AI) to intelligent assistants (IA). The intelligent assistants race has just begun (e.g., Siri [Apple]) Google Now, financial advisors, and so on) and it could eliminate the need for actual human assistants in the coming five years. Through innovative algorithms, machine learning is able to capture and exploit the—collective—intelligence of the workforce in ways that have never before been possible.

Although humans do not seem to get along well in their relationships with intelligent machines, Nick Bostrom, who leads the Future of Humanity Institute, stated that there is a “‘decent probability’ that machines will outsmart humans within the next hundred years” (Shead, 2015).

Barrat (Bilton, 2014) states the following:

We humans steer the future not because we're the strongest beings on the planet, or the fastest, but because we are the smartest. So when there is something smarter than us on the planet, it will rule over us on the planet. What makes it harder to comprehend is that we don't actually know what superintelligent machines will look or act like. Can a submarine swim? Yes, but it doesn't swim like a fish; Does an airplane fly? Yes, but not like a bird. Artificial intelligence won't be like us, but it will be the ultimate intellectual version of us. (p.E2, *italics added*)

2) Technology-Knowledge

Can machines and human beings get along with each other, work together, and put co-created knowledge into value? How can a machine (e.g., an intelligent agent, a cognitive computer, a robot) show some 'humanness' and become a great team player by augmenting human intelligence instead of replacing it? Davenport and Kirby (2015) have developed a 'five step approach' to think and act upon this question. The authors have identified the things that humans are uniquely good at and how machines can be integrated and actually support the value creating processes of the worker matching the goals which the workforce and organization stand for (i.e., 'purpose').

Tom Peters (2014) argues the following:

Machines can automate and augment a lot of things, but design is something humans do best. It's part of the way you play around with things—part of the relentless experimentation. You falter, you get back up, and eventually you figure things out. That's the design process. (p.4, *italics added*)

Increasingly, people become aware that certain knowledge and skills that used to make them unique no longer give them an advantage over increasingly intelligent machines. People will come to see smart machines as partners and collaborators in creative problem solving. "Augmentation, in contrast, means starting with what humans do today and figuring out how that work could be deepened rather than diminished by a greater use of machines" (Davenport & Kirby, 2015, p. 60).

From an augmentation perspective, people might renegotiate their relationship to machines and realign their contributions in five ways. Some people will “step up to even higher levels of cognition; others will step aside and draw on forms of intelligence that machines lack. Some will step in, monitoring and adjusting computers’ decision making; others will step narrowly into highly specialized realms of expertise. Inevitably, some will step forward by creating next-generation machines and finding new ways for them to augment human strengths” (Davenport & Kirby, 2015, p. 64). The process is outlined below.

- 1 Step up: let the machine do the mundane tasks that are seen as ‘being beneath’ a person so the professional has the opportunity to engage with so called ‘higher order concerns’ without being disconnected to the overall organization and with “how their particular piece of the pie fits in” (Davenport & Kirby, 2015, p. 62);
- 2 Step aside: use mental capabilities that are not connected to ‘rational cognition’ but draw on what the psychologist Howard Gardner (1999) has called multiple intelligences. Particularly the personal intelligences (Gardner, 2004) that focus on the interpersonal” and intrapersonal intelligence—such as knowing how to work well with other people (‘people skills’) and understanding one’s ‘working model’ (i.e., being aware of goals, fears, strengths and weaknesses, and so on);
- 3 Step in: focuses on understanding how computers make decisions, support decision making and their strengths and weaknesses, and how to monitor, modify, and assess the work of information systems. In an augmentation environment, support is mutual. The human ensures that the computer is doing a good job and makes it better. Those capable of stepping in know how to monitor and modify the work of computers. They understand that computers are good at providing answers but computers are incompetent at asking smart questions (Birkinshaw, 2015).
- 4 Step narrowly: to choose a task, activity, or job that is so narrow that nobody would ever be tempted to automate it—it just would not be economical to do so (Davenport, 2015, p. 4). A professional transforms from an ‘employee’ into a ‘professional brand’ that exemplifies distinction, authenticity, and commitment.
- 5 Step forward: because most machines are still built by humans, one simply must be involved in the next generation of information systems and artificial intelligence tools. These activities involve work that is itself highly augmented by software using simulations, algorithms, and

machine learning.

Algorithms are entering into the areas of medicine, law, finance, tourism, logistics, and all sorts of ‘workspaces’ exploring ways of taking advantage of data, information, and knowledge not only to profit from existing successes, but by creating new models (Susskind & Susskind, 2015). Algorithms are powerful identifying patterns too subtle to be detected by human observation, and “using those patterns to generate accurate insights and inform better decision making” (Luca, Kleinberg & Mullainathan, 2016, p. 101). The challenge is to ‘humanize’ algorithms. The danger is that people will treat algorithms—and the ‘machines’ that run them—the same way as they treat a colleague, manager, or client. When man and machine really interact, one can expect the best results. People will be ‘seeking’ a dialogue with intelligent agents asking follow-up questions where the ‘machine’ can look at all the evidence (i.e., valuable data and information and knowledge) and try to formulate a new set of follow-up questions. Ultimately people will be able to spend less time searching for data, information, and knowledge and devote more time learning from and applying data, information, and knowledge to create moments of value. According to Went, Kremer, and Knottnerus (2015), the key concept in all of this is complementarity (i.e., having people and ‘machines’ work together and grow more productive as a result). This gives rise to new ways of sharing practical professional knowledge and expertise. One way to promote complementarity is by co-designing and co-shaping the organization to install a ‘spatial state of mind’ according to the philosophy and phasing of a collaborative, iterative spatial design process: ‘imagine it, prototype it, do it, test it, improve it, and reimagine it.’

Will those artificial assistants more or less become an extension of oneself? Organizations—and its members—will gradually consider machines as partners and collaborators mutually helping each other to create valuable knowledge flows, to instigate a sense of purpose, and to solve complex problems to make an organization’s aspirations more credible. Another strategy is to ask what the activities and skills are that only humans are capable of doing (e.g., complex problem solving skills, social skills, creativity, interpersonal skills, physical dexterity, judgement, and decision making [World Economic Forum, 2016]) and what the activities and skills are that we humans will simply insist to be performed by other humans, even if computers

could do them (Went, Kremer, and Knottnerus, 2015).

The Future of jobs: Estimating global net employment effects.

The results of the World Economic Forum's survey on the Future of Jobs (World Economic Forum, 2016) provide direct information on the expected relative employment changes to job families over the period 2015–2020:

It is possible to extrapolate from these values the estimated numbers of jobs created or lost in absolute terms worldwide. Between them, the 15 economies covered by our data account for about 1.86 billion workers, approximately 65% of the world's total workforce. According to the calculations, current trends could lead to a net employment impact of more than 5.1 million jobs lost to disruptive labour market changes over the period 2015–2020, with a total loss of 7.1 million jobs—two thirds of which are concentrated in the Office and Administrative job family—and a total gain of 2 million jobs, in several smaller job families. So the biggest employment decline of any job family is expected in Office and Administrative roles, which are expected to be negatively affected by a perfect storm of technological trends that have the potential to make many of them redundant, such as mobile internet and cloud technology, Big Data analytics and the Internet of Things etc. Interestingly, the respondents to the survey expect a comparatively small employment impact from two disruptions that currently receive significant attention. Where it is mentioned, the artificial intelligence and machine learning driver is expected to lead to negative employment outcomes in job families such as Education and Training, Legal and Business and Financial Operations. However, it appears our respondents do not believe that these technologies will have advanced significantly enough by the year 2020 to have a more widespread impact on global employment levels" (p. 13, *italics added*)

Ford (2016) believes that it is not about the skill level or how much education people have. The primary question will be: 'Is the job on some level routine, repetitive and predictable?' In other words, can the actions that a worker undertakes in that field be predicted based on what he/she has done in the past? If the answer to that is yes, then it is going to

be susceptible to machine learning. Went, Kremer, and Knottnerus (2015) affirm that there “is no doubt that progressive digitization and robotics will eliminate some jobs and change others, but commentators sometimes exaggerate the scale of this transition and the speed at which it will occur. In addition, we cannot predict which new jobs and activities will be created by new technologies. People continue to master the robot in many respects: much of human activity is far from being codifiable or routinisable and there are many things that only people can do, or that we insist that people do.(p. 27)

Chui, Manyika, and Miremadi (2015) found that a focus on occupations is misleading: Very few occupations will be automated in their entirety in the near or medium term. Rather, certain activities are more likely to be automated, requiring entire business processes to be transformed, and jobs performed by people to be redefined. “The preliminary results show that 45 percent of work activities could be automated using already demonstrated technology” (Chui, Manyika and Miremadi, 2015, p. 3).

3) Knowledge-People

Increasingly work is thought of as a process that happens ‘wherever, whenever, whatever, and however.’ “Work is something you do ‘in space’ and not in a ‘place that you go to’” (adapted from Kaye & Jordan, 2008, p. 187). Effective organizational design should thus provide an inspirational context where—inner, connective, and outer—space offers an ‘unlimited reality’ that attracts people to connect and interact their ideas and opportunities and act upon them. The mentalization of work indicates a shift from knowledge as something that humans and machines have towards knowledge as an ‘activity’—something that makes people interact and do. The knowledge and experience a human ‘owns’ is of no value unless it is shared, embedded, and deployed (Lekanne Deprez & Tissen, 2011) within a process that creates and captures realized value:

Traditional organizations have focused on building and protecting knowledge stocks—proprietary resources that no one could access unless you had a license or paid a substantial fee. Knowledge-based organizations focus on knowledge flows. The number and quality of knowledge flows of an organization will be a core element of spatial organizations. (p. 28)

Mentalization of work.

Mentalizing denotes the human ability to read the desires, intentions, knowledge, and beliefs of other people and underpins the ability to coordinate interpersonal relationships (Foss & Stea 2014; Stea, Linder & Foss, 2015). As ‘machines’ increasingly develop a ‘mind of their own’ and machines and human beings ‘team up’ with each other (Davenport & Kirby, 2015), ‘machines’ will be able to read knowledge and beliefs. Mentalization of work emphasizes the interactions of continuous data, information, and knowledge flows between humans and machines. Brynjolfsson and McAfee (2015) assert that the debate over what technology (e.g., ‘machines’, software intelligent agents) does to work, jobs, and wages is as old as the industrial era itself. The authors Brynjolfsson and McAfee (2015b) believe that:

Our [human] mental advantages might be even greater than our physical ones. While we’re clearly now inferior to computers at arithmetic and are getting outpaced in some types of pattern recognition—as evidenced by the triumph of Watson, an artificial-intelligence system created by IBM, over human Jeopardy! champions in 2011—we still have vastly better common sense. We’re also able to formulate goals and then work out how to achieve them. And although there are impressive examples of digital creativity and innovation, including machine-generated music and scientific hypotheses, humans are still better at coming up with useful new ideas in most domains. This calls to mind a quote attributed to a 1965 NASA report: ‘Man is the lowest-cost, 150-pound, nonlinear, all-purpose computer system which can be mass-produced by unskilled labor.’ (Brynjolfsson & McAfee, 2015b, p. 11, *italics added*)

This concept of mentalization of work can be made explicit by means of designing spatial arrangements in order to establish a more direct—but naturally fitting—relationship between what people ‘have on their minds’/‘inside their heads’ and what ‘machines’ are running (e.g., scripts, software) to improve interactions. A variety of spatial organization forms (i.e., spatial arrangements KPCs, KSCs, and KICs [see paragraph 5.4]) can be distinguished, all depending on the preferred type of knowledge (‘topics’) people transact and interact, in relation to the performance which is expected and even required from them.

From the results of the two pilot studies, PDC1 (Pilot Data Collection 1) and PDC2 (Pilot Data Collection 2), it is obvious that the existing functional organization—where units often ‘represent’ distinct stocks and flows of knowledge—no longer serves the organization as effectively and efficiently as it once did. Nowadays, a typical CBS manager is not only responsible for managing the people that work within a unit, but he/she is also supposed to understand the topics (e.g., key knowledge areas) that his/her unit has to deal with. Instead of focusing on span of control (i.e., the amount of people—‘subordinates’—that a team manager can directly control), managers increasingly experience the tension and challenge to manage by span of content. For a team manager shaping his/her spatial world, the span of content (i.e., the amount of different subject areas/key knowledge areas situated within a team) has become an important indicator for being successful in sync with the demands of internal and external customers. By connecting knowledge, people, and technology through spatial arrangements, spatial organizations will be able to create moments of value by organizing cross-boundary inflows and outflows of data, information, and knowledge.

The future—research—directions of spatial organization design are as follows.

- 1 Challenge the human tendency to yearn the future to look much like the recent past. To invent the future of work, humans, and machines must be building on ‘each other’s data, information ,and knowledge’ as partners and collaborators—mutually helping each other;
- 2 Connect academic theory (i.e., spatial theory of organizations) and research (i.e., spatial organization design) to the practice of modern complex organizations;
- 3 Stimulate collaborative research (e.g., insider-researchers of an organization that collaborate with academic researchers from universities) creating knowledge and future insights that are relevant to practice and theory;
- 4 Foster an intrapreneurial spirit and create a ‘start up/start around⁴² mentality’ inside (instead of holding on to a ‘silo mentality’); and
- 5 Magnify a desire and willingness to learn ('fostering learnability') and act upon it.

⁴² A ‘startaround’ is an established company that must think and operate like a startup as it undergoes a turnaround (K&W, 2010).

At this point, this thesis has reached its final destination, but the journey into organizational space has just begun. From a design perspective, the first steps toward a spatial theory of organizations have been taken. Keeping in mind that few designs survive direct contact with reality, this emergent theory has attempted to make a contribution to a hitherto ‘undervalued’ issue within organization and management theory division (OMT) of the Academy of Management in the United States of America, namely the “appreciation of organizational design” (Miller, Greenwood & Prakash, 2009, p. 273). As a researcher and/or practitioner, one is never completely prepared for travelling through organizational space. Anything can happen during the quest for—possibly new—spatial arrangements. While traveling, keep an open mind and be deliberately receptive, trusting that “the dots will somehow connect in the future⁴³.”

⁴³ Adapted from Commencement address delivered by Steve Jobs, CEO of Apple Computer and of Pixar Animation Studios, on June 12, 2005 at the Stanford University, USA.

Summary

Although the spatial dimension in organization theory and management practice has existed for a long time, the impact of space on organizations and organization design has been weak. Until recently, use of space was regarded as no more than an idea with ideological appeal and little practical relevance. The notion of ‘space’ was locked into the industrial tradition (e.g., Ford Motor Company’s assembly line) and practice of ‘place.’ Within the context of the current state-of-the-practice of organization theory, this thesis addresses the following research question: “To what extent does the notion of space in its organizational context develops into a spatial theory of organizations?” Miller, Greenwood, and Prakash (2009) have stated that an important reason for the decline in significance of organization theory within organization science is “that [organization theory] has drifted from some of the early core domains and questions” (Miller, Greenwood & Prakash, 2009, p. 273). In particular, the Organization and Management Theory division (OMT) of the Academy of Management of the United States of America has lost one of its central contributions, namely the “appreciation of organizational design⁴⁴” (Miller, Greenwood & Prakash, 2009, p. 273).

A spatial theory of organizations will be ‘framed’ within the intersection of knowledge, people, technology, organizations, and space. This organization theory focuses on integrating several perspectives of space—physical (‘outer’), virtual (‘connective’), and mental (‘inner’)—as a predominant organizational design criterion in order to create ‘best performing’ organizational forms. By adopting a future orientation, a spatial theory of organizations will involve co-creating and testing ‘prototypes’ of new organization forms. Those ‘spatial’ organizational forms are adaptive, fluid, and incomplete to keep pace with the increasing speed, agility, and complexity that mirrors the current and future modern organizational landscape.

The performance of individuals, organizations, and countries is becoming increasingly dependent on knowledge production and the knowledge flows that run through digital —knowledge — networks creating value. As 20th century globalization was defined by flows of physical goods and finance, 21st

⁴⁴ The Journal of Organization Design has made a contribution to fill this gap. See for example: Obel and Snow (2012), Alberts (2012), and Burton (2013).

century globalization is increasingly driven by flows of data, information, and knowledge. Globally, knowledge-intensive goods and services already account for half of all cross-border flows and are growing more quickly than any of the others (Bughin, Lund & Manyika, 2014).

Within the spatial theory of organizations, multiple perspectives of space can be used to connect these knowledge flows to *human and machine thinking* (Davenport, 2005; Davenport & Kirby, 2015; Susskind & Susskind, 2015). The so-called ‘mentalization’ of work’ indicates a shift from knowledge as something that humans and machines *have* towards ‘knowledge in action’—something that makes people connect, interact, and *do*—creating personal and organizational value. Furthermore, a spatial theory of organizations will support organizational practice by reconsidering and re-imagining organization design. It is argued that organizational space can be organized in a distinctly guided fashion, by means of ‘spatial arrangements’ in which work is no longer divided through the structuring of functions, tasks, and activities, but through knowledge, focus, and attention brought together and connected in the best possible context for people to work in, more specifically, to ‘put their minds to.’

Traditionally, organization design has focused on explaining and theorizing about what has happened (i.e., ‘the past’—rather than what ‘may be’ in the future [Obel & Snow, 2012]). Preventing hazardous organization design flaws from happening—often caused by an organizational design that has simply outlived its usefulness—requires a particular style of thinking—design thinking and design doing. Such a ‘design mindset’ is characterized by keeping organizations in a fluid state instead of being in a crystallized condition, thus fixed.

Modern emerging organizational forms are:

- future proof (Rohrbeck & Bade, 2012);
- fluid (Schreyögg & Sydow, 2010);
- incomplete (Alexander, 2002; Garud, Jain & Tuertscher, 2008);
- living (de Geus, 1997);
- agile (Dyer & Erickson, 2009; Worley & Lawler, 2010; Alberts, 2012; Weber & Tarba, 2014; Williams & Lawler, 2014; Birkinshaw & Ridderstråle, 2015; McKinsey & Company, 2015);
- liquid (Collopy, Boland & VanPatter, 2005; Bauman, 2014); and

- unfinished (Alexander, 2002b).

In order to benefit from these ‘assigned organizational capabilities’, an organization’s design approach must be adaptable and iterative (i.e., ‘designed’ for the unexpected—and still be capable of delivery in a more or less predictable fashion). Organizational dynamics—characterized by agility, fluidness, and so on—suggest that organizations need to be continuously dynamic themselves, which proves to be an incorrect assumption: organizations need to be selectively dynamic (Tissen & Lekanne Deprez, 2007).

Within this thesis, an organization theory—no matter how rigorous and vigorous—will not count unless there is a collaborative relationship between researcher and client (manager, professional, and/or employee); nor will organization theories be sufficiently robust without the client’s contribution. Thus practice and theory are indivisible. Neither can fully exist and flourish without the other. The challenge for academics and practitioners is to adopt a future orientation to produce practical knowledge on how to create ‘new’ organizational designs. Outliers provide fertile fields in which to learn about emerging valuable, rare, and distinct spatial arrangements (i.e., how organizations are redefining the problems and opportunities they face, reinventing themselves, and putting in place new approaches to operate effectively in a selectively dynamic environment [adapted from Mohrman & Lawler, 2012]). Outliers constitute “a ‘rare breed’ in the organizational zoo” (Puranam & Håkonsson, 2015b, p. 22). Such types of organizations allow organizational design researchers to focus on the future—what might be possible. The dominant style of design thinking within traditional organizations is generally based on the use of two kinds of logic. The first, inductive logic, entails proving—through observation—that something actually works. The second, deductive logic, involves proving—through reasoning from principles—that something must be. The challenge is always: ‘Can you prove that?’ And, to prove something in a reliable fashion means using rigorous inductive or deductive logic. Traditional organizational designers often use—and value—inductive and deductive reasoning. They induce patterns through the close study of organizations and people and deduce answers through the application of well-known organizational design theories. However, modern organizational designers increasingly adopt a third type of logic: *abductive reasoning* (Martin 2004; Martin, 2009). Abductive reasoning embraces the logic of what might be. Designers learn by doing and adding *abductive reasoning*

to the fray—which involves suggesting that something *may be* and reaching out to explore it. Designers may not be able to prove that something is or *must be*, but they nevertheless reason that it *may be*, and this style of thinking is critical to the creative co-design process. (Martin, 2004).

Within this context, a design-based collaborative management research approach is used to bridge the theory-practice gap. The focus is on a single-case study within Statistics Netherlands. Instead of a one-size-fits-all perspective, this thesis uses a one-size-fits-one approach, where organizations offer their organizational members degrees of freedom ('free work' and mental space) on how to *arrange* their work processes according to the type of knowledge that generates the greatest value within a specific spatial arrangement.

Design-based research's dual purpose of contributing simultaneously to theory and practice is expressed in two distinctive but interwoven streams of inquiry, namely the knowledge stream and the practice stream:

- The objective of the *knowledge stream* is to use existing, generalizable knowledge and generate new generalizable knowledge that can help to create desired situations in a way that contributes to theory; and
- The objective of the *practice stream* is to contribute to the practical concerns of people in problematic or challenging situations, by solving particular problems (Andriessen, 2007; Andriessen, 2011) or realizing opportunities in specific circumstances.

All of the ideas, concepts, formats, and so on are systematically captured, evaluated, discussed, and selected until only a few remained. The representatives of the various task groups were invited to participate into the internal sounding board to co-create the spatial design of Data Collection. Furthermore, to facilitate the implementation process, the current organization was allowed to insource additional headcount.

Design-based collaborative management research is an iterative, non-linear way of doing research, but this does not imply that design thinkers—researchers and practitioners alike—are disorganized or undisciplined, but rather that design thinking is fundamentally an exploratory process.

Traditionally, organization design has been focused on creating relatively ‘fixed’ mechanistic organizational structures in stable environments, while modern organization design requires more ‘fluid’, organic organizational arrangements in complex environments. Spatial organizing focuses on selectively connecting knowledge to people and technology. Research conducted by Tissen, Lekanne Deprez, Burgers, and Halmans (2008); and Lekanne Deprez and Tissen (2011) has produced a theoretical framework—the DOF (dimensioning, orientating and formatting) framework—for developing and designing spatial organizations leading to different spatial organization arrangements. Each spatial arrangement delivers a specific moment of value.

DOF (dimensioning, orientating and formatting) has been embedded within the design-based collaborative management research approach. The three DOF phases of spatial organization design are as follows:

- Dimensioning focuses on the question of how knowledge can be better applied and exploited within spatial organization design. Dimensioning can be defined as the creation of a mental (knowledge) map which makes people feel comfortable ('in their minds') as to where, when, and how they can add value;
- Orientating involves the deployment of people's concentration and attention ('minds') towards developing actionable knowledge (Johnson, 2013; Meyer, 2013) in work that meets the requirements and intention of the organization and relevant stakeholders; and
- Formatting directs people's attention to improving the productivity, impact, and quality of knowledge flows by imposing—information and communication technology enabled—standardization and modularization on mental work activities.

The phases of DOF are both iterative and recursive. They are iterative because in practice each phase is often repeated during the process of an organizational design effort. Each iteration is recursive because it represents changes learned from reflecting on the output and outcome of the previous iteration. The number of iterations needed to create a specific spatial arrangement will depend on the complexity of (and combinations of) the smallest building blocks—knowledge areas/domains.

A knowledge momentum is seen to be the trigger ('spark') between the supply of knowledge and the demand of knowledge. In order to benefit from the knowledge momentum, the original Knowledge Services Combination (KSC) concept has evolved into three types of spatial organization arrangements, with each arrangement designed to bring forward a specific *moment of value*: standard moments of value; structured moments of value, and shared moments of value.

- Knowledge Product Combinations (KPC): to connect, combine, and apply routine knowledge through formats, frameworks, scripts, and systems. The dominant design principle is organizing with information and communication technology (ICT). The result is a series of *standard moments of value*.
- Knowledge Services Combinations (KSC): to channel existing and new knowledge into shared products, services, and processes. The dominant design principle is organizing with knowledge. The result is a series of *structured moments of value*.
- Knowledge Innovation Combinations (KIC): to generate innovative knowledge to co-create new products, services, and processes. The dominant design principle is organizing with people. The result is a series of *shared moments of value*.

The figure below summarizes how a spatial theory of organizations—within the boundaries of physical ('outer'), virtual ('connective'), and mental ('inner')—can be applied to support knowledge production. A knowledge momentum provides a 'spark' to connect (or 'match') the knowledge demand of customers, clients, and/or civilians to the knowledge supply of an organization. The knowledge flows match demand to supply and therefore create and capture value in and between organizations. Within the design based collaborative management research approach, spatial organizing focuses on selectively connecting knowledge to people and technology. The DOF organization design approach creates spatial arrangements that can be considered as 'distinct' organizational forms—KPCs, KSCs, and KICs—with each arrangement designed to bring forward specific moments of value

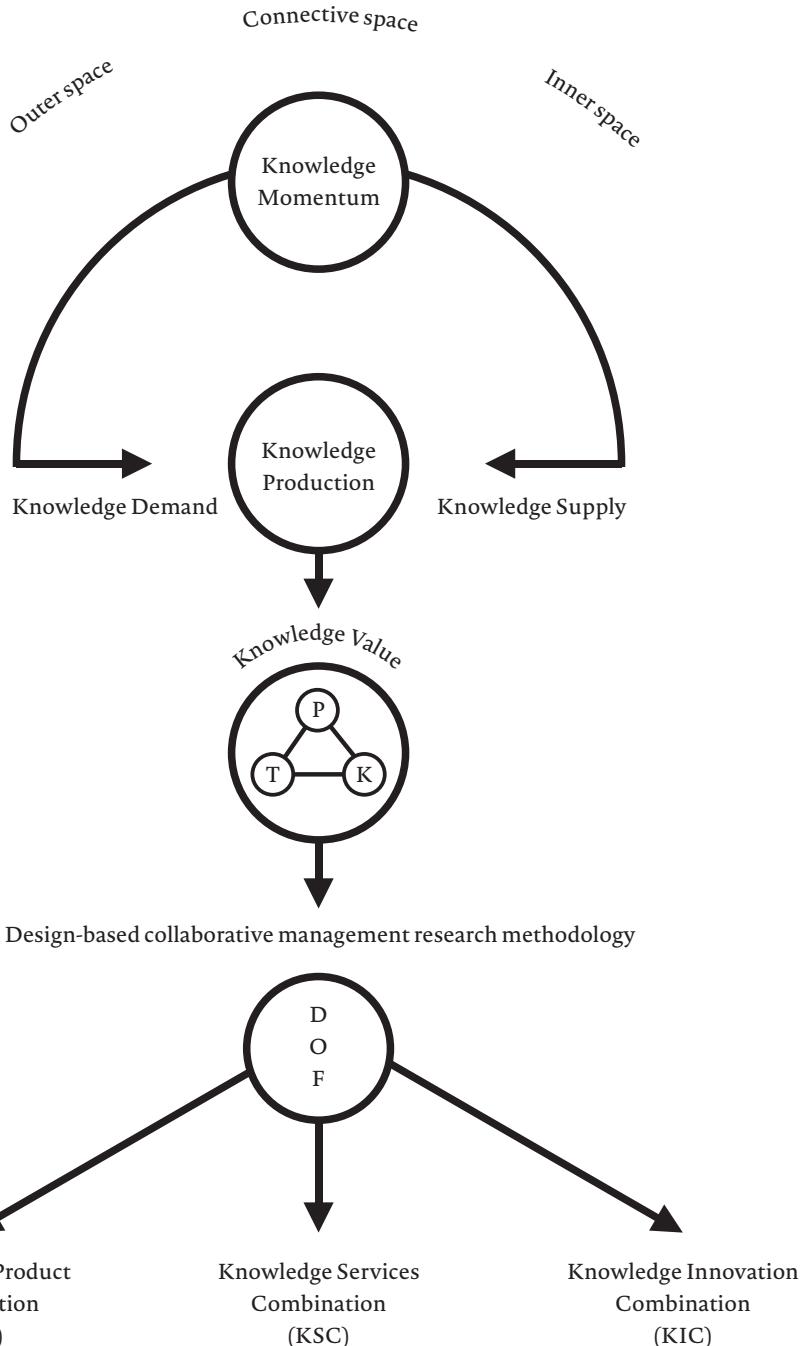


Figure 5.1

After presenting the output of the pre-research and early research phases

(conducted during the period 2000–2008), the overall research question was: “How can we design a knowledge intensive organization⁴⁵ in such a way that this design effort helps to overcome organizational problems and/or to fulfill organizational opportunities and unlock latent value that ultimately leads to create moments of value?”

The results of both pilots (conducted between 2009 and 2011), Data Collection 1 (PDC1) and Data Collection 2 (PDC2), are discussed. Since 2012, the official collaborative research group—which conducted both pilot projects PDC 1 and PDC 2—has evolved into a ‘light’ collaborative research group (including Frank Lekanne Deprez, René Tissen, and Frank Halmans). This group has agreed to meet annually and discuss the impact of three types of spatial arrangements on Division Data Collection and on the spatial theory of organizations. The research yielded the following conclusions:

- Conclusion 1: Both a spatial theory of organizations and the process of spatial organization design are still in their early stages of development;
- Conclusion 2: The spatial design of Data Collection is an example of an ‘extreme single-case’ pilot study and as such it has become a source for both advancing the spatial theory of organizations and the practice of designing spatial organizations;
- Conclusion 3: Different spatial organization arrangements create specific moments of value;
- Conclusion 4: Spatial organization design increasingly focuses researchers and practitioners on theory-driven, emergent design efforts where organizations are formed—not structured—and are temporary in nature; and
- Conclusion 5: An insider-researcher potentially creates unique longitudinal research results.

In the last chapter, the focus will be on emphasizing the continuities between humans and ‘machines’ (e.g., intelligent agents, robots, Internet of Things, social bots and so on) overcoming the fourth discontinuity between man-machine (Mazlish, 1993). The implications for human work and spatial organization design will be explored. Organizations will gradually consider ‘machines’ as partners and collaborators, mutually helping each other to create valuable knowledge flows. This chapter ends with five guidelines that will

⁴⁵ At the start of this research project, we used the concept ‘knowledge-intensive organization’ instead of spatial organization.

direct and support the future spatial design of organizations and consequently will further advance the spatial theory of organizations.

Samenvatting (Dutch)

Alhoewel de ruimtelijke dimensie zich in de afgelopen jaren in de organisatietheorie en managementpraktijk heeft gemanifesteerd, is de impact van ruimte op de organisatiewetenschappen – en i.h.b. organisatieontwerp – zwak. Tot voor kort werd het concept ‘ruimte’ gezien als een interessant idee met een hoog ideologisch gehalte maar met weinig praktische relevantie. Het begrip ruimte werd vooral geassocieerd met zichtbare ‘fysieke’ werkplekken zoals bijvoorbeeld de inrichting van de werkplaatsen bij de lopende band van de autofabrieken van de Ford Motor Company (U.S.A.).

Zodoende is in dit proefschrift de volgende onderzoeksraag geformuleerd: “In hoeverre heeft het concept ruimte zich binnen de organisatiewetenschappen ontwikkeld tot een ruimtelijke theorie van organisaties?” De auteurs Miller, Greenwood en Prakash hebben onlangs aangegeven dat een belangrijke reden voor afnemende betekenis van organisatietheorieën in de organisatiewetenschappen is “dat [organisatietheorieën] een aantal van de kerndomeinen en - vragen links hebben laten liggen” (Miller, Greenwood & Prakash, 2009, p. 273). Zo heeft de Organisatie en Management Theorie divisie (OMT) van de Academy of Management de laatste tijd weinig aandacht gegeven aan een van haar kernonderwerpen, namelijk “de betekenis en waardering van een goed organisatieontwerp⁴⁶” (Miller, Greenwood & Prakash, 2009, p. 273).

Een ruimtelijke theorie van de organisaties wordt vormgegeven binnen een raamwerk van kennis, mensen, technologie, organisaties en ruimte. Deze organisatietheorie richt zich op de integratie van verschillende perspectieven van de ruimte -- fysiek ('outer'), virtueel ('connective') en mentaal ('inner') - om ‘excellent’ presterende organisatievormen te creëren. Een toekomst bestendige ruimtelijke theorie van organisaties richt zich op het co-creëren en testen van prototypes van nieuwe organisatievormen. Deze ruimtelijke organisatievormen zijn veelal adaptief, vloeibaar en ‘onaf’ om in te kunnen spelen op de toenemende snelheid, wendbaarheid en complexiteit die het huidige – en toekomstige – organisatielandschap kenmerkt.

De prestaties van individuen, organisaties en landen worden steeds meer

⁴⁶ Het vakblad *Journal of Organization Design* levert een belangrijke bijdrage om deze leemte op te vullen. Zie bijvoorbeeld Obel and Snow (2012); Alberts (2012) en Burton (2013).

afhankelijk van kennisproductie en kennisstromen die zich wereldwijd in allerlei (digitale) netwerken voortbewegen. Werd de globalisering in de twintigste eeuw vooral gekenmerkt door de productie van fysieke goederen - engeldstromen, in de 21e eeuw is de productie van allerlei grensoverschrijdende digitale (data-, informatie- en kennis) stromen de aanjager. Wereldwijd is de stroom van kennisintensieve producten en diensten goed voor de helft van al het grensoverschrijdend verkeer en deze stroom neemt steeds meer toe (Bughin, Lund & Manyika, 2014).

Binnen de ruimtelijke theorie van organisaties worden de verschillende beschikbare ruimten (fysiek, virtueel en mentaal) aangewend om de kennis optimaal te laten stromen naar ‘denkende mensen en digitale machines’ (Davenport, 2005; Davenport & Kirby, 2015; Susskind & Susskind, 2015). Deze ‘mentalisaatie’ van het werk wijst op een verschuiving van kennis als iets dat mensen en machines hebben naar kennis als een activiteit. D.w.z. als iets dat mensen met elkaar verbindt en kan worden geactiveerd om waarde - zowel voor een persoon als voor een organisatie- te creëren. Bovendien zal een ruimtelijke theorie van organisaties de organisatiepraktijk van alledag verder ondersteunen door het proces van organisatieontwerp op een innovatieve wijze te benaderen.

In dit proefschrift wordt het concept ‘ruimte’ op een duidelijke, doelbewuste en gereguleerde manier door ruimtelijk arrangementen geordend. Hierbij is het werk in eerste instantie niet langer georganiseerd in functies, taken en activiteiten, maar door het samenbrengen van kennis, aandacht en concentratie. Hierdoor ontstaat er voor de mensen een ideale werkcontext om in te werken – om ‘aandacht ophet werk te kunnen richten’. Organisatieontwerp is van oudsher vooral gericht op het theoretisch funderen van wat er op dit gebied in het verleden is gebeurd in plaats van wat er in de toekomst mogelijk is (Obel & Snow, 2012). Om het falen van een organisatieontwerp voor te zijn – veelal veroorzaakt doordat een organisatieontwerp een bepaalde houdbaarheidsdatum heeft overschreden – wordt tegenwoordig voor een ‘design thinking & design doing – benadering’ gekozen. Een dergelijke manier van ontwerpen houdt organisaties zo lang mogelijk in een ‘vloeibare’ vorm om op deze manier te voorkomen dat er een uitgekristalliseerde, vaste organisatiestructuur ontstaat.

Moderne organisatievormen zijn:

- toekomstbestendig (Rohrbeck & Bade, 2012);
- vloeiend (Schreyögg & Sydow, 2010);
- incompleet (Alexander, 2002; Garud, Jain & Tuertscher, 2008);
- levend (de Geus, 1997);
- wendbaar (Dyer & Ericksen, 2009; Worley & Lawler III, 2010; Alberts, 2012; Weber & Tarba, 2014; Williams & Lawler, 2014; Birkinshaw & Ridderstråle, 2015; McKinsey & Company, 2015);
- vloeibaar (Collopy, Boland & VanPatter, 2005; Bauman, 2014); en
- onvoltooid (Alexander, 2002b).

Om aan de bovenstaande kenmerken te voldoen, is er voor een specifieke organisatieontwerp aanpak gekozen waarin ‘ruimte’ zowel inspeelt op het kunnen anticiperen op het ‘onverwachte’ als op een ‘voorspelbare’ manier direct leveren van producten en diensten. Deze omslag naar het ontwerpen van een slagvaardige, dynamische organisatie – d.w.z. wendbaar, incompleet, flexibel, resultaatgericht e.d. – zou de indruk kunnen wekken dat organisaties zich permanent in een ‘dynamische staat van paraatheid’ zouden moeten verkeren. Volgens Tissen en Lekanne Deprez (2007) moeten organisaties zich eerder ‘selectief dynamisch’ moeten inrichten en opstellen.

Het idee binnen dit proefschrift is dat een organisatietheorie – hoe robuust en krachtig ook – er nauwelijks toe doet als er niet een samenwerkingsverband is tussen de onderzoeker en de opdrachtgever (manager, professioneel, werknemer). Zonder de bijdrage c.q. inbreng van klanten, cliënten en andere relevante belanghebbende partijen zijn organisatietheorieën dikwijls onvoldoende solide. Immers praktijk en theorie zijn onlosmakelijk met elkaar verbonden. De uitdaging voor wetenschappers en praktijkmensen is dan ook om een zodanige toekomstbestendige gezamenlijke aanpak te kiezen waarbij de beschikbare praktische kennis (‘de praktijkstroom’) direct wordt geïntegreerd met de academische kennis (‘de kennisstroom’) van modern organisatieontwerp. Uitblinkende organisaties – d.w.z. ‘outliers’ (Mohrman & Lawler, 2012) of ‘buitenbeentjes’ – vormen een ‘zeldzame soort’ in het bestaande organisatielandschap (Puranam & Håkonsson, 2015, p. 22). Dergelijke organisaties zijn veelal onderscheidend op allerlei gebied en dagen organisatieontwerpers voortdurend uit om na te denken over ‘wat zou er mogelijk zijn’. Nu is de dominante stijl van ontwerpgericht denken binnen de organisatiewetenschap i.h.a. gebaseerd op het toepassen van twee typen

logica. Ten eerste, inductieve logica die door middel van observatie bewijst dat er iets echt werkt. Ten tweede, deductieve logica die op basis van principes bewijst dat er iets moet zijn. Bij beide benaderingen is de kernvraag: ‘Kun je dat bewijzen?’ M.a.w. het gaat erom iets d.m.v. ‘strenge’ inductieve of deductieve logica op een betrouwbare manier bewijzen. Onderzoekers op het gebied van organisatieontwerp maken veelal gebruik van, en hechten grote waarde aan inductief - en deductief redeneren. Men is veelal op zoek naar specifieke wetmatigheden door nauwgezet organisaties en mensen te bestuderen en de gevonden wetmatigheden toe te passen op bekende organisatieontwerptheorieën. Echter moderne ontwerpers en onderzoekers omarmen steeds meer een derde type namelijk *abductie* (Martin 2004; Martin, 2009). *Abductie* omarmt de logica van *wat zou kunnen zijn*. Ontwerpers leren vooral ‘door te doen’ waarbij *abductie* met name suggereert dat er iets kan zijn. Alhoewel deze ontwerpers mogelijk niet in staat om te bewijzen dat er iets is of moet zijn, hebben ze wel reden om aan te nemen dat *er iets zou kunnen zijn*. Deze denkstijl is van cruciaal belang voor het stimuleren van creatieve ontwerpprocessen (Martin, 2004).

In dit proefschrift is er gekozen voor een gezamenlijk (ontwerpgericht) management onderzoekaanpak om de bestaande praktijk - theorie kloof te overbruggen. Het object van onderzoek is een ‘enkel gevalstudie’ binnen de Divisie Dataverzameling – ‘in wording’ – van het Centraal Bureau van de Statistiek (CBS). In plaats van een ‘one-size-fits-all – benadering’ wordt er een ‘one-size-fits-one – aanpak’ gehanteerd. Hierdoor ontstaat de mentale ruimte bij het personeel om keuzes te maken hoe de werkprocessen zodanig kunnen worden ingericht dat - afhankelijk van de aard van kennis – er door de werknemers waarde binnen het (juiste) ruimtelijk arrangement kan worden gecreëerd.

Door twee verschillende - maar met elkaar verweven - onderzoekstromen te combineren wordt een belangrijke bijdrage aan zowel theorievorming als praktijkontwikkeling geleverd:

- Het doel van de kennisstroom is het mobiliseren van bestaande generieke kennis en het genereren van nieuwe generieke kennis die kan helpen om bepaalde gewenste situaties te creëren- bij voorkeur op een wijze die bijdraagt aan theorievorming; en
- Het doel van de praktijkstroom is om in concrete praktijkgevallen –

bijvoorbeeld bij een probleem of uitdaging - gerichte probleemoplossingen aan te reiken (Andriessen, 2007; Andriessen, 2011) of specifieke kansen te creëren.

Alle ideeën, concepten, formats e.d. worden systematisch verzameld, geëvalueerd, besproken en geselecteerd tot er een aantal waardevolle zaken overblijven. Bij deze aanpak werden met de medewerkers diverse lunchbijeenkomsten en klankbordbijeenkomsten georganiseerd. Ook werd door het tijdelijk inhuren van mensen mogelijk gemaakt om het implementatieproces te versnellen.

Het gezamenlijk (ontwerpgericht) management onderzoek is een iteratief, non-lineaire manier van onderzoeken. Dit betekent niet dat ontwerpgerichte onderzoekers en praktijkmensen 'ongeorganiseerd' en 'ongedisciplineerd' te werk zouden gaan, maar dat het proces van 'design thinking & design doing' voornamelijk een exploratief proces is.

Traditioneel organisatieontwerp is veelal gericht op het creëren van relatief 'vaste' mechanistische organisatiestructuren in stabiele omgevingen, terwijl modern organisatieontwerp zich vooral richt op het ontwerpen van 'vloeibare', organische arrangementen in complexe omgevingen. Ruimtelijk organiseren heeft in essentie betrekking op het selectief verbinden van kennis met mensen en technologie. Het onderzoek van Tissen, Lekanne Deprez, Burgers en Halmans (2008) en Lekanne Deprez en Tissen (2011) heeft een theoretisch kader - DOF (Dimensioneren, Oriënteren en Formatteren) - voor het ontwikkelen en ontwerpen van verschillende ruimtelijke arrangementen voortgebracht. Deze ruimtelijke arrangementen leveren specifieke 'momenten van waarde' op. De DOF - ontwerpmethode is een belangrijk onderdeel van de gezamenlijke (ontwerpgericht) management onderzoek aanpak. De DOF - fasen van ruimtelijk ontwerpen zijn:

- Dimensioneren: gericht op hoe kennis het beste kan worden aangewend en benut bij het ontwerpen van ruimtelijke arrangementen. Dimensioneren omvat het ontwikkelen van een mentale (kennis)map die ruimte creërt waardoor het mogelijk is te bepalen op welk moment, waar en hoe kennis tot waarde kan worden gebracht;
- Oriënteren: het richten van de aandacht en concentratie van mensen met als doel om op de juiste wijze met waardevolle, actiegerichte kennis aan

- het werk te gaan (Johnson, 2013; Meyer, 2013) om uiteindelijk de intentie – d.w.z. wat er bereikt moet worden – van de organisatie te realiseren; en
- **Formatteren:** het verbeteren van de productiviteit, impact en de kwaliteit van de kennisstromen door het focusen van de aandacht van de mensen waarbij standaardisatie en modularisatie van bepaalde-door informatie en communicatie technologie ondersteunde-mentale kennisstromen centraal staan.

De bovenstaande fasering van DOF is zowel iteratief en recursief. De fasen zijn iteratief omdat in de moderne organisatieontwerp praktijk deze drie fasen herhaaldelijk worden doorlopen. Iedere iteratie is op zich recursief omdat men leert van de output en de resultaten van de vorige iteratie. Het aantal iteraties dat nodig is om een ruimtelijke arrangement te maken hangt af van de complexiteit van (combinaties van) de kleinste bouwstenen – kennisgebieden / kennisdomeinen.

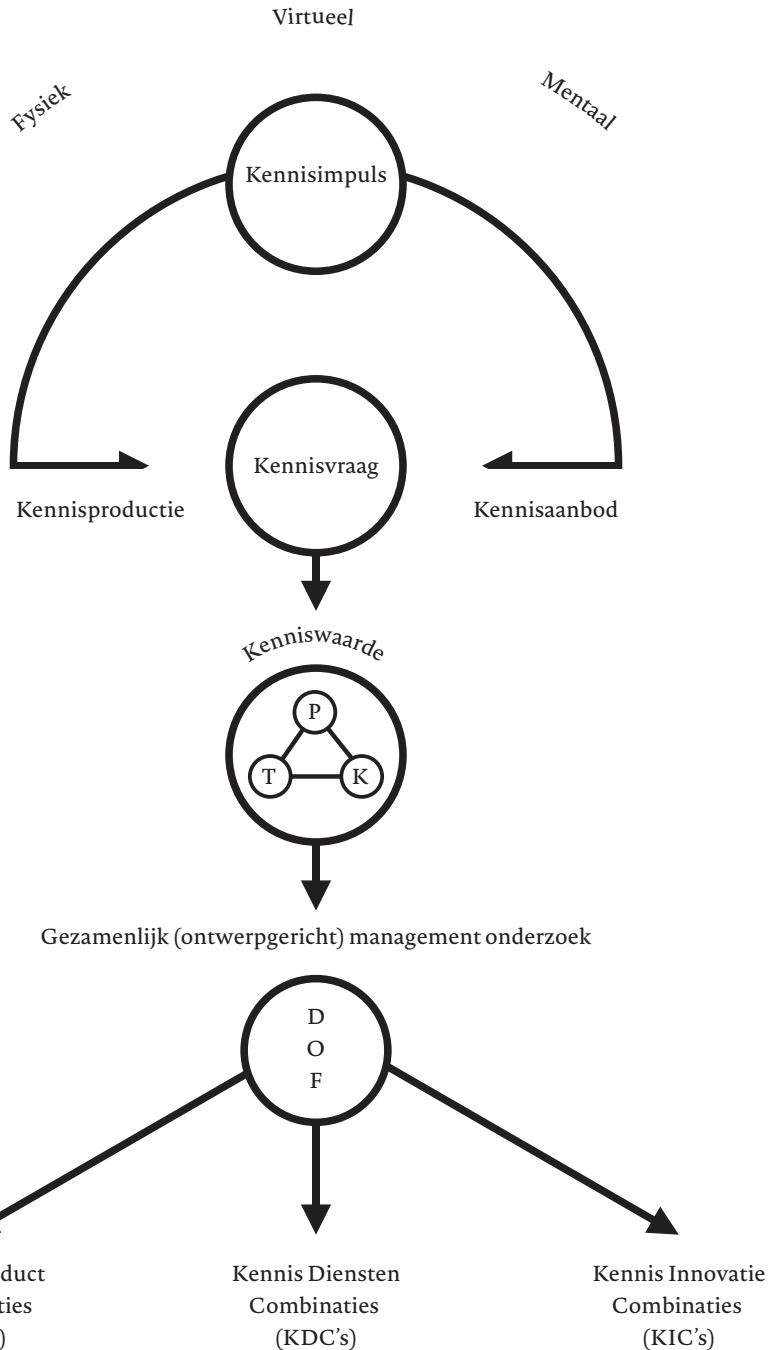
Een kennisimpuls – voortkomend uit een vraag uit de omgeving die wordt afgestemd met het interne aanbod van kennis – levert vaak het startmoment ('vonk') op voor een traject van ruimtelijk organiseren. En dergelijke kennis impuls heeft uiteindelijk het concept 'Kennis Dienst Combinatie (KDC)' opgeleverd. Dit concept is door de gezamenlijke onderzoeks groep van Nyenrode Business Universiteit en het CBS nader uitgewerkt. Uiteindelijk zijn er drie soorten ruimtelijke arrangementen gedefinieerd -KPC's, KDC's en KIC's - waarbij ieder arrangement wordt gekenmerkt door specifieke momenten van waarde: standaard momenten van waarde; gestructureerde momenten van waarde en collectieve momenten van waarde:

1. **Kennis Product Combinaties (KPC's):** Het via formats, kaders, scripts, en systemen met elkaar verbinden, combineren en toepassen van de beschikbare routine kennis. Het dominante ontwerpprincipe is 'organiseren met (informatie-en communicatie) technologie'. Het resultaat is een reeks standaard momenten van waarde.
2. **Kennis Dienst Combinaties (KDC's):** Het zodanig kanaliseren, verbinden, combineren en toepassen van bestaande en nieuwe kennis dat er nieuwe producten, diensten en processen ontstaan. Het dominante ontwerpprincipe is 'organiseren met kennis.' Het resultaat is een reeks gestructureerde momenten

van waarde.

3. *Kennis Innovatie Combinaties* (KIC's): Het genereren van innovatieve kennis om door co-creatie nieuwe producten, diensten en processen te ontwikkelen. Het dominante ontwerpprincipe is 'organiseren met mensen.' Het resultaat is een reeks collectieve momenten van waarde.

Het onderstaande figuur geeft een overzicht van hoe een ruimtelijke theorie van organisaties - binnen de grenzen van fysieke ('outer'), virtuele ('connective') en mentale ('inner') ruimte - kan worden toegepast om de juiste kennisproductie te realiseren. Een kennisimpuls verschaft een 'vonk' aan de hand van de spanning die ontstaat tussen een (kennis)vraag van klanten, cliënten en/of burgers én de beschikbare kennis van een organisatie. Vraag en aanbod van kennisstromen worden op elkaar afgestemd waardoor binnen en tussen organisaties waarde wordt gecreëerd. Ruimtelijk organiseren heeft in essentie betrekking op het selectief verbinden van kennis met mensen en technologie. De DOF organisatieontwerp aanpak levert een drietal ruimtelijke arrangementen op die als 'te onderscheiden' organisatievormen – KPC's, KDC's en KIC's – met specifieke momenten van waarde kunnen worden weergegeven.



Figuur 5.1. Het toepassen van een ruimtelijke theorie van organisaties: het ontwerpen van ruimtelijke organisaties door gezamenlijk (ontwerpgericht) management onderzoek.

Na de presentatie van de resultaten van het vooronderzoek-uitgevoerd tussen 2000-2008-is door de gezamenlijke onderzoeks groep van Nyenrode Business Universiteit en het CBS de volgende onderzoeks vraag geformuleerd:

“Hoe kunnen we een kennisintensieve organisatie⁴⁷ zodanig ontwerpen dat dit organisatieontwerp voldoende ondersteuning biedt om organisatorische problemen te overwinnen en/of organisatorische uitdagingen te realiseren door de ‘verborgen, latente waarde’ te identificeren en om te zetten in specifieke momenten van waarde.”

De resultaten van beide pilots – dataverzameling 1 (PDC1); dataverzameling 2 (PDC2) – die zijn uitgevoerd in de periode van 2009 tot 2011 worden weergegeven. De gezamenlijke onderzoeks groep - die beide proef projecten PDC 1 en 2 PDC heeft uitgevoerd - is geëvolueerd tot een ‘light’ versie bestaande uit: Frank Lekanne Deprez, René Tissen en Frank Halmans. Deze groep ontmoet elkaar jaarlijks om de impact van drie ruimtelijke arrangementen op de Divisie Dataverzameling te bespreken en eventuele bijstellingen aan de ruimtelijke theorie van organisaties te bewerkstelligen. Het onderzoek leverde de volgende conclusies op:

- Conclusie 1: Zowel een ruimtelijke theorie van organisaties als het proces van ruimtelijke organisatieontwerp verkeren nog in een experimentele fase van ontwikkeling;
- Conclusie 2: Het ruimtelijke organisatieontwerp van Dataverzameling is een voorbeeld van een ‘extreme single case’ pilotstudie en levert als zodanig een goed fundament voor zowel theorie- als praktijkontwikkeling op het gebied van ruimtelijk organiseren;
- Conclusie 3: De verschillende ruimtelijke arrangementen creëren specifieke momenten van waarde;
- Conclusie 4: Ruimtelijk organiseren leidt bij onderzoekers en praktijk mensen tot theorie-gedreven, ‘emergente’ ontwerp inspanningen, waarbij ‘tijdelijke organisaties’ worden gevormd en niet worden gestructureerd; en
- Conclusie 5: Een insider-onderzoeker biedt voldoende kansen voor het

⁴⁷ Bij de aanvang van dit onderzoeks project werd het concept kennis intensieve organisatie in de plaats van ruimtelijke organisatie gebruikt.

uitvoeren van longitudinaal onderzoek.

In het laatste hoofdstuk ligt de nadruk op het opheffen van de (vierde) discontinuïteit tussen mens en machine (Mazlish, 1993) en de gevolgen daarvan voor de menselijke arbeid en organisatieontwerp van ruimtelijke organisaties. Hierdoor wordt binnen organisaties mogelijk om ‘machines’ (intelligent agents, robots, internet of things, social bots e.d.) als partners en/of medewerkers in te zetten die gezamenlijk o.a. waardevolle kennisstromen genereren. Dit hoofdstuk eindigt met vijf richtlijnen voor de toekomstige vormgeving van de ruimtelijke organisaties. Hierdoor wordt de ruimtelijke theorie van de organisaties wederom een stap verder gebracht.

Curriculum Vitae

Frank Lekanne Deprez is researcher and lecturer at Nyenrode Business University and is the Founder and Owner of ZeroSpace Advies in Amstelveen, The Netherlands. He is also an associate partner at Globally Cool in Zeist and Catalyse—healthcare—in Rotterdam both in the Netherlands.

Frank earned his Master's Degree in Industrial and Organizational Psychology at the Free University in Amsterdam. His research interests focus on human resources management, HR intelligence, spatial organization design, knowledge management, new 'normal' (or simply 'better') ways of working, knowledge value, and the knowledge economy.

His passion is helping organizations target and apply knowledge when and where it is really needed by initiating a—knowledge—value creating mindset: organizing knowledge and designing knowledge-intensive organizations to deliver astonishing results. Frank endeavors to be an inspirational moderator by being an energetic and engaging chairman of forums, seminars, and conferences worldwide.

Before starting his own company in 2003, Frank Lekanne Deprez was a research associate at the University of Tilburg, The Netherlands, and held management and functional positions at KLM (Royal Dutch Airlines). From 1995 to 1997, he was the manager of market and product development at Galileo Nederland, Ltd. During the period 1997–2003, he was a manager at KPMG Knowledge Advisory Services, where he was a consultant and also provided executive training and education for a number of international organizations. From 2002 to 2010, Frank was part-time professor of Knowledge Organizations and Knowledge Management at the University of Applied Sciences Zuyd, Heerlen, The Netherlands. Frank is also chairman of the General Practitioner Center Amstelland in Amstelveen, The Netherlands on a volunteer basis.

Frank Lekanne Deprez is co-author of *Value-Based Knowledge Management* (1998); *The Knowledge Dividend* (2000); *Zero Space: Moving Beyond Organizational Limits* (2002); and *Developing Spatial Organizations: A Design-Based Research Approach* (2011). His publications have been translated into German, Spanish,

Korean, Serbian, Japanese, and Chinese (traditional and simplified). For a complete list of publications, please visit: nyenrode.nl/bio/Pages/Frank-Lekanne-Deprez.aspx

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Appendix A

Collecting and storing research data.

Sample page: June 2004 – March 2008.

CBS – lijn (Statistical Netherlands)

DVZ – lijn (Data Collection)

Tijdstip	CBS-Lijn	DVZ-lijn
jun-04	CBS wordt ZBO	
nov-04	REO: Efficiency maatregel (Balkenende I)	Een belangrijk project is het inrichten van één CBS Contact Center (helpdesk en rappel) (functionele aanpak)
okt-06	Programma Herontwerp Economische statistieken. Aangekondigd door Bert Kroese als Programma manager	
feb-07	ICT-Strategie steeds expliciter: CBS krijgt IT-architectuur. Focus op standaardisatie van processen en systemen. ICT-trajecten hebben ook betrekking op het domein Waarnemen (DSC en CRM)	
jun-07	Shared Service Waarnemen onder verschillende vlaggen van divisies	Samenwerking tussen SDV en BWH (Hank vanuit BWH ook tijdelijk waarnemen bij SDV)
jun-07	Initiatieven ricing werk voor derden: Samenwerking bij de ontwikkeling en publicatie van statistische informatie, bij de verzameling van basisgegevens, bij methodologisch onderzoek, etc. DNB, SCP, VROM en EZ zijn belangrijke partners	Dataverzameling speelt een belangrijk punt vanwege unique selling points (steekproefontwerp en veldwerkkorps).
jun-07	Besluit Directieberaad over het aanstellen van een ontvangend management t.a.v. Waarnemen.	Hank Hermans krijgt de opdracht om een organisatie in te richten ten behoeve van het CBS-breed verzamelen van data als input voor het statistisch proces.
sep-07		Implementatieplan Dataverzameling
nov-07	Implementatie programma Dataeverzamelen	Rolduc-Bijeenkomst: Kick Off Dataverzameling
nov-07		
nov-07	Implementatie HecS, Aansturing door programmaraad	
jan-08		Op basis van de Contourenschat gaat Dataverzameling aan de slag, waarbij de focus ligt op processen en systemen. De taakgroepen die actief betrekken zijn bij de veranderingen zijn de taakgroepen van de bestaande sectoren SDV en BWH
mrt-08		Er onstaat langzamerhand het beeld dat voor een volgende stap in de ontwikkelijk van Dataverzameling aanpassingen in de organisatie (betreft hier: de bestaande taakgroepen van SDV en BWH) noodzakelijk is.

Appendix B

**Tables of the knowledge domains of Data Collection:
Survey design; Direction and Implementation.**

Table 6.2. Knowledge domain: Survey design

Knowledge domain: Survey design			
Knowledge area	Management intention	Nature of knowledge	Management challenge
Questionnaire design	Outline of questionnaire supporting meetings with clients. Questionnaire design as instruction for field work.	Instructive	High quality statistics based on minimum survey burden.
Sample design	Outline of sample in support of meetings with clients. Sample design as instruction for field work.	Instructive	High quality statistics based on minimum survey burden
Approach strategy	Approach instructions for field work.	Instructive	Depending on the assignment: Minimum possible costs Highest response rate Quality of response
Survey expertise	Innovation of survey design and respondent communication; Integral agreement between all data users within the Netherlands Integral agreement between all data users within the Netherlands	Innovative	Stimulation of response behavior. Insight into compliance principles Uniformity in unique variables.

Table 6.3. Knowledge domain: Direction

Knowledge domain: Direction			
Knowledge area	Management intention	Nature of knowledge	Management challenge
Channel use	Using the appropriate channels, volume and so on, to realize the agreed upon response rates and quality	Learning	Depending on the assignment: <ul style="list-style-type: none"> • Minimum possible costs • Highest response rate • Quality of response
PDCA	<ul style="list-style-type: none"> • Distribute resources and timely completion of products and sub-products. • Up-to-date information on status and effectivity of process, timely adjustment of process if it deviates from set target. 	Instructive	<ul style="list-style-type: none"> • Realization of all milestones on time, effectively, and efficiently by designating the milestones in such a way that: • steering is optimal. • agreements are complied with effectively and efficiently by designation of correct kpi's, realizing and tightening set norms. • resources are applied in an optimum way.
Quality assurance	Assuring continuity and quality	Instructive	Tightening quality requirements and continuing to realise them

Knowledge domain: Direction (continued)

Knowledge area	Management intention	Nature of knowledge	Management challenge
Relations management	Correct interpretation of an agreement with expectations of clients	Instructive	Deliver added value to assure results based on contacts with internal customers
Functional management	Correct interpretation of ICT requirements	Instructive	Optimal ICT support for users within processes

Table 6.4. Knowledge domain: Implementation

Knowledge domain: Implementation			
Knowledge area	Management intention	Nature of knowledge	Management challenge
Channels knowledge	Assuring the implementation of the work in compliance with agreements via process improvement and resource planning	Instructive	Lower costs as a result of efficiency
Respondent approach Face 2 Face	Data collection from companies and respondents via face-to-face interviews	Routine	Realisation of response at minimum possible production costs, with pre-agreed quality.
Respondent approach Telephone	Data collection from companies and respondents via telephone interviews / reminders	Routine	Realisation of response at minimum possible production costs, with pre-agreed quality.
Respondent approach Paper	Transport of information and survey questions to respondents and companies. Optimal data processing	Routine	Realisation of response at minimum possible production costs, with pre-agreed quality.

Knowledge domain: Implementation			
Knowledge area	Management intention	Nature of knowledge	Management challenge
Respondent approach Digital	Transport of information and survey questions to respondents and companies. Optimal data processing	Routine	Transporting information via channels may not be an impediment for either survey design or implementation Efficient/cost-effective implementation



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